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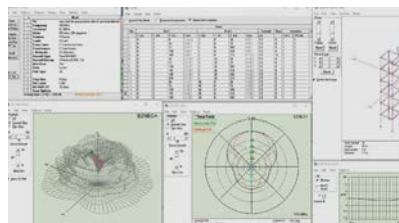
Pumping it up
How inflatable aerials
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RadioUser

ISSN 1748-8117

June 2020 Vol. 15 No 6

On sale: 28 May 2020

Next issue on sale: 25 June 2020

RadioUser

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Subscriptions Hotline: 01778 395161

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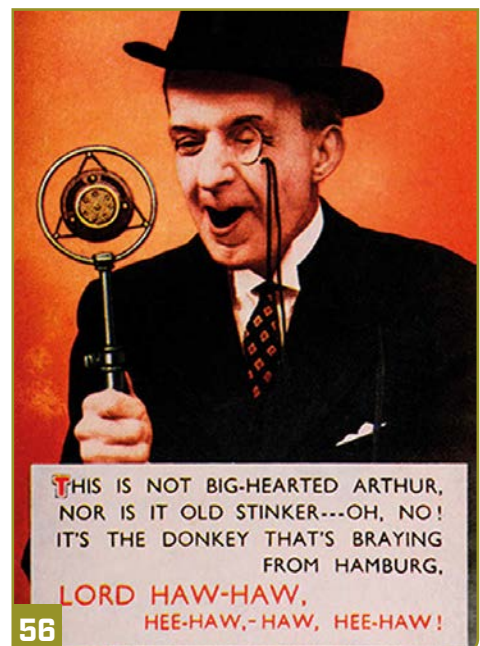
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We have a cornucopia of radio news and snippets from Bob Houlston, one of our regular correspondents.



Historical Roots & New Directions

Hello and welcome to the June issue of *RadioUser*. As the Coronavirus lockdown continues, in a variety of formats, across the UK, many are rediscovering their radios as a means of staying in touch with others, a means of getting information and a provider of daily routine and, yes, comfort.

I am the same, and I find that I turn to my favourite programmes and shows much more often than before at the moment. My podcast consumption has gone up, and I have widened my scope to enjoy music and spoken-word podcasts from all over the world, and in all genres.

There is a bit of a focus in this issue on the propagandistic and covert use of radio. For example, in the first of a two-part feature, Paul Beaumont investigates how Cold War spies and their handlers used number station transmissions to plan their activities. Going back in time a little, Scott Caldwell offers an extended column on William Joyce, who became both infamous and ridiculed as 'Lord Haw-Haw', working for the Nazi fake news machine. To round off the historical focus, David Harris introduces a fascinating new biography of Charles Gardner, the pilot and 'Battle-of-Britain-Broadcaster'.

Elsewhere in this issue, Chrissy Brand is starting to introduce a new flavour to her International radio Scene section, focusing, from now on, much more on recommended international broadcasts and podcasts, and on how you can receive them, in all formats, from broadcast to podcast, to streaming.

Several of our writers look at the implications of the Coronavirus crisis on radio, be it in the context of the radio spectrum, or in connection with new ways of broadcasting and consuming the medium.

In some of the other of our regular columns this month, you will learn more about some exciting aerial model-



ling software, inflatable antennas, and maritime Automatic Radar Plotting Aid (APRA) technology.

In other articles, we will introduce you to the issue of moderation in Network Radio and the importance of the Digital Emergency Warning Service. Last, and certainly not least, I offer Part Two of my short excursion into Standard Frequency and Time Signal (SFTS) stations.

Since we are currently missing our regular *Airshow Guide* and *Rallies* sections, we have taken the opportunity to offer you some updated resources on aeronautical acronyms and key UK radio clubs, such as the BDXC.

In addition to this, we have an extra-large and juicy slice of up-to-date *News and Products* for you this month, which I hope you will enjoy.

Times continue to be challenging, but it is becoming clear, to radio station operators, radio hobbyists and listeners alike that radio continues to play a pivotal role at the moment, and that some extremely exciting changes and developments are in the offing for the medium.

Stay indoors, stay safe and healthy and enjoy your radios.

Most importantly, stay in touch with me and others.

Georg Wiessala

Editor, *Radio User Magazine*
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What's New

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

Radio News

STAFF FURLONGHS AND THE RADIO

INDUSTRY: The Coronavirus Job Retention Scheme has been put in place for many staff at various radio groups in the UK. Nation Broadcasting, CCUK (Communicorp) and Bauer Media are just some of the companies who have told staff this week not to work for the foreseeable future. Nation Broadcasting said: "With a significant decline in short term revenues we have introduced several measures to protect our people and the business during this ongoing emergency while recognising the important role our radio stations play in their respective communities at this difficult time."

Around 25 staff at Nation have been furloughed, as the business makes a few changes, including creating a single but longer news bulletin for all of its stations to air in Wales, a new programme schedule and resource sharing across UK stations, and the relaying of Nation Radio Scotland on the Your Radio frequencies for the time being. Jason Bryant at Nation adds: "We will continue to review our provisions in line with Government advice, forward revenues and booking rates and any relevant funding available at UK, nations or industry level." CCUK has responded to the coronavirus crisis by placing some of its staff on furlough for the next two months. Around 50 employees, mostly from non-programming areas of the business, will no longer be required to travel to one of its nine locations in England, Scotland and Wales, or work from home. Communicorp UK runs Smooth, Capital and Heart brands on licence from Global, along with XS Manchester. Meanwhile, in Ireland, Communicorp Media has decided to keep staff working but cut all pay by up to 25% for the next three months. Besides, Bauer Media is planning to furlough some staff but has not yet announced any specific decisions. Dee Ford CBE, Group Managing Director, Bauer Radio stated: "The COVID-19 virus has had a major impact on our lives, and our business. The Government has acknowledged this and is offering businesses, such as ours, some support. We are seeking support from the government through the Job Retention Scheme to protect jobs during what is the most challenging time of our lives." Elsewhere, Bauer Media in New Zealand yesterday announced plans to close its entire operation – which is centered on



Air Antennas Inflatable Antennas

Air Antennas is the realisation of a long-held ambition of owner and founder, Tom Morris. Tom has a professional background in the antenna industry spanning 15 years. He has also been a passionate amateur radio operator for over 30 years. Tom is recognised authority in the field of antenna design and development, mainly in the GSM, GPS & WIFI sectors. A 'light-bulb moment' in April 2019 led Tom to develop a prototype antenna, the Inflatable Ham Air Antenna. Tom said, "I was tired of the 'long wire' and bulky carrying about, of antennas, so I decided to work on a truly portable system." The response from the antenna industry and amateur radio community was tremendous and bolstered Tom's decision to launch Air Antennas. The business operates from a new office in Prestwick, Ayrshire and attracts customers from all corners of the globe. Tom continued: "We are now supplying VHF/UHF Antennas, to Emergency Rescue teams in the USA & Canada, due to the lightweight nature and

high performance of the Air Antennas, and this side of the business is growing monthly. I also saw a gap in the market, for top quality, portable RX antennas, for SWLs, military & civil airband listeners, and so on. Therefore, we developed two new antennas for this section of the hobby. The BlackKnight Military & Civil RX Antenna covers 118 to 450MHz, and the new HFRX Antenna, ranges over the full short wave band (0 to 30MHz), for broadcast AM & SSB/CW. Both models have been receiving great reviews". The main source of info on these and the other antennas is Tom's live Twitter feed, @AntennaAir, where you will also find the best-selling dual-band 2m/70cm version and some newly launched ADS-B antennas. Air Antennas is also launching a new TX & RX 'Tri-band' Antenna for the US market, on 2m/1.25m/70cm, 144/220/440Mhz. Tom summarised, "We are continually testing new designs, and will continue to think outside the box, of the conventional way, of designing antennas".

publishing magazines – as a result of the virus. At Global, there are currently no plans to use the Coronavirus Job Retention Scheme, and most of the staff are working from home to keep all of its services operating. At the time of publishing, News UK has not responded to our request for

information. The Coronavirus Job Retention Scheme is a temporary scheme open to all UK employers for at least three months starting from 1 March 2020.

(Source: RadioToday, National Press)

<https://tinyurl.com/uuq9ggv>

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Inovonics 674 AM Monitor Receiver

This software-defined DSP receiver has many cool features. As a global product, it can either tune in 10 kHz increments for the Americas, or 9 kHz increments for Europe. Audio outs are available in analogue and digital, each with independent level adjustments. The multicolour, backlit LED display continuously shows received signal strength and audio levels. Combined with the jog wheel, this display also facilitates system setup. The 674's programmable front-panel alarms with rear-panel tallies indicate low or no signal and audio program loss. Alarm conditions also cause the display to flash against a red background, a move guaranteed to get your attention. Tweaks and upgrades to the firmware are easily uploaded through the front-panel USB port. At the back, there is an F connector for the 50 Ω antenna input as well as terminals for the alarm tallies, including ground, +5V, low-signal, and audio loss. There's also an AES digital audio output and analogue line outputs labelled left and right. Finally, two paralleled coaxial power connectors can take the +12 VDC and daisy-chain it to two additional INOmini devices, useful if the 674 is rack-mounted with two companion units. The front-panel headphone jack will accommodate any stereo phones with a 3.5 mm plug. When the headphones are plugged in, the LCD menu will automatically switch to the headphone volume screen, and you can adjust volume

with the knob. Press the knob again and you're returned to the previous menu. Menu screen 6 gives a bar graph presentation of the program audio level. The meters are peak-responding with a floating peak-hold function. 100% carrier modulation corresponds to 0 dB. The 674 can operate with just about any type of antenna. The 50 Ω antenna connector is insulated from the rear panel to create a quasi-balanced configuration. The instructions recommend connecting the shield to an external ground. Getting a strong, interference- and a noise-free signal can be difficult in some locations, and Inovonics offers as an option the 637-01 passive AM loop antenna, with a figure 8 pattern, which can assist with some of the more challenging AM reception environments. Two menu screens determine how the 674 will sound. The standard NRSC truncated 75 μ s de-emphasis may be switched in or out. The manual suggests making a decision based on which sounds best to you. A second screen enables selection of IF bandwidth. Your options are 2, 3, 4 and 6 kHz. These settings mark the -6 dB points. While the 674 is geared to a global market, the display is only offered in English. A menu selection of languages might make it more user-friendly outside the United States and other English-speaking countries [...].

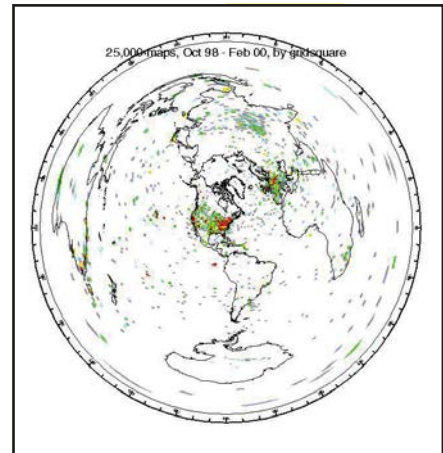
<https://tinyurl.com/y7curtxn>
<https://www.inovonicsbroadcast.com>

Radio News

MAPPING LIGHTNING STRIKES FROM SPACE:

If lightning strikes anywhere in the Western Hemisphere, odds are it has already been detected and mapped by satellite-bound cameras orbiting some 35,000 km above Earth. Lightning flashes are more typically mapped from ground-based networks using radio frequencies to generate precise data on the order of meters. However, ground-based systems have

a limited line of sight. The view from a satellite does not, for example, need to "account for things like tree lines or city skylines or even just general dissipation over distance," said Michael Peterson, an atmospheric scientist at Los Alamos National Laboratory in New Mexico. "It's not only a matter of being able to see more, but being able to see things completely." The idea of using a satellite to detect lightning has been around since at least the 1980s, but with the launch of the National Oceanic and Atmospheric Administration's (NOAA) Geostationary Operational



Customised Great Circle Maps

Have you ever wanted to create your own Great Circle map, homed-in on your exact QTH? Or perhaps you require one for a DXpedition or at a holiday location. The answer is to design and print one of your own. There is an excellent, online, map-creating tool at this URL:

<https://tinyurl.com/r82me>

CQ-DATV

Issue 83 of CQ-DATV is now out. CQ-DATV is an electronic-only magazine covering Amateur TV and analogue TV technology. What is different is that CQ-DATV is a monthly publication and so it is bang up to date with the latest ATV news and events, but it is also a free magazine that is now read in over 250 countries. The most recent issue contains contributions on, among other topics, Micro Corner - Simple OSD Generator - Part One; Slow-Scan TV on HF; Experimenting with the AD724 PAL Coder; Grass Valley Mixer Conversions - Part 16; MiniTiouner-Express advert; LT-SPIICE; On Top of the World; One from the vault - A guide to making your own PCB.

<https://cq-datv.mobi/ebooks.php>
 editor@cq-datv.mobi

Environmental Satellite-R Series (GOES-R) weather satellites starting in 2016, researchers and forecasters have attained unprecedented levels of lightning data from the Geostationary Lightning Mapper (GLM) instruments attached to the satellites.

An interdisciplinary team of researchers now has developed a technique that can map out the lightning flashes GLM detects across the entire Western Hemisphere in real-time.

(Source: Journal of Geophysical Research,)

<https://tinyurl.com/sqd9lvu>

Enter our competitions at www.radioenthusiast.co.uk/competitions

Magi-Cal[®] Automatic SMA Calibrator

Tracy Verduyn (SDR Kits) wrote in to introduce the new Magi-Cal[®] Automatic SMA Calibrator for DG8SAQ VNA 3, 3E and 3EC. A new product from the Designer of the DG8SAQ low-cost 1.3GHz Vector Network Analyser, the Magi-Cal[®] is an automated SMA Calibrator for use with the VNA 3, 3E and 3EC. Normally, the VNA calibration process involves a lot of connect/disconnect cycles of the various calibration standards. This is time-consuming and can be prone to handling errors - measurement results with vector network analyzers are only as good as the quality of the performed calibration. The Magi-Cal[®] performs an automatic one-port or two-port VNA calibration with a single connect cycle, providing consistent, high-quality, calibration results. Covering the full frequency range of the VNA, the Magi-Cal[®] offers a good quality of calibration up to 1 GHz that is on a par with that achieved with Premium Calibration parts. Calibration above 1 GHz is limited by actual VNA performance, same as when using manual calibration. Each Magi-Cal[®] device is individually commissioned and calibrated, and the model parameters are stored within the Magi-Cal[®] hardware itself. This gives the added benefit that the unit can be quickly and easily used to calibrate multiple VNAs. Available now from www.SDR-Kits.net. Price £126.00 incl. VAT – shipping extra.

<https://tinyurl.com/yc4q4zma>



Radio News

BBC OFFICES TO CLOSE: An unknown number of radio studios and offices still used by BBC local radio stations across England are being closed under the latest plans for the BBC to cut costs. The corporation won't confirm which sites are being closed, but some reports in the Northwest say that Blackpool, Lancaster, Barrow and Kendal are some of the sites going. But whilst the BBC Press Office won't offer any more details, a report on the BBC News site says up to 20 locations will be shut in places like Scarborough, Blackpool, Canterbury, Grimsby, and Portsmouth. RadioToday understands the district offices once used at the start of BBC Local Radio have been slowly closing in recent years, and very few remain. A source said: "This has been the clear direction of travel for years – most district offices like this closed during the cuts in 2012, and the huge leaps forward in mobile technology and connectivity make an office with an ISDN line an expensive anomaly." Jason Horton, head of BBC East and

South East, confirmed the office and studio space at Gunwharf Quays, Portsmouth used by BBC Radio Solent will be closing when speaking to the Press Association. A BBC spokesperson said, "We have 39 broadcast bases across England. These sites are supported by a number of very small, often unstaffed sites in nearby locations. New technology means these smaller sites are no longer needed. Closing them will save money at a time when the BBC faces significant financial pressures. There will be no job losses and our services in those areas will not change."

(Source: RadioToday)

<https://tinyurl.com/y855ddh3>

COLONEL TOM MOORE RADIO: Sussex station More Radio temporarily changed its name to Colonel Tom Moore Radio and announced a new breakfast show team featuring two former Heart presenters. The 24-hour name change is to mark the 100th birthday of Tom Moore, who's raised over £30m for the NHS and has topped the chart with his duet with Michael Ball. Meanwhile, former Heart Sussex presenter Tom Evans

is joining the station's breakfast show – he'll co-present with Lou Nash and eJack Hayes who joined More Radio in November. Nick Osborne moves from breakfast to mid-mornings after three years of waking up the county.

(Source: RadioToday)

<https://tinyurl.com/ya7ktyef>

5MHZ NEWSLETTER: The latest edition of The 5 MHz Newsletter (No 24 – Winter/Spring 2020) is now available for free pdf. This edition includes 5 MHz news from 7 countries, GB3WES Beacon Closedown, a 5 MHz Controlled Feeder Radiation Dipole, plus features the latest World of 5 MHz Map and an article on two Blue Ham Exercises.

<https://tinyurl.com/zh65rb9>

ADVERTISERS: How Radio Can help to get Through the Current Crisis? Rescue Remedy, aimed at businesses in these challenging times, is a useful publication available here. It covers such topics as increased audience availability, investment, and the longer-term perspective.

<https://tinyurl.com/y9thz3qn>

For the latest news and product reviews, visit www.radioenthusiast.co.uk

Radio News

EMERGENCY FUND FOR RADIO

FREELANCERS: An emergency fund has been announced to help those in the radio and audio sector who are facing hardship because of the coronavirus crisis. The urgent need to provide support for freelancers and other individuals who are the lifeblood of radio, podcasts, and audiobooks, has brought together the Radio Academy, AudioUK, the BBC, Audible and Reelworld to create the Audio and Radio Emergency Fund. The new Fund has been kick-started with a contribution from the Radio Academy's benevolent fund and boosted by contributions from the BBC and internet audio company Audible. Funding from other organisations will be announced shortly. The scheme will give grants of up to £1,000 to individuals who need extra support during the COVID-19 pandemic, such as those in hardship who are receiving no government assistance; people who need help with radio or audio development projects, or those who need new equipment or software. Recognising the urgency of the current situation, when the Fund opens, it will aim to approve applications within ten days, and then to pay grants as quickly as possible. The Radio Academy is administering the fund and has appointed an independent panel to distribute the much-needed support. It will be chaired by Dom Chambers, a director of the Community Media Association, and will include: Aradhna Tayal, director of Radio TechCon; Ahmed Hussain, BBC producer; Camilla Byk, founder of Podium.me; Cathy Fitzgerald, documentary maker; and Stuart Morgan, managing director at Audio Always. As a priority, the new Fund will be engaging with the freelance community, to ensure it fully reflects the diversity of the whole podcast, audiobook, and radio sector across the UK. Dom said: "As society works out how best to meet the challenges of COVID-19 what has emerged is the need for connection and community and those trusted voices and content makers who bring us information, news and entertainment. Those who communicate must be able to do what they do best." James Purnell, director of BBC Radio and Education added: "We are privileged to have such a talented, world-class pool of freelancers working with us and their contribution to the success of our services is enormous. COVID-19 is having a devastating impact on so many people's lives, and now more than ever we must support our colleagues in the freelance community who are facing hardship. This fund is a vital initiative to help safeguard the creative future of the radio industry." Details on how to apply to the fund are available on the Radio Academy website and social media. (Source: Radio Today)



New from Moonraker

VERO VR-N7500 50W Dual Band Mobile Radio With APP Programming

The Vero Telecom VGC VR-N7500 is a brand new 50watt VHF/40 watt UHF Headless ham transceiver with a solid build quality. It is very different in design compared to any other radio used mobile or base. The VR-N7500 uses a smartphone as a control

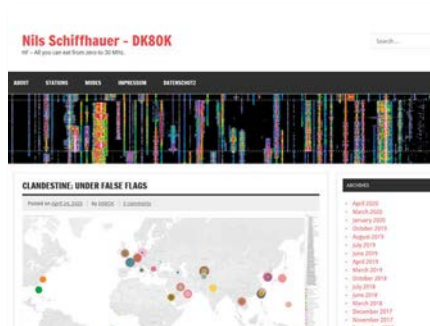
panel. The body is installed in the trunk, the mobile phone is connected to the body through Bluetooth, and the automatic horizontal screen state is fully intelligently connected. Car hands-free intercom can be utilised through the vehicle Bluetooth and PTT is by the supplied Bluetooth PTT.

<http://www.vgc.net.cn/news/65-cn.html>

New websites from Schiffhauer & Van Horn

(1) Our friend and contributor Nils Schiffhauer, DK8OK, was one of the first radio amateurs in Europe, to have imported the first real SDR – the SDR-14, by pioneering company *RFSpace*. For more than the decade thereafter, he tried to share his never-ending enthusiasm for the application of this technique. These are applications, which are often neglected in magazines. Nils said, "I also like to use the multimedia aspect of the internet". So, he first tried out a YouTube channel with 75+ introductions to many different aspects of DXing. "To be honest", Nils sighs, "doing a good video is a lot of work." Too much, he decided and now concentrates on his website, where he covers all aspects of DXing – from broadcast and medium wave to utility and clandestine. He is also an enthusiastic promoter of using the new possibilities of SDRs in combination with free and powerful software.

Long-time DXer and former *Monitoring Times* author Loyd Van Horn, W4LVH, has announced the launch of his new website, *DX Central*. It will specialise in AM and FM DXing. Loyd notes: "DX



Central is the culmination of both what I have learned as a DXer through the past 30 years, and it is helping me to flush out all of the things I still want to learn. There are many sites out there for AM and FM DXers, but I have always wished that there were a site that taught the art of DXing and helped cultivate that skill, as well as providing information on equipment, from the perspective of the DXer."

<https://dk8ok.org>
www.dxcentralonline.com

Enter our competitions at www.radioenthusiast.co.uk/competitions

Radio News

CHINESE SATELLITE LAUNCH: China has successfully launched the 54th BDS satellite, from a Long March-3B launch vehicle from the Xichang Satellite Launch Center at 19:55 on 9th March, 2020. The satellite successfully entered the designated orbit and will be commissioned after completing the orbital transfer, in-orbit test, test, and evaluation. The BeiDou Navigation Satellite System (BDS) has been developed following a three-step development strategy, including BDS-1, BDS-2, and BDS-3. At present, BDS-1 is already retired, which consists of 4 BeiDou navigation experiment satellites. Starting from the 1st satellite of BDS-2, so far, 54 BeiDou navigation satellites have already been launched. BDS-3 is only one step away from completion. BDS-3 is comprised of 30 satellites, containing 24 satellites in Medium Earth Orbit (MEO), 3 satellites in Inclined Geo-Synchronous orbit (IGSO) and 3 satellites in Geostationary Earth Orbit (GEO). The satellite launched during this mission is the 29th constellation satellite, and also the 2nd GEO satellite of BDS-3. GEO satellites play a key role in featured services, such as satellite-based augmentation, short message communication, and precise single point positioning, etc. The last GEO satellite will be launched as planned in May, while the global constellation deployment of the BDS-3 will be comprehensively completed.

The whole process of this launching mission, from the arrival of the satellite at the launch site on Jan. 9th, till the launch on 9th March, took place during the prevention and control of COVID-19. The launch vehicle left the factory for transportation at the beginning of February. Its prescheduled transportation route might pass through the most severe epidemic area in Hubei Province. After changing its route, the arrival date of the launch vehicle was two days later than planned. Dozens of working staff in launch vehicle test team and satellite test team had already left the launch site for a statutory holiday of the Spring Festival. Due to the epidemic, they could not return to the launch centre to continuously perform their on-site tasks. Meanwhile, there is a huge risk on epidemic prevention and control, with multiple batches and multiple regional personnel entering into the launch site. Under such circumstances, each major system of the BDS project quickly initiated a contingency plan, implemented various epidemic prevention measures, optimized work process, undertook back-scheduling, and other measures.

The satellite and the launch vehicle for this mission were developed by the China Academy of Space Technology and the China Academy of

Radioplayer

DRIVING RADIO INTO THE FUTURE

Radioplayer for Cars

Radioplayer has launched its first-ever business-facing ad campaign in the UK, promoting its work to keep radio strong in cars. In a multi-channel campaign, Radioplayer is running radio ads across hundreds of UK stations, produced by Radioville, as well as targeting readers of key trade magazines including Autocar, Car & Accessory Trader, Automotive Management, and IMI Magazine with full-page print ads. Targeted digital and social adverts are also running on The Guardian and LinkedIn while an out-of-home activation sees billboards placed around areas where the big car manufacturers are located. The tagline 'Driving Radio Into

The Future' refers to Radioplayer's work on behalf of radio broadcasters around the world, to develop next-generation radio interfaces for the dashboard. They do this by working in partnership with car companies and their technology suppliers. Michael Hill, MD of Radioplayer, said: "Radio is central to people's lives, particularly during times of national crisis. It gives people news, advice, entertainment, and a human connection – which is why we have seen Radioplayer listener numbers jump by 50% between February and March."

(Source: RadioToday UK; Radioplayer; industry press)

<https://tinyurl.com/yb3z3s8m>

Launch Vehicle Technology, respectively. Both are affiliated to the China Aerospace Science and Technology Group Corporation Limited. The launch was the 327th mission in the Long March rocket series.

(Source, and with thanks to David Smith):

<https://tinyurl.com/yco3r6yn>

EUROBAROMETER, RADIO IS MOST TRUSTED MEDIUM:

Radio is the most trusted medium in Europe according to the annual Eurobarometer survey from the European Commission which monitors trust in media. Radio, which has come out top for the tenth year in a row, is the most trusted in nearly three quarters (73%) of the European countries covered by the survey, including the UK. Its latest results found that radio was trusted by 57% of the population, compared to 49% for TV and 46% for the press. In contrast, social media and the internet continue to receive much lower trust levels than traditional media, with social networks the least trusted medium in 28 out of 33 countries surveyed. The Eurobarometer survey findings are backed by similar research

from Radiocentre, whose previous Breaking News report also found radio to be the most trusted medium in the UK, with social media the least trusted platform. Siobhan Kenny, CEO of Radiocentre said: "As so much of the world is affected by the coronavirus outbreak, trusted information has never been more important to all citizens. Radio always scores very highly as a trusted medium and this survey shows, once again, that listeners can turn to radio for reassurance, entertainment and information when they need it most." These figures are published amid the COVID-19 pandemic, during which commercial radio has seen an uplift in listening as audiences. Radiocentre's latest research into the changes in listening under lockdown found that 90% of respondents were tuning in to stay in touch with the outside world, with a similar amount agreeing that commercial radio kept them informed (89%). A further 84% – possibly missing regular social activities – said that radio keeps them company.

(Sources: Eurobarometer, RadioToday)

<https://tinyurl.com/ybfdq77g>

<https://tinyurl.com/y84unxdz>

For the latest news and product reviews, visit www.radioenthusiast.co.uk

Radio News

CORONAVIRUS AND RADIO, STRONGER

THAN EVER: Radio stations are reinventing themselves during the coronavirus pandemic and being rewarded with record online listening figures as a result. And some local commercial and BBC stations across the UK are stepping up their game with extra local content and interactivity with listeners. Some stations are reporting double-digit increases in online listening in recent weeks. Global says that there has been a significant increase in connected radio listening, with daily reach up 15% and hours up 9%, between 9-17 March. LBC displayed the most notable growth, with its daily reach growing 43% and listening hours increasing 17%. Figures for Bauer a week later also show an average daily reach increase of 15%, and average daily hours up 13% week-on-week.

The broadcaster also reported a record daily reach for Bauer Radio streaming on Friday 20 March. Nation Broadcasting, which owns Nation Radio and a network of local stations in Wales as well as stations in England and Scotland, has seen increases across almost every one of its stations of around 40%, rising to 75% in some cases. DC Thomson, which runs Original FM, Wave FM and Kingdom FM in Scotland, has seen regular increases of more than 20% in listener numbers online. The Jack FM group has reported similar increases of around 30% in online reach. KMFM which has services across Kent has also seen a rise in its online audience of 36% compared to its usual levels. Tindle Radio, operating Channel 103 in Jersey, and Island FM in Guernsey also saw a surge in online reach of 25% to 35% in recent weeks, while Dee Radio in Cheshire has reported the number of unique listeners to its online streams doubling over the same period. Fun Kids has also seen a particularly large increase in the online audience following the decision to close schools across the country.

Streaming hours for the station are up 80% overall, with some shows has increased fivefold during the day. Fun Kids has also launched a new daily podcast for children called Stuck at Home, hosted by the station's presenters Dan, Bex, Conor, Sean, and George all from their own houses – as they, too, are stuck at home. Siobhan Kenny, CEO of Radiocentre, the industry body for commercial radio, said: "As the UK acclimatises to a new world of working from home and enforced isolation, radio proves its strength as a hugely valuable source of information, reassurance, company and, most importantly, fun.

(Source: RadioToday UK, Radio World)

<https://tinyurl.com/ybjqlhn8>



HOSPITAL RADIO: Presenter Greg James has recorded a video message for a 15-year-old hospital radio presenter who is broadcasting shows to patients from a gazebo in her garden. The Radio 1 breakfast show presenter has also invited Amy Cardno, from Forth Valley Royal Hospital's Radio Royal in central Scotland, to sit in on his show once the lockdown has finished. Amy – better known to her listeners as 'Wee Amy' – featured in an STV News report, with Greg sending the programme a video message to Amy to be included. Greg told her: "I wanted to send you a message because I heard all about your extraordinary work on your hospital radio station. I have read up about you, I have listened to some of your stuff – and you just get it. You get why radio is so important. You get how it connects people. You get how it brings people together. And you get that it is a very special relationship between the presenter and the listeners – and as long as you remember that you cannot go far wrong. So from me and everyone at Radio 1, and all your listeners – the people who work in the hospital and the patients – thank you for doing the work you do. You might think that it is too fun to be considered a very vital job, and it is fun for sure, but it is a lifeline for a lot of people. Playing the right song at the right time can change someone's day and I know you understand that – so keep doing that. It is the most wonderful job in the whole world. It is a privilege to get to talk into a microphone every day, and no doubt I will see you at Radio 1 one day when you inevitably take over my job. "Actually, would you like to come to Radio 1 with your friends and family whenever all this is blown over? Because this is very much an invitation! You're welcome to come and watch the breakfast show, hang out with us, meet the team, and have fun one morning when things are looking brighter. But for now, keep doing what you are doing because you're doing a great job."

(Source: RadioToday)

Rig Expert Antenna Analyser Stick

The Rig Expert Antenna Analyser Stick 230i is designed for measuring SWR (standing wave ratio), return loss, as well as other parameters of cable and antenna systems in the range of 100kHz to 230MHz. Small, handy and powerful vector network analyser is designed for measuring most useful parameters of cable and antenna systems in the range of 100 kHz to 230 MHz. Compared with the other devices the Stick is a state-of-the-art antenna and cable analyser of small size and low weight.

(Source: *The Spectrum Monitor*, May 2020: 8-11; RigExpert)

<https://tinyurl.com/ycovtrx5>

STAY AT HOME

RadioUser STOP PRESS!

PROTECT THE NHS

save lives

SDRPlay: New Ways of Working

Jon and Andy at SDRPlay have supported local radio clubs by providing evenings of talks and demos about SDRs and SDRplay. These have proved very popular, and they were all booked up to talk at the Norfolk Amateur Radio Club's monthly event in March when the Covid-19 Lockdown put paid to that. Undeterred, and thanks to the tremendous resourcefulness of NARC's honorary chairman David Palmer G7URP and several others, the club members were able to have a very successful 'virtual meeting', using a combination of Skype and Facebook and YouTube live streaming and chat. Following the formal

presentation, Jon and Andy were able to answer questions and provide comments on a range of topics from Antennas to Zero IFs. There were over 70 virtual attendees as a result. Following on from this success, SDRplay would be happy to hear from other clubs who might like to schedule similar events. SDRplay is also planning a series of webinars for a wider audience starting soon. These will be on a variety of SDR-related topics such as Raspberry Pi, Frequency Scanning, Panadapters, and so on.

jon.hudson@sdrplay.com
<https://www.sdrplay.com/webinars>

broadcasting within the next two years. Cheshire FM is a service for people in Northwich, Cheshire. The station has been engaging with the local community via social media to understand what they want from the service and to make sure its programmes cater to their tastes and interests. Coast and County Radio will serve the community of Scarborough. Its programmes will feature local charitable and educational organisations, and encourage listeners to participate in local events. Cross Counties Radio is for people who live and work in Lutterworth and Magna Park. It will be run by volunteers from the local community and will offer broadcast training opportunities. Elastic FM will serve the people of Chesterfield.

It will bring individuals, communities, and organisations together, promoting social cohesion and community dialogue. Radio Scarborough is for the people of Scarborough. It has established relationships with local organisations and charities and will work with volunteers from the local community. West Kent Radio is for people aged 45+ in the Royal Tunbridge Wells area. It will promote the benefits of a healthy lifestyle and the importance of maintaining good personal, mental, and physical health. Besides, two further applications were considered but Ofcom decided not to award a licence to the following: Radio Chesterfield (Chesterfield Community Radio Group Ltd), Chesterfield, Derbyshire, and Severn Air Radio (Severn Media Ltd), North Somerset. (Source: Ofcom, National Press, RadioToday)

<https://tinyurl.com/u2egbnu>

Radio News

OFCOM 1. ENGINEERS SHINE A LIGHT ON INTERFERENCE: Ofcom's spectrum assurance team recently solved a sky-high interference case that took more than a little detective work to crack. The team were contacted by National Air Traffic Services to let them know that aircraft flying in and out of Glasgow airport were being affected by interference when they were between 6,000 and 10,000 feet in the air. The interference was affecting voice communications between the controllers on the ground and the aircraft. Whenever the aircraft were in the vicinity of the interference the crew would not hear any air traffic control messages as the signal was swamped by the noise of the interference. But what was causing the problem – and crucially, where was it?

The next step was for the team to locate and identify the source of the interference. However, due to the height of the aircraft (not to mention the speed of their flight!), the team described

how identifying a potential cause would be like looking for a needle in a haystack. The spectrum engineering officers spoke to the National Air Traffic Services (NATS) to narrow down the search area.

They were able to create an 'area of probability' on a map, in which they could focus the search for the source. This was done by using flight-tracking software, which allowed them to make a note of where the aircraft were when they reported the issue – and this, in turn, helped to identify a corresponding location on the ground. (Source: LAM Communications, Ofcom)

<https://tinyurl.com/st4nd3q>

OFCOM 2. NEW COMMUNITY RADIO STATIONS: Ofcom has awarded six new community radio licences in England to add to the 300 already broadcasting across the UK. Cheshire FM, Coast and County Radio in Scarborough, Cross Counties Radio in Lutterworth, Elastic FM in Chesterfield, Radio Scarborough and West Kent Radio in Royal Tunbridge Wells are all expected to start

NEWS FROM SOTABEAMS: Richard G3CWI from SOTABEAMS reports that during the lockdown period there has been a major change at SOTABEAMS. He said, "I have decided to retire and my colleague Martin Jackson has taken over as Managing Director. I will still be around in the background of course, but the day to day running of the company will be done by Martin. After taking a bit of a break I intend resuming my Radio Adventures video series. Martin is an Engineering Graduate and has worked as our Technical Director for four years. Martin has developed some of our most popular products, such as the WSPRlite and the WOLFWAVE. You will hear more from him in the months to come.

Martin can be contacted at martin@sotabeams.co.uk

Please use

support@sotabeams.co.uk

for technical support. On a more personal note, I have met, spoken to, and corresponded with many wonderful customers over the years. I would like to thank you for your support and encouragement. I hope that you will continue to support the company as Martin takes over."

For the latest news and product reviews, visit www.radioenthusiast.co.uk

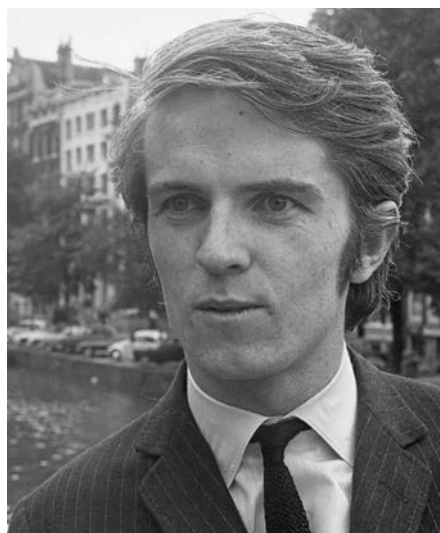


Watson W-8686 Weather Station

RadioUser
STOP PRESS!

Peter Waters (Waters & Stanton) has just had a delivery of a new weather station the Watson W-8686. Radio enthusiasts love to monitor the weather, especially if they have large antennas, masts or towers in the garden to keep an eye on. The new Watson W-8686 weather station uses Wi-Fi communications and a colour screen, to provide clear and accurate weather readings. Powered by a solar panel the W8686 can stream data directly from the weather station to internet-based weather services. When available solar light is insufficient, the unit can use Lithium-Ion batteries for backup. The weather station monitors Wind speed, Wind direction, has a UV sensor, solar radiation sensor, Rain Gauge, outdoor temperature and humidity monitor, indoor temperature monitor and barometric pressure reader. The display allows monitoring of all major parameters with a time and day Calendar built-in. Available from Nevada Radio and Waters & Stanton Price £189.95.

www.hamradiostore.co.uk



Radio News

OBITUARY. RONAN O'RAHILLY, FOUNDER OF RADIO CAROLINE: Ronan O'Rahilly, the founder of Radio Caroline, has died aged 79 near Greenore in County Louth, where the station's original boat was kitted out in 1963, eventually going on to launch from the North Sea at Easter 1964. Ronan O'Rahilly was the son of 1916 Easter Rising hero Michael O'Reilly, a.k.a. The O'Reilly. O'Rahilly first became known as a player in the 'Swinging London' scene of the 1960s, managing Alexis Korner (the blues-rocker who nurtured the career of the Rolling Stones) and Georgie Fame. Fame eventually had three UK No 1 singles, but O'Rahilly initially struggled to get his musicians noticed by BBC stations and the then-popular Radio Luxembourg, and so he instigated his station, Radio Caroline, in 1964. The Irishman set about creating the pirate station from the MV Caroline, anchored in international waters off the coast of

Essex in England. He revolutionised Irish and British broadcasting. With a much less diverse radio industry than today and the BBC only playing two hours of pop music a week, Radio Caroline quickly amassed a listenership of millions for its daytime pop-focused output. Several Radio Caroline's DJs moved to the newly-created Radio 1, which had been influenced by the success of the former and another offshore station, Radio London. Having merged with rival pirate Atlanta Radio, a second ship, Radio Caroline North, dropped anchor off the Isle of Man with the signal thumping into Ireland. In 1967, an act of parliament outlawed offshore radio stations because they were not paying royalties to artists and that their broadcasts could interfere with emergency channels. Both the South and North ships continued broadcasting until 1968 when they were forcibly towed away by a Dutch maritime supply company who claimed that Ronan owed them a considerable sum of money. The station returned from one of the original ships in 1972 but closed

in 1980 when the MV Mi Amigo sank during heavy North Sea storms. Against all the odds, Ronan masterminded another watery comeback in 1983 aboard the MV Ross Revenge. Radio Caroline then moved to Dutch waters and continued broadcasting at sea until 1991. Radio Caroline's 27-year unlicensed career ended in that year, following a prolonged campaign against it by the British, Belgian, and Dutch authorities, which culminated in the former Icelandic trawler being raided and equipment removed. It now operates as a legal medium wave (648kHz) and online station featuring several of its old North Sea staff. The Radio Caroline story became the basis for the 2009 Richard Curtis film *The Boat That Rocked*. (Sources: RadioToday, 20th April 2020; BBC, Radio Caroline, Southgate Amateur Radio News, Hot Press, National Press, Guardian; Scott Caldwell will be looking at Ronan O'Rahilly in July's Radio History column - Ed.)

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War Correspondent, Author and Aviator

David Harris

mydogisfinn@gmail.com

David Harris reviews a new biography of Charles Gardner (1912–1983), a war broadcaster, writer, aviation expert and pilot of the first calibre.

Charles Gardner (1912–1983) was a journalist, BBC radio correspondent, RAF pilot and aviation industry executive. This biography by his son, Robert Gardner (b.1938) concentrates mainly on his war service as both a pioneer radio broadcaster and pilot. Charles Gardner made one of the most famous wartime broadcasts on the 14 July 1940, when he gave live commentary on an engagement between German and British fighter planes over Dover. The 7'27" broadcast was so well regarded that it was released as a 78 rpm record. You can still listen to the recording on the BBC website:

<https://tinyurl.com/y8pyodj6>

What made the broadcast so notable was that it was the first time that there had been a live radio commentary of aerial combat taking place in the skies over Britain. Today the BBC employs thousands of people in its news team but up until 1936 it had no news reporters and relied on news agency reports which were read out by newsreaders. Charles Gardner, along with Richard Dimpleby (1913–1965) joined the BBC in 1936 as the BBC's first news correspondents.

Charles was born in Nuneaton, Warwickshire where he left school at 17 to work as an apprentice journalist with the *Nuneaton Daily Tribune*. He then moved to the *Leicester Mercury*, where he first started to become interested in aviation. He was an ambitious man, and in 1936 he joined the BBC as a news reporter. In those days, reports were recorded onto a disc. This meant that he had to be followed around the country by a BBC van containing engineers and recording equipment.

Charles obtained a pilot's licence in 1939 and became the BBC's aviation expert. When the war was declared on 1 September 1939 Gardner and Richard Dimpleby became the BBC's first war correspondents. Gardner was sent to France,



Battle of Britain Broadcaster: Charles Gardner, Radio Pioneer and World War II Pilot by Robert Gardner (Air World [Pen and Sword], 2019. 220 pp. Hbk. £25) ISBN 9781526746870 www.pen-and-sword.co.uk

from where he covered the activities of the RAF Advanced Air Striking Force (AASF). He stayed in France until the fall in June 1940 when the Germans invaded.

He returned to the UK where he quickly wrote a book about the RAF in France, entitled *AASF*. It was published in late 1940. It was shortly after he returned to the UK, that he made his famous aerial warfare broadcast, which attracted much interest but also some criticism by those who thought he was trivialising death by treating aerial combat as if it was a sporting event.

Gardner became bored by his work as a war correspondent and felt constrained by censorship. He could well have emulated his friend Richard Dimpleby and become a famous broadcaster. However, as a qualified pilot, he joined the RAF at the end of 1940. He was posted to Coastal Command, where he flew *Catalina* flying boats. He was based at RAF Castle Archdale, Lough Erne, Northern Ireland. Lough Erne was close to the Atlantic Ocean, where the *Catalinas*

flew long-distance anti-submarine patrols to protect convoys. The neutral Irish government secretly permitted RAF aircraft to overfly its borders as a way of supporting the war effort.

In December 1941 Japan bombed Pearl Harbour, and the war in the Far East began. In 1942, Charles was posted to Ceylon (Sri Lanka) and flew *Catalina* patrols looking for Japanese warships. He also took part in a notable search and rescue mission in October 1942. This lasted eight days and was conducted in support of the rescue of 60 crew from the *SS Martaban*, which had been torpedoed by a Japanese submarine.

Despite being a full-time pilot, Gardner kept his hand in as a broadcaster; from 1944 to 1945, he returned to his role as a war correspondent working for South East Asia Command under Lord Louis Mountbatten. In July 1944, he was posted back to London, where he was able to see this family for the first time in three and a half years. He worked with the Ministry of Information helping to raise awareness of the Burma War, which had been rather overshadowed by the conflict in Europe.

Gardner ended the war with the rank of Wing Commander and in 1946 was awarded the OBE. After leaving the RAF he rejoined the BBC and had a rather unusual personal role in keeping Lord Mountbatten apprised of the relationship between Princess Elizabeth and his nephew Phillip. Gardner did not stay with the BBC but joined aircraft manufacturer Vickers (later BAC) until his retirement in 1977. In 1981, he wrote, *British Aircraft Corporation: A History*. His son Robert who followed his father's career as a journalist and aviation industry executive has done a superb job in researching and writing up the life of his father. The book offers very valuable insights into the early days of radio news broadcasting, the life of an RAF seaplane pilot and the role of his father in raising awareness of the Burma Campaign.



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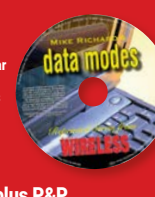
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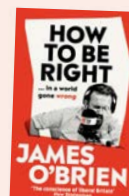
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Coronavirus and (No) Aircraft Movements

David Smith
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David Smith comments on the almost empty skies and explains why Brexit will not affect aviation safety. The ATC Profile series is suspended this month, in favour of a comprehensive list of aviation-related abbreviations.

At the time of writing in early April 2020, the lack of air traffic over the UK is shocking. The *Flightradar24* and *ADS-B Exchange* tracking sites show mainly cargo aircraft, along with relatively few military flights. Instead of the constant tightly packed string of 'inbounds' to Heathrow, the arrivals are in ones and twos, and some are even making unheard-of visual approaches!

Meanwhile, aerial survey companies are taking advantage of the situation to

enable them to cover areas normally congested with airline traffic.

This stands in ironic contrast to a NATS announcement of 3rd March 2020, to the effect that the previous decade had been the busiest ever for UK air traffic. Almost 2.6m flights were handled in UK airspace in 2019, with traffic growing by 13% over the decade.

The summer of 2019 saw the busiest day on record, with 8,863 flights on 5 July 2019, beating the previous record set in May 2018. Notably, the two millionth flight of the year occurred on 25 September, three days earlier than ever before. A decade ago, this milestone wasn't reached until October and even November, reflecting the growth that has happened in the industry since then.

As air traffic has grown, so too have environmental concerns, and the past

decade has seen NATS achieve significant CO₂ savings, as a result of changes to airspace infrastructure, as well as the introduction of advanced air traffic controller tools. In 2018/2019 alone, NATS enabled a reduction of 113,500 tonnes of CO₂ emissions from airspace operations and saved airline customers £18.4 million in fuel costs.

Airspace modernisation over the next ten years will build on this further, allowing for up to 20% of CO₂ savings through improvements to continuous climb and descent profiles and ending stacking as we know it today. Flights will fly quieter, quicker and cleaner routes.

Until the Coronavirus crisis, NATS was predicting that by 2030, there would be 3.2m flights in UK skies every year. It has great plans in place to modernise airspace and upgrade technology to better

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handle these increasing numbers. It is to be hoped that operations get back to something approaching 'normal' in the not-too-distant future.

Government Guidance on Coronavirus

Current Government advice precludes recreational General Aviation (GA) flying. The Civil Aviation Authority (CAA) announced this as follows: *"This is being observed in practice by the vast majority of the GA community, and we are grateful to them for doing so. The message we are receiving from the GA community is that they fully appreciate the need for these restrictions, and observing them is being widely encouraged throughout the community. Again, we are grateful for this."*

"Because the directive to stay at home is being well observed, we do not perceive a need to introduce a specific ban on flying by Visual Flight Rules (VFR) as seen in some European countries. This will have the significant benefit of allowing flexibility, and allowing GA flights to resume as overarching restrictions on movement are lifted."

"The above does not apply to search and rescue operations, or where it necessary to fly to, or for, work. In all of these activities, we expect public organisations and businesses to be socially responsible in the decisions they make, and to apply social distancing guidelines."

Before the guidance to stay at home if possible, a large number of GA pilots were active. This placed a strain on NATS, who were trying to limit the non-essential activities performed, including services to GA. This was to ensure the resilience of the critical air traffic management services, while



complying with current guidance, by not having more people on site than necessary.

Brexit and Aviation Safety

Regarding Brexit, the UK Government and the European Union have both said they intend to forge a bilateral aviation safety agreement, as the UK will no longer participate in the European Aviation Safety Agency's (EASA) system after the transition period ends.

The UK Civil Aviation Authority has been planning for this outcome since the 2016 Referendum, and it is prepared to take over regulatory responsibilities from EASA. There will be no immediate changes to aviation regulations at the end of this year, because of these preparations.

A CAA spokesperson said, *"Our plans have been shared widely with the aviation and aerospace industries, the International Civil Aviation Organisation and other nation-*

al aviation authorities around the world. As a national safety regulator, we will continue to work closely with these agencies, maintaining open dialogue and sharing best practice."

Resources

- Airport Operators Association (AOA)
<https://www.aoa.org.uk>
- British Airline Pilots Association
<https://www.balpa.org>
- Civil Aviation Authority (CAA)
<https://www.caa.co.uk/home>
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Aviation Abbreviations & Q-Codes

Abbreviations marked with an asterisk are normally spoken on R/T as a complete word or without the use of phonetics.

AAR	Air-to-Air Refuelling	HF	High Frequency	QFE	Barometric pressure at aerodrome level
ACARS*	Aircraft Communications Addressing and Reporting System	HEMS	Helicopter Emergency Medical Service	QGH	Controlled descent through cloud
ACC	Area Control Centre	HIRO*	High-Intensity Runway Operations ('Hero')	QNH	Barometric pressure at sea level
ADF*	Automatic Direction Finder	HMR	Helicopter Main Route	QRA*	Quick Reaction Alert
ADR*	Advisory Route	HPZ	Helicopter Protected Zone	QSY	Change frequency to ...
ADS-B*	Automatic Dependence Surveillance-Broadcast	IAS	Indicated Air Speed	QTE	True bearing from the aerodrome
ADT	Approved Departure Time	IATA	International Air Transport Association	RA	Resolution Advisory
AEW	Airborne Early Warning	ICAO	International Civil Aviation Organisation	RNAV	Area Navigation
AFIS*	Aerodrome Flight Information Service	ICF	Initial Contact Frequency	RNP	Required Navigation Performance
AGL*	Above Ground Level	IFR*	Instrument Flight Rules	RP	Reporting Point
AIAA	Area of Intense Aerial Activity	ILS*	Instrument Landing System	RPA	Remotely Piloted Aircraft
AIS	Aeronautical Information Service	IMC*	Instrument Meteorological Conditions	R/T*	Radio Telephony
AMSL	Above Mean Sea Level	INS	Inertial Navigation System	RTOW*	Regulated Take-Off Weight
ANSP	Air Navigation Service Provider	IRVR*	Instrumented Runway Visual Range	RTTY*	(pronounced 'Ritty') Radio Teletype
ARCC	Aeronautical Rescue Co-ordination Centre	ISTAR*	Intelligence, Surveillance, Target Acquisition and Reconnaissance	RVR*	Runway Visual Range
ARINC*	Aeronautical Radio Inc	kHz	Kilohertz	RVSM*	Reduced Vertical Separation Minima
ATA	Aerial Tactics Area	LARS*	Lower Airspace Radar Service	SAR	Search and Rescue
ATCRU	Air Traffic Control Radar Unit	LATCC*	London Area and Terminal Control Centre	SATCOM	Satellite Communications
ATD	Actual Time of Departure	LDOCF	Long Distance Operational Control Facilities	SID*	Standard Instrument Departure
ATIS*	Automatic Terminal Information Service	LITAS*	Low-Intensity Two-colour Approach Slope Indicator	SIGMET	Significant met conditions
ATM	Air Traffic Management	LSB	Lower Side Band	SLP	Speed Limit Point
ATZ	Aerodrome Traffic Zone	LVPs*	Low Visibility Procedures	SLOP	Strategic Lateral Offset Procedure
BAA	British Airports Authority	MACS	Military Aeronautical Communication System	SMR	Surface Movement Radar
BFO	Beat Frequency Oscillator	MARSA*	Military Accepts Responsibility for Separation of Aircraft	SNOWTAM	
CAA	Civil Aviation Authority	MATO	Military Air Traffic Operations	SNOCLO	Airfield closed during snow-clearing operations
CAS	Controlled Airspace	MATZ*	Military Aerodrome Traffic Zone	SOP	Standard Operating Procedure
CAVOK*	Ceiling and Visibility OK	MDA	Managed Danger Area	SOTA*	Shannon Oceanic Transition Area
CCD	Continuous Climb Departure	MDH	Minimum Descent Height	SPECI*	Special Met Observation
CDA	Continuous Descent Approach	MDI	Minimum Departure Interval	SRA	Surveillance Radar Approach
CHAPI*	Compact Helicopter Approach Path Indicator	METAR*	Routine Aviation Aerodrome Weather Report	SSB	Single Side Band
CPDLC	Controller-Pilot Datalink Communications	METRO*	US Military Met Office ('Meetro')	SSR*	Secondary Surveillance Radar
CVR	Cockpit Voice Recorder	MHz	Megahertz	STAR*	Standard Terminal Arrival Route
D&D	Distress and Diversion	MLS*	Microwave Landing System	STOL*	Short take-Off and Landing
D/F*	Direction Finding	MNPS	Minimum Navigation Performance Specification	TA	Traffic Advisory
DFR	Departure Flow Regulation	MOR*	Mandatory Occurrence Report	TACAN*	Tactical Air Navigation
DGPS	Differential Global Positioning System	MRA	Military Reserved Airspace	TAD*	Tactical Air Designator
DME	Distance Measuring Equipment	MRSA	Mandatory Radar Service Area	TAF*	Terminal Aerodrome Forecast
DVP	Digital Voice Protection	MTA*	Military Training Area	TAS	True Air Speed
EASA	European Aviation Safety Agency	MTOM	Maximum Take-Off Mass	TASCOM*	(TAZCOM) Terrestrial Air-Sea Communication
EAT	Expected Approach Time	NAT	North Atlantic Track	TC	Terminal Control
EOBT	Estimated Off Blocks Time	NATS	Now company title but originally stood for National Air Traffic Services.	TCA	Terminal Control Area
ETA	Estimated Time of arrival	NDB*	Non-Directional Beacon	TCAS*	Traffic Alert and Collision Avoidance System
ETBS	Enhanced Time Based Separation	NERS	North Atlantic European Routeing Scheme	TMA	Terminal Manoeuvring Area
ETD	Estimated Time of Departure	NFM	Narrow (band) Frequency Modulation	TMZ	Transponder Mandatory Zone
FDPS	Flight Data Processing System	NM	Nautical Miles	TRACON*	Terminal Radar Control (USA)
FAA	Federal Aviation Administration	NOTAM*	Notice to Airmen	UAC	Upper Area (Control) Centre
FIR	Flight Information Region	Nosig	No significant change to the weather	UAR	Upper-Air Route
FISO	Flight Information Service Officer	NPR	Noise-Preferential Route	UAV	Unmanned Aerial Vehicle
FL	Flight Level	OACC	Oceanic Area Control Centre	UHF*	Ultra High Frequency
FM	Frequency Modulation	OAT	Operational Air Traffic or Outside Air Temperature	UIR	Upper (Flight) Information Region
FMS	Flight Management System	OCA	Oceanic Control Area	USAF	United States Air Force
FMU	Flow Management Unit	OCH	Obstacle Clearance Height	USB	Upper Side Band
FTU	Flying Training Unit	ORCAM*	Originating Region Code Assignment Method	UTC	Universal Time Constant (or Co-ordinated)
GA*	General Aviation	OTS	Organised Track System	VASI*	Visual Approach Slope Indicator
GAT	General Air Traffic	PAPI*	Precision Approach Path Indicator	VCR	Visual Control Room
GHFS	Global High-Frequency System	PAR	Precision Approach Radar	VDF*	VHF Direction Finder
GLONASS*	Global Orbiting Navigation Satellite System	PBN	Performance Based Navigation	VDGS	Visual Docking Guidance System
GMC	Ground Movement Control	PIREP*	Pilot Report of weather conditions encountered en route	VFR*	Visual Flight Rules
GMP	Ground Movement Planning	PPR	Prior Permission Required	VHF*	Very High Frequency
GNSS	Global Navigation Satellite System	QDM	Magnetic track to the airfield with no allowance for wind	VMC*	Visual Meteorological Conditions
GPS	Global Positioning System			VOR*	VHF Omni-directional Range
GPU	Ground Power Unit			VRP*	Visual Reference Point
GPWS	Ground Proximity Warning System			WFM	Wide (band) Frequency Modulation

Keith Rawlings
Keith.g4miu@gmail.com

Keith Rawlings examines several major aerial modelling programmes, looking at their practical features and limitations and suggesting ways in which you can make the best use of them.

This month I would like to start an ongoing topic of computer modelling for aerials. This will not be a tutorial but more of a 'what-you-can-do' session, along with some examples.

The modelling of an aerial design enables us to quickly, and quite accurately, evaluate its likely performance before we embark on its construction.

However, no amount of computer modelling can substitute for the real thing, so, although it can be fun, playing around with different modelled ideas, a 'virtual aerial' on a computer will not be of much use unless you go and make it.

It should be noted that, when using modelling programs currently popular with amateurs, it is not always easy to model the exact environment your aerial might find itself in, especially at lower frequencies.

By way of example, there may be buildings, trees etc that will affect a real-life aerial.

However, a fairly good idea can be had of how an aerial will work. At VHF and above, where an aerial's height, in relation to wavelength, can be favourable, perfectly accurate results can be obtained.

However, be prepared for a little 'fettling'!

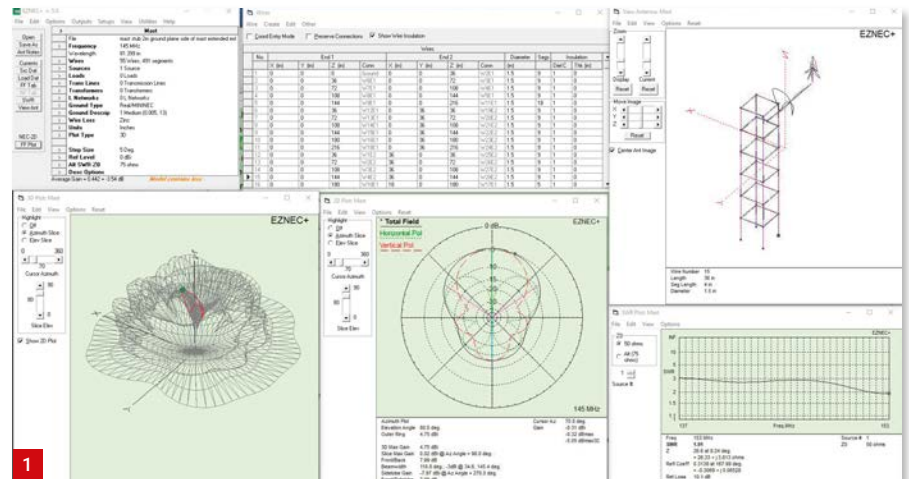
There are many modelling packages but those that seem most popular with amateurs are EZNEC, 4NEC2, and MMANNA-GAL Basic.

EZNEC

Out of these three, I have almost exclusively used EZNEC for many a year, and it is always my go-to modelling package. The bad news is that it is paid-for software; while it does not have the eye-watering type of price tag of top-flight packages, it still costs. Presently (March 2020) the basic package is \$99 and the + version \$149.

The Pro/2 version (using the NEC2 engine) is \$525, and the Pro/4, for use with the NEC4 engine, costs more than \$675. The cost of the NEC4 license fee is presently \$500 for non-US/non-commercial users.

The Art & Science of Aerial Modelling



Most of my discussion will be based on EZNEC.

All is not lost, however, because there is a Demo version available, which is fully functional but with a limit on 20 segments per design. We will come to 'segments' later; for now, it means that designs will be limited in their complexity so they will be mostly basic.

EZNEC has some nice features and is well supported. There are a lot of models out there for users to download, and the software is supported by a comprehensive user manual.

The program is based around a 'Control-Center' where features are selected from the appropriate buttons or drop-down menus.

A typical screenshot of EZNEC and its 'windows' can be seen in Fig. 1.

The ARRL *Antenna Book* uses 'EZNEC-ARRL' to view and analyse files from the book.

I believe the correct way to pronounce EZNEC is 'easyneck', I just call it E-Z-NEC!

Readers may wish to try the demo. The latest version is V6.0.23.

<https://www.eznec.com/index.shtml>

What is more, a paid-for, third party, product for automating the use of EZNEC can be found here.

<https://www.ac6la.com>

For those that want to get serious with EZNEC, the book *Advanced Antenna Modelling*, by Marcel De Cank ON5AU, is worth considering.

<https://tinyurl.com/ybvlqmq3>

You can read what I thought about the book here:

<https://tinyurl.com/y7656gaw>

4NEC2

4NEC2 is a comprehensive and versatile modelling package, which is completely free. It provides just about everything an average aerial designer needs. The software (Fig. 2) boasts thousands of segments, an optimiser and 3D colour graphics, along with many other features, including the functionality of running the NEC4 engine. It uses a Control Center layout in the same vein as EZNEC. The 4NEC2 suite may seem a little daunting to newcomers; however, I think that, with perseverance, many users may find that it provides everything they need, and at no cost. For me, it is my second-line modelling program, second only because I have used EZNEC for so long.

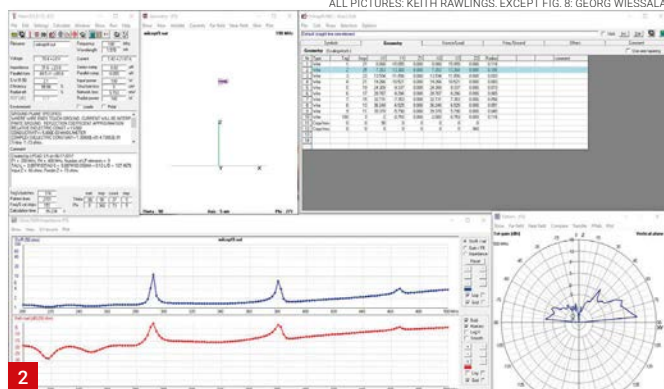
<https://www.qsl.net/4nec2>

MMANA-Gal

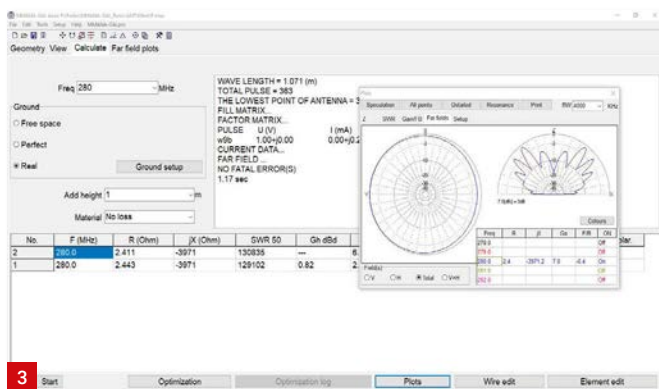
MMANA-Gal Basic is an extremely popular package. Like 4NEC2, it is completely free and has enough features to satisfy even the most complex requirements. It is easy to use and, arguably, has an easier-to-use interface. This is because most of the main functions are selected by 'Tabs'.

By contrast, EZNEC and 4NEC2 use multiple windows. Therefore, the screen can fast become untidy if you let it. For users finding MMANA-GAL Basic limited, there is a 'Pro' version available, called

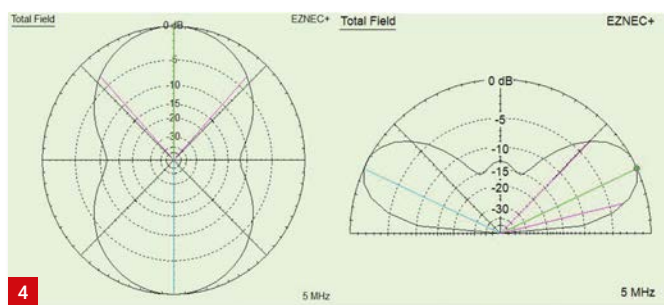
ALL PICTURES: KEITH RAWLINGS, EXCEPT FIG. 8: GEORG WIESSALA



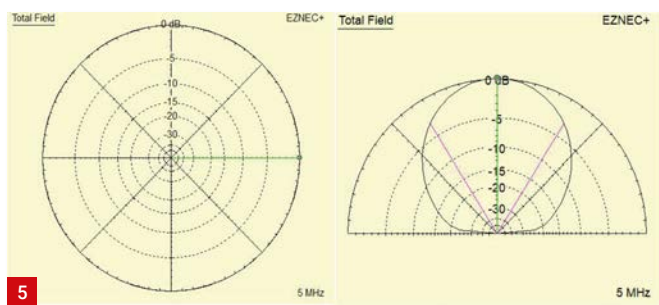
2



3



4



5

Fig. 1: An EZNEC screenshot.

Fig. 2: 4NEC2 screengrab.

Fig. 3: MMANA-Gal Basic screen projection.

Fig. 4: A 5MHz dipole: Plot at 100ft.

Fig. 5: A 5MHz dipole: Plot at 30ft.

'GAL-ANA'. This costs €139 (Fig. 3).
<http://gal-ana.de/promm/index.htm>

Which Software Should I Use?

This is down to the individual. However, I will stick my neck out (or is that NEC?) and say that, for the newcomer to modelling, in my opinion, MMANA-GAL Basic would be your best bet.

There is a lot of support available and the RSGB have produced a book entitled *An Introduction to Antenna Modelling* by Steve Nichols G4KYA, which is an excellent guide. I can confidently recommend this book. Because my knowledge of MMANA-GAL was minimal, I picked up a copy at the last Newark Hamfest, so that I could include the use of this package in the column.

However, although I have used MMANA-GAL I have yet put any of its models into practice.

Therefore, I will be starting with EZNEC!

I will come back to the other two packages (plus another) at a later date,

Why Model?

There are various reasons to spend some time learning the ins and outs of modelling. Modelling will give the user a better understanding of how aerial

systems work. It will help to show if a design may or may not work as expected, or as required before construction starts. Users may well be able to model a commercial design to assess its specifications. Modelling can also demonstrate how those design plots that you see published in handbooks, and which are usually based on perfect ground, will perform differently over real terrain. Last but not least, modelling is a great way to idle some time on a wet Sunday afternoon or a cold winter's evening!

NEC Details.

NEC (Numerical Electromagnetics Code) was developed in the 1970s by the Lawrence Livermore National Laboratory and has been made publicly available for general use. Subsequently, it has been distributed for some computer platforms, from mainframes to PCs. NEC is the engine that performs the calculations and turns out the predicted data. Broadly, the user interfaces, EZNEC, 4NEC2, and so on, convert this data into graphs and plots and provide information on Standing Wave Ratio (SWR) an impedance. They will also permit the modeller to enter their designs into the engine via a form of spreadsheet type table, usually in X-Y-Z coordinates, or by direct 'drawing' on a graph.

Most of the commonly-available modelling packages run on NEC2, which is freely available. Where payment is made

for software, you are paying for the user interface. The more capable NEC4 engine requires payment for a license. In the case of EZNEC, the license is required before you can purchase the Pro/4 software.

I am not sure of the procedure for 4NEC2, but it looks like the NEC4 engine can be selected in the software.

Something to bear in mind is that modelling is used to *predict* how a design should work and that, like anything else to do with computers, 'garbage-in' equals 'garbage-out'. There are rules, which, if ignored, will return inaccurate results. One such example is 'segments'.

Each design will have 'wires' ('NEC-Speak' for 'elements'), and each of these is broken down into 'segments' for calculation. It is important to select the right number of segments. A rule-of-thumb is 10 segments per half wavelength, although more will increase accuracy.

EZNEC can calculate segment numbers for you (and will warn you if it thinks you are getting things wrong).

The segment-length to wire-diameter ratio has to be observed, although this is usually more of a factor at VHF frequencies and above.

Source placement is another important factor. A 'source' is NEC jargon for 'feed point', and it needs to be placed appropriately on a design. In EZNEC, this is easily done, as a source is placed on a percentage of the length of wire. So, if you had a dipole made from a single wire

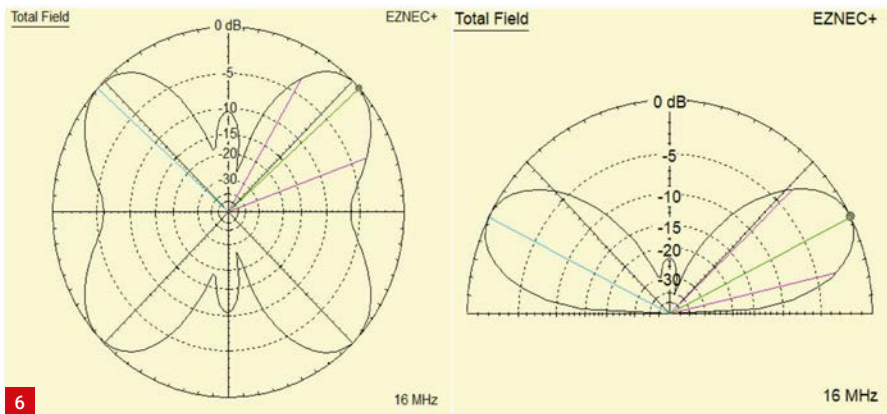


Fig. 6: A 16MHz plot at 30ft.

(that is an EZNEC wire, not a *real* wire) you would place the source at 50% of that wire i.e. in the middle. EZNEC automatically assumes that the wire needs to be split at this point. However, many segments you use on this wire they should form an odd number, so that the source may be placed in the middle. For example, if our dipole had 11 segments, there would be 5 on one side of the source 5 on the other, and the source would be in the middle of the 11 segments.

Some Things You Can Do.

I remember a post on a forum where someone was asking for some advice on an aerial for general HF listening. One reply he got recommended a dipole, “easy and cheap to put up, mate, although it receives best off of the sides” This is good-enough advice, and it is not inaccurate, although it does not tell the full story.

No frequency was specified. However, we can take a 5MHz dipole (over average ground). Look at Fig. 4: This demonstrates the predicted plot with the dipole at 100ft high (about a halfwave) We can see that EZNEC predicts – not the classic doughnut shape depicted in books – but radiation off of the sides (left) and at a reasonable take-off angle (right).

The image in Fig. 5 demonstrates plots with the wire at a more realistic 30ft. You will notice that EZNEC now predicts that the dipole is omnidirectional and has near-vertical elevation.

Now, look at Fig. 6: This shows the plot of the same dipole, randomly chosen at 16MHz. The radiation pattern is different: There are lobes predicted in four directions off of the side of the dipole and, once again, at a reasonable elevation angle. Therefore, dipoles work differently

on different bands and at different heights.

Modelling can quickly run multiple ‘what-ifs’, with respect to a specific design. It can accurately predict how an aerial should work in a certain environment. It will give you a good idea of what to expect from a design, which, as seen above, might not be as anticipated.

In this case, it must be borne in mind that – even though a particular radiation pattern may favour a certain direction – it does not *necessarily* mean that *no* signals will be received from other directions, especially on HF.

The plot will show what direction the aerial favours the most. However, quite often signals will still be received from other directions, at a lower level in respect to the main lobe.

You should also remember that the 5MHz dipole at 30ft is depicted in the plot as having a high angle of radiation and should be an effective aerial for NVIS (Near Vertical Incidence Skywave) reception. NVIS is a case in fact where aerials working with low angles of radiation – generally desirable for long-distance ‘skip’ – are not necessarily the best type for this kind of work.

Next month I will continue on the theme of modelling and also include some readers’ questions.

In the meantime, I will attempt to brush up on my MMANA-Gal skills! Table 1 contains links to some further resources on the subject of aerial modelling.

Until then, good listening.

<https://tinyurl.com/yacbzrlt>
<https://tinyurl.com/jc8pzer>
<https://tinyurl.com/yc2t6pr>
<https://tinyurl.com/y8k3bg6x>
<https://tinyurl.com/y6bdapxk>
<https://altairhyperworks.com/product/Feko>

Table 1: Some Key Aerial Modelling Links.

SPACE WEATHER. SCIENCE, FRAMEWORKS,

AND APPLICATIONS:

Now that space weather is internationally recognized as a significant natural hazard, there is growing interest in converting space weather research into products that can help the operators of technological systems affected by space weather. This transition from Research to Operations (R2O) needs a framework that helps scientists and engineers to assess how science can help operators, and then to convert that science into initial products that can be tested and improved until ready and robust for operational use. Application Usability Levels (AUL), as shown in the figure above, are one such scheme, inspired by the well-known scheme of Technology Readiness Levels for hardware systems. Cid et al. [2020] provide a practical demonstration of the AUL scheme using a previous development of space weather products, namely local geomagnetic indices customized to the needs of a particular user, Red Eléctrica de España, the company responsible for the transmission and operation of the electricity system in Spain. This demonstration provides valuable and generic insights into the challenge set by R2O work. In particular, it brings out the importance of building a dialogue with those operators, of understanding their concerns, and delivering products customized to their specific needs (which will depend not only on how space weather affects their systems but also on where those systems are located—in this case, the electricity system in Spain). The authors show how this dialogue can be fitted into the AUL framework. They also demonstrate how that framework provides criteria for assessing the progress of work to transition research into operations, criteria that necessarily include good science, but also a recognition of users’ need for relevant and reliable products. Citation:

(Source: EoS, April 2020)

<https://doi.org/10.1029/2019SW002171>

SRA MENTAL HEALTH CAMPAIGN: The Student Radio Association has launched a Mental Health Campaign with help from talkRADIO host Iain Lee. Iain is the first guest to talk to the SRA about the issue, with more to follow. “We’ve reached out to people across the industry, at various stages in their career to share their stories with us, and with you,” the SRA said. “Mental Health awareness isn’t a day, week or month. It’s constant. As such, we’ll be sharing one story a week, every week, until we run out of voices that want to be heard.” The SRA has enough interviews to release a new one each Friday and would like to hear from anyone in radio who would be willing to talk to them about mental health.

(Source: Jordan)

Spy Messages & Number Stations, 1950 to the Present (Part I)

Paul Beaumont G7VAK
g7vak@yahoo.co.uk

Sometime in late 1954, Gordon Lonsdale entered Britain and set himself up as a bubble gum and Jukebox supplier. This he did from his flat, 634 White House near Regent's Park Underground Station, London.

Some months later, a married couple, Peter and Helen Kroger followed him. They set up an antiquarian book sales business and lived at 45 Cranley Drive, Ruislip, located West of London.

These persons were all 'illegals', working on behalf of the Soviet Russian State and involved in the now notorious story of the *Portland Spy Ring*.

This involved the removal of classified and secret files by two clerks, Harry Houghton and Ethel 'Bunty' Gee who worked at the Royal Navy's Underwater Warfare Establishment in Portland, Dorset. The photographing of the files using a slow film and a special photographic mount and lights was the responsibility of Lonsdale; the reduction to microdots of the negatives fell to the Krogers (Fig. 2).

Not surprisingly, both Gordon Lonsdale and the Krogers generally received their instructions via Morse 'allo messages [now termed 'number stations'] using Modulated Carrier Wave or MCW. These were sent from a transmitter site south of Moscow generally referred to as 'Moscow Central.'

Some instructions for both Lonsdale and the Krogers were sent using microdots; the readers were concealed in modified talcum powder tins (Fig. 1).

The Numbers of the Cold War

Number Stations or 'allo messages' could be heard any time of day right across the short wave spectrum during the Cold War. Just about every country that was involved transmitted them, using Morse code in MCW or Interrupted Carrier Wave ICW/CW, voice mode or other means.

When the Berlin Wall was brought down in early November 1989, number station transmissions from the East German Secret Service ('Stasi', official name: *Ministerium für*

In Part One of his article on spies and radio, **Paul Beaumont** unlocks the world of secret number station transmissions from the Cold War era to the present day, looking at technology and key actors.



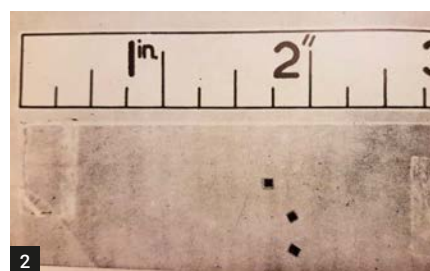
Staatssicherheit, 'Ministry for State Security') closed down suddenly.

Their sometimes tinny, distorted 'introchants' or music – usually recorded onto magnetic tape and suffering wow and flutter, giving a sinister sound to those who intercepted them – were suddenly silent. The recipients awaiting messages in West Berlin and beyond would remain disappointed as the entire organisation slowly closed; the expected financial support and *matériel* came no more.

The East German Stasi offices were invaded by those previously subjugated; files were removed, burnt or just thrown to the floor. Equipment too was taken away wholesale, eventually finding its way onto the surplus and collector's market across Europe.

One of my friends has a Stasi file on him and it makes very interesting reading, especially the paragraphs claiming things that never occurred.

However, some nations continued with their transmissions; most prolific were those from Russia, Cuba, Israel, and the United States. The modes used were Morse,



Voice and Polytone, a type of MFSK that relied on tones with 40Hz separation. A selection of languages were in use: English, German, Spanish, Russian and other eastern European tongues, along with the odd Arabic stuff. At least one transmission in Farsi (spoken in Iran) was recorded, and rumours as to the location of different nations' transmitter sites circulated.

Today messages in Mandarin can be heard, along with Korean sent from both North and South of the dividing parallel. The initial voice message prompting action against Kim Jong-Un's errant relative Kim Jong-Nam was heard on 16th September 2016, on the parallel frequencies

PICTURES: AUTHOR'S COLLECTION, EXCEPT FIG.S 4-6: COURTESY OF D VRIESLEBEN

V15 Synthesised Speech, AM (September 2016)

North Korean origin
1615z 3250/3320/6400kHz [16/09/2016]

Intro Song Transmitted: 'We will go together with a song of joy:' 기쁨의 노래하고 함께 가리라

Announces: 'We will notice the repetition homework of the science of Distance Learning University for No27 exploration agent.'

위한 원격교육대학 과학의 습과제를 알려드리겠습니다. 단문자를 무로겠습니다.

문제를 무르겠습니다. 774페이지 79번 326페이지 2번 258페이지 12번 741페이지 58번 419페이지 50번 687페이지 84번 900페이지 40번 187페이지 38번 905페이지 45번 813페이지 48번 432페이지 6번 672페이지 55번 894페이지 79번 932페이지 48번 422페이지 18번 299페이지 62번 97페이지 81번 212페이지 2번 392페이지 12번 863페이지 19번 923페이지 8번 561페이지 96번 533페이지 83번 429페이지 60번 201페이지 60번 299페이지 18번 853페이지 99번입니다.	We will give questions. Page 774, No. 79 Page 326, No. 2 Page 258, No. 12 Page 741, No. 58 Page 419, No. 50 Page 687, No. 84 Page 900, No. 40 Page 187, No. 38 Page 905, No. 45 Page 813, No. 48 Page 432, No. 6 Page 672, No. 55 Page 894, No. 79 Page 932, No. 48 Page 422, No. 18 Page 299, No. 62 Page 97, No. 81 Page 212, No. 2 Page 392, No. 12 Page 863, No. 19 Page 923, No. 8 Page 561, No. 96 Page 533, No. 83 Page 429, No. 60 Page 201, No. 60 Page 299, No. 18 Page 853, No. 99 are.	다시 무르겠습니다. 774페이지 79번 326페이지 2번 258페이지 12번 741페이지 58번 419페이지 50번 687페이지 84번 900페이지 40번 187페이지 38번 905페이지 45번 813페이지 48번 432페이지 6번 672페이지 55번 894페이지 79번 932페이지 48번 422페이지 18번 299페이지 62번 97페이지 81번 212페이지 2번 392페이지 12번 863페이지 19번 923페이지 8번 561페이지 96번 533페이지 83번 429페이지 60번 201페이지 60번 299페이지 18번 853페이지 99번입니다. 이상입니다.	We will give questions again. Page 774, No. 79 Page 326, No. 2 Page 258, No. 12 Page 741, No. 58 Page 419, No. 50 Page 687, No. 84 Page 900, No. 40 Page 187, No. 38 Page 905, No. 45 Page 813, No. 48 Page 432, No. 6 Page 672, No. 55 Page 894, No. 79 Page 932, No. 48 Page 422, No. 18 Page 299, No. 62 Page 97, No. 81 Page 212, No. 2 Page 392, No. 12 Page 863, No. 19 Page 923, No. 8 Page 561, No. 96 Page 533, No. 83 Page 429, No. 60 Page 201, No. 60 Page 299, No. 18 Page 853, No. 99 are That's all.
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This message was repeated at 1615z 29/09/2016 on the parallel frequencies: 3250/3320/6400 kHz



of 3250//3320//6400kHz at 1625z (Fig. 3). This message commenced with an introductory song (*We will go together with a song of joy*), followed by the announcement 'We will notice the repetition homework of the Science of Distance Learning University for No27 exploration agent.'

Needless to say, the message consisted of 27 groups that took the form of 'Page 774 No79.' The entire message was then repeated, ending with 'That's all.' The message was again repeated 13 days later.

Applying the numbers spoken against a printed matrix would select a Korean symbol; that symbol being a syllable allowing the message text to be displayed *en clair* (Fig. 4).

Transmissions & Technologies

Many amateurs using the 20m band [14000 to 14350kHz] will have heard the odd number transmission in Russian; this is a repeat of a transmission 1 to 2 MHz higher, but the whereabouts of the expected recipient of this low group count and scheduled transmission can only be guessed at.

The image in Table 1 shows the log of an ENIGMA2000 monitor ('M8') located in England, for the message heard on 26th March 2020. Most Number Station transmissions now fall outside of the amateur

bands and those designated for the aeronautical service.

However, during the Cold War, almost anything went, and 80m had more than its fair share; amateurs became aware of radio accented German numerals in raspy female voices preceded by a sharp and commanding 'Achtung! Achtung!' spoken with such verve the voice would strike fear into the uninitiated.

Nowadays such voices in any language are computer-synthesised. Before that, the Ministry for State Security used electronic 'readers' based on a plug-in EPROM (Erasable-Programmable Read-Only Memory) chip. This part fitted in to a 'Speech Morse Generator 32620' (*Sprach-Morse Generator*, Figs. 5 and 6) by the *Hauptverwaltung Aufklärung (HVA)*, the Foreign Intelligence wing of the Stasi in the former German Democratic Republic (GDR, East Germany). The device's output was used to modulate the transmitter.

As the name suggests, Morse or Speech was used, the latter in the required tongue. Before this, message preparation was by live recording to tape.

Were diplomatic wireless stations involved in this? I cannot say for certain. However, I have been told of two instances by an excel-

Fig. 1: Kroger's modified Talcum powder concealment method. Fig. 2: Portland Spy Ring microdots. Fig. 3: A North Korean message of 16th September 2016. Fig. 4: The Decode Matrix for North Korean Number messages. Fig. 5: The Sprach-Morse Generator (Speech Morse Generator) 32620.

lent source concerning the message tape preparation process being interrupted by a hapless clerk or diplomatic officer walking in on a female diplomat cleared for this work.

Morse is mainly machine-sent, generally to specific schedules and at a variety of speeds. Nowadays, the preferred mode is CW, but past transmissions also used MCW. Instances of one side of a teletype carrier being keyed have also been heard. Once again, the 'Speech Morse Generator 32620' played its part, saving and reading Morse to/from data tape (Fig. 7).

Contemporary Transmissions

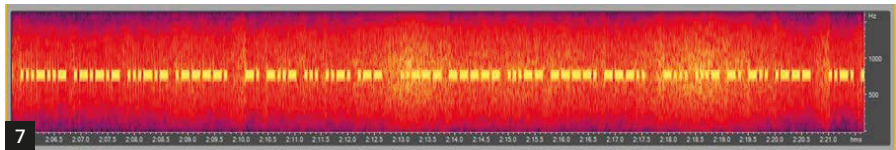
Morse transmissions today form the majority of Number Station transmissions. These messages seem to follow the usual form of construction across the different transmission modes: ID, decode key, group count, message text, a repeat of decode key and group count (with some exception), and a



6



9



7



8



10

particular ending.

This general construction can be seen looking at one of the Russian language S06s transmissions of 26th March 2020: 175 [ID] 249 [Decode Key] 6 [Group Count] 88146 57856 98836 46186 16945 80744 [Message Text] 249 6 [Repeat of dk&gc] 00000 [Ending].

Whilst 'allo or number messages were most prolific on the short waves during the Cold War, their use was not understood by the casual listener, and many questions were asked, as to the nature and origin of these messages. Answers suggesting fishing fleet messages were, perhaps, believable. By contrast, hints at attempts to contact 'flying saucers' seemed both unnecessary and ridiculous.

Of course, there were those of us who knew exactly what these messages were about, and why and how the sent format was eventually deciphered to its final form.

The number messages of the Portland Spy

Ring were subject to radio schedules, much like all those of today. The schedules were hidden in converted table lighters by both Lonsdale and the Krogers. Lonsdale used a domestic receiver, the Bush EBS44, also known as the *Bush Imperial* (after the colonial market it was designed for). It received adequate signals via an unmatched short wire (Fig. 8).

Apart from medium wave coverage, it sported full short wave coverage from 1600 to 30000kHz along with a 'Magic Eye' tuning indicator. Being designed to be used with a short antenna it was more than adequate for Lonsdale's use. Calibration was excellent – I used one whilst in Aden, and upon my return to Britain I mainly monitored the 160 and 80m bands listening to call signs such as G5XW, G3EFS and G3WOK (Fig. 9).

Lonsdale listened to his coded messages somewhere between 6000 and 8000kHz and like me, he was using a short aerial that was no more than 12 feet long.

Schedules, One-Time Pads and Suitcase-Transmitters

As an investigation started into the activities of the players in the *Portland Spy Ring*, officers of our Secret Service entered Lonsdale's apartment. They found his radio schedules and some one-time pads (Fig. 10).

Behind the dividing wall to the next apartment, a calibrated receiver, wavemeter and tight loop antenna were set up and proved Lonsdale's complicity. The tuned frequency plus the IF of his receiver (~455kHz) were received and recorded by Secret Service technicians and passed to GCHQ along with the schedules.

Later this information was used by GCHQ to RDF the source's location just South of Moscow (Fig. 11).

The technique used by MI5 technicians is, according to Peter Wright in his book *Spycatcher*, codenamed RAFTER. This is nothing remarkable, as this was a short cut used by radio repair technicians to test

5738		
9307	7619	8504
9078	3464	4938
4454	7839	8209
2239	8194	6288
5211	6844	9305
8375	3120	8494
3951	2847	5980
5674	8675	9455
391	4506	7838



Fig. 6: The EPROM Carrier Fig. 7: M51, a pseudo-Number Station sample. Fig. 8: The Bush EBS44 tuning scale. Fig. 9: My Father sitting by EBS44 in Ma’alla, Aden, in 1956. I am the child in the photo. Fig. 10: One Time Pads Fig. 11: Radio schedules used by the Portland Spy Ring. The line is illegible on the original. Fig. 12: The author’s timer unit – testing for use whilst in Cyprus. Fig. 13: Kroger’s Transmitter/Receiver. Fig. 14: The size of a One-Time Pad.

what stages functioned when no audio was to be heard.

The Krogers were rarely present when their scheduled transmission occurred. A 74 feet 9ins long [22.422metres] wire antenna in the loft was connected to their Radiogram. Left switched on and set to the wanted frequency, a reel-to-reel tape recorder, controlled by a time switch, automatically recorded the audio in the absence of the Krogers who saw fit to be elsewhere during the procedure.

Interestingly, this technique was used in the first episode of *Troika*. Furthermore, the ‘talc-concealment’ method was seen in ITV’s *Special Branch* programme first transmitted in September 1969.

This was a month before the Krogers were repatriated to the Soviets on a BEA Trident to Warsaw.

I too use the ‘Kroger-principle’ today with a Sony SW-55 receiver and its five memories, time switch, solid-state recorder with VoR function, and a wire antenna

that is suspended in my shack. It works well, faultlessly recording Voice, Morse and Polytone number messages in my absence (Fig. 12).

The loft antenna was also suitable for use with the Kroger’s suitcase transmitter/receiver (Fig. 13).

The receiver could be freely tuned between 2000 and 20000kHz but the transmitter was crystal-controlled: 6340, 8888 and 14775kHz. A fourth crystal found away from the transmitter, would resonate on 17080kHz.

Capable of 100 to 150W output, the transmitter was keyed by a spring-powered device that allowed the numerically-encrypted message to be recorded and stored on magnetic tape. When the Kroger’s transmission schedule demanded it, the encrypted message would be sent using ‘burst-techniques’, at a rate of 240 words per minute. Police notes at the time stated the house had no antenna to be seen.

The Discovery of Other Spies

Apart from Lonsdale and the Krogers, other named spies received their messages by radio in the three designated modes.

Geoffrey Prime, a GCHQ employee, turned over large amounts of information to his Russian masters. His messages, in German numerals, were received at night. One witness, a close neighbour, stated that his wife – after hearing a harsh-toned, female, voice chanting number groups, with the sound blaring out – had remarked that “I’m sure the bloke in that flat is a spy.”

He was imprisoned in 1982. Prime used a Grundig Satellit 205 an export model, also sold as Satellit 5000. His ‘allo messages, in German, were recorded onto a Phillips Tape Recorder RK5L EL3586 using 3.5inch tape reels. During his interview, Prime denied espionage but quickly folded when the investigating officer, Detective Chief Superintendent David Cole, not only played a copy of the recorded ‘allo message but suddenly removed

Fig. 15: Cuban Morse transmission: 15071 15071 15071 15071 15071.

Fig. 16: The well-known Sony ICF-2010 Receiver used by Montes, Myers and other spies.

the false bottom in Prime's briefcase to show special chemically impregnated paper for secret writing, one-time pads and radio listening schedules (Fig. 14).

While Prime used a one-time pad to decipher his number messages, Ana Belen Montes, who ran the Cuba Desk in the Defense Intelligence Agency (US) and was arrested by the FBI on 21st September 2001, received her messages (Fig. 15) from Cuba [DGI] three nights a week on a Sony ICF-2010 receiver and manually input the chanted numerals to a Toshiba laptop. Insertion of a small 3.5inch diskette, and entering a security code, brought the message to the screen *en clair*.

An FBI search of her apartment revealed the paraphernalia of espionage, and a deep scan of her laptop Hard Disk Drive revealed parts of messages she had received, as well as the frequencies they were received on 7887kHz at 2100z on a Saturday. This was a known DGI frequency for voice number messages. It was mentioned in the official FBI Complaint document outlining the evidence against Ms Montes.

This frequency was part on a schedule across Thursday, Friday and Saturday and 2100 and 2200z.

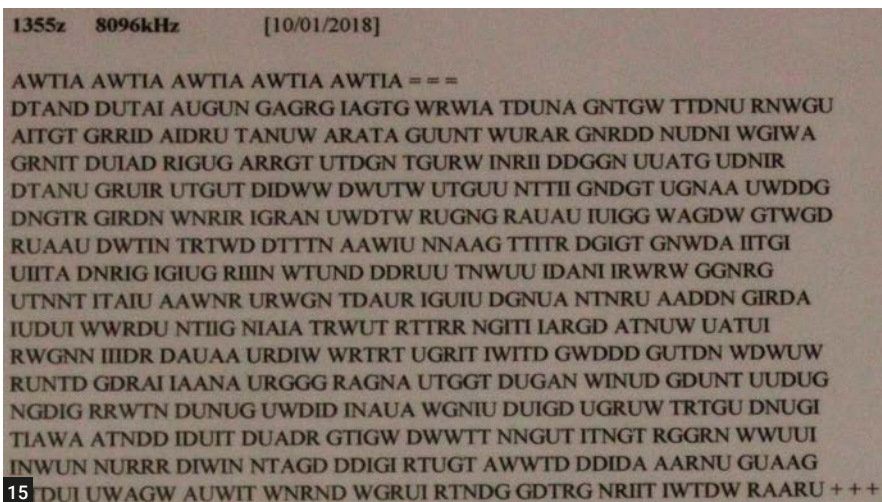
The full schedule is shown in Table 2. Including the secondary frequencies. Montes made returns via a Cuban diplomat posted to the United Nations; for a rudimentary notification, she utilised the US pager system with just seven replies available (Table 3).

For her service to Cuba, Montes received 25 years imprisonment.

Cuban Morse code (Fig. 15) uses cut characters to send the numbers 0 to 9 as represented by TANDUWRIGM. These long transmissions were also received on a Sony ICF-2010 (Fig. 16) receiver by American Kendall Myers who stated that he and his wife Gwendolyn had spied on behalf of Cuba for 30 years. Arrested on 4th June 2009 he received a 'Life-means-Life' sentence.

His FBI Complaint document states Myers' preference for Morse code. His reply to the Cuban DGI was via the internet – and one must ask if this led to his downfall.

In Part Two of this mini-series, I will be looking at some of the decoding and receiving equipment used by spies, and at the number stations scene today. I will also offer some tips and resources for those who wish to learn more about this subject.



Russian S06s Transmission

S06s detail from ENIGMA2000 Active Station List: Female voice, at the moment, a voice message is spoken at only ONE speed and the zeros are always spoken at a slower speed. 14212kHz1210z 26/03 [175 249 6 88146 57856 98836 46186 16945 80744 249 6 00000]1215z S2 THU

Table 1: ENIGMA2000 monitor 'M8'Log for 26th March 2020.

Time GMT(z)	Thursday	Friday	Saturday
2100	7563, 12180	6983, 12215	78877
22:00	6826, 10446	6782, 11566	7555

Table 2: The Cuban Schedule used by Ana Belen Montes.

111	No radio reception	555	No Danger
222	Message received	666	illegible
333	I'm OK	777	Left country
444	Danger	888	illegible

Table 3: Reply Codes of Ana Belen Montes.

COVID-19, A New Golden Age, and Inflatable Aerials

Tim Kirby
longworthtim@gmail.com

I'm writing this column in early April when we are under COVID-19 'lock-down'. By the time you read this, the situation might have changed – we shall see! However, over the last couple of weeks with many people staying at home – it's been noticeable that people have been turning to their radios as a means of social contact.

My first hint of this a couple of weeks ago was listening to the Southern Ireland Repeater Network – a group of VHF/UHF repeaters on the amateur bands in Éire – where I was delighted to hear someone say that he had dusted off his radio equipment and got it going again to keep in touch with people. I was not surprised either, to hear from one of the retailers that CB radios were selling well as people set them up to keep in touch with others in their communities.

It is interesting to reflect on how radio serves a need in such times, that runs in parallel with the pervasive use of mobile phones and internet technology. There's a PhD in that for someone, somewhere!

As well as keeping in touch with our communities, the 'lockdown' time potentially provides us with the time to do some of the things that we have always wanted to do but never found the time for! I hope for some people this may include getting involved with hobby radio for the first time or perhaps returning to it. Not to be outdone, Network Radio has attracted some interest too – reader BB contacted me, thinking about having a go with Zello – to keep in touch with the outside world. After all, with the availability of the Zello platform on a PC or a smartphone that you already have – this is perhaps the most immediate and easiest platform to experiment with.

[see also *Chris Rolinson's* Network Radio column in this and future issues

On Radio and COVID-19, see also

www.radioenthusiast.co.uk.

A Golden Age of Equipment!

It was really good to have the opportunity to review the AOR5700D receiver a couple

Tim Kirby reflects on the effects of Coronavirus on the use of some of our radio spectrum, wonders whether we are in a golden age of availability of equipment and puffs into a tube.



of months ago (*RadioUser*, April 2020: 14-17), and I hope you enjoyed reading the review.

It gave me cause to reflect – I wouldn't want anyone reading this column to think that to get into the hobby of listening across the bands from VLF to UHF and SHF that you need to spend £4,500 or so on a receiver. Like most hobbies, you can spend a lot, or you can spend a little – and in my book, that's a lot!

It seems to me that in the current age we are almost as lucky, in terms of availability of equipment at modest prices, as in the so-called 'golden age' of surplus equipment in the 1960s and 1970s. There are budget short wave receivers available; Clint Gouveia looked at these recently (*RadioUser*, January 2020: 60-63; February 2020: 54-57; April 2020: 24-26), and he found that many of them worked rather well.

Moreover, if you wish to listen to the VHF/UHF bands, there are simple transceivers (you can easily disable the transmitter to avoid any accusations of wrongdoing!) available for less than £25. Some single-band transceivers can be had for less than £10!

What is more, if you do want to dabble in the field of Software Defined Radio (SDR), you can use one of the budget RTL-SDR dongles, which can be purchased for around a tenner.

Combined with some free software and your computer, these receivers can do astonishing things – thanks to the ingenuity of software developers. The second-hand market can sometimes provide some bargains – I picked up a handheld and desktop scanner for £60 – these scanners serve me well on an almost daily basis. They're not top-of-the-range by any means – but they work just fine!

Why not visit our new online bookshop at www.radioenthusiast.co.uk/store

Fig. 1: The inflatable HF receiving aerial – quickly deployed for a listen! Fig. 2: Two or three puffs into the tube will inflate the aerial.

Fig. 3: Race Receivers in the 450-460 MHz band are increasingly used in motor racing.

With a station consisting of these, or similar components you can have hours of fun and fascination. I think for many people there's a lot of enjoyment to be gained in getting it all working and operational as you'd like. I know there is for me – although there are times when I think it is close to masochism!

As your interest progresses, you might look at one of the slightly more expensive SDR receivers; you can buy these from just under £100. These will give you even better performance and capability. Better still, they work across VLF into UHF and the lower ranges of SHF, so if you were finding any of your previous station limiting for whatever reason, you might well find that you see a performance improvement from this purchase.

This is an illustration of how your station may evolve gently as you refine your requirements and interests. Hopefully, it will give you a great deal of satisfaction as you build it up. That's not to say that I wouldn't recommend a much more expensive receiver! There might be many cases when these would be an excellent addition to your radio shack, but I think it's important to emphasise that the performance of an expensive receiver can show but fairly marginal improvements over a basic setup in some circumstances.

If you are interested in the transmitting side of the hobby, then, of course, I would encourage you towards the licenced amateur route – but I may be biased! However, there is a lot you can do and enjoy, again with simple equipment, using PMR446 and CB equipment at low cost. I enjoy using PMR446 and CB radios myself, and it is surprising how fascinating and absorbing such equipment may be. It is all radio!

Therefore, my message is: If you are getting into the radio listening hobby there are many ways to do it and you don't have to spend loads of money in the process – please don't be put off by the price of some of the equipment.

There is lots of fun to be had, however you approach the hobby!

Inflatable Aerials

A few months ago on Twitter. I spotted an intriguing tweet from @AntennaAir about an inflatable aerial (Figs. 1 and 2), which



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the company was designing and producing for the amateur 2m band. Various conversations ensued, and I ended up reviewing one of the antennas for our sister magazine, *Practical Wireless* (PW, December 2019):

I found that the antenna worked very well. I have managed to work (albeit under exceptional circumstances) into the Canary Islands and Poland on 2m FT8, using this antenna

I've kept in touch with Tom GM3HNN, the man behind *Air Antennas*. Recently, he was telling me about two of his 'inflatable aerials' which are specifically for listeners. There is a wideband 118-450MHz aerial which Tom targets at airband enthusiasts, although of course, it will work for Marine, Amateur and PMR users as well. Slightly out of the scope of this column, but perhaps of interest to many readers is the HF aerial with 0 – 30MHz coverage.

Why an inflatable aerial? Of course, one of the benefits is that it is very light and portable. All the Air Antennas weigh around 400g and come nicely presented in a pouch, which contains the antenna. The antenna element itself, which I gather is a wiring loom, is contained within a heavy-duty sleeve, which can be inflated with a couple of puffs of air through a tube, similar to that which you may have used on a life jacket. The coax is attached to the wiring loom and runs out through the base of the antenna.

For the receive antennas, RG-174 coaxial cable is used, and this is terminated with BNC connectors.

This is all very well, but do they work? I am always a little sceptical about aerials

that promise the world but are only tiny. I am all for trying to stretching the laws of physics – but there is only so far that you can go!

Tom very kindly let me have a look at both the models; HF and VHF/UHF. The VHF/UHF one arrived first and I was immediately very impressed with its' performance on the VHF airband, 2m amateur band and marine band. With the aerial resting in the window-sill of my westerly-facing radio shack, the performance was dare I say it, surprisingly good, with the usual signals being easily audible and in fact, some slightly more marginal and further signals from across the water in Ireland being audible too on all those bands.

The amateur 430MHz band worked well too and results were not too far off a roof-mounted vertical outside. At the time of testing, airband both civil and military are pretty quiet in these parts at least, however, the occasional transatlantic flight popped up in the civil airband, so there was every indication that it worked well.

I was interested to see how the HF antenna performed too. I was rather expecting it to be very noisy when I tried it in a similar position in the radio shack but to my surprise, the antenna was quiet, but signals were audible. Initially, I listened on the 20m amateur band and then moved to the 160m amateur band, where I listened for FT8 data signals.

I was encouraged to see stations from all over Europe coming through. Next day, I took the portable receiver out into the field with the antenna and had a tune around. I didn't use an ATU but suspect



TIM KIRBY

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that one might have helped on the lower frequencies. For above 7MHz, it seemed to work quite well without, but for best performance, you'd probably use an ATU. The 17MHz broadcast band seemed good into Asia when I listened with good signals from both the Far East and a little closer (Radio Saudi was a huge signal).

I was pleased to find that it received well on the CB band – although the band wasn't open, there were some local CB signals to listen to, at good strength and over a reasonable distance.

Incidentally, I know one or two people have inquired whether it would be possible to fill the antennas with helium and have them self-supported as 'balloons'. Tom tells me he's tried this and it works! Tom's email is at the end of this section. Therefore, if you're after some highly portable, light receive antennas and don't want to try making your own – then these could be good solutions for you. You can find more details at airantennas.com or talk to Tom on Twitter:

@AntennaAir.
air-antennas@europe.com

Motor Racing

Our editor emailed me the other day with a picture of a 'Race Receiver' he'd seen on eBay and asked what it was! It turns out to be a receiver used in Motor Racing for safety and marshalling purposes. You can see a video of how to set one up at this URL:

<https://youtu.be/w70pP8p2TZ8>

The receiver works between 450 and 460MHz, and different channels are used at different race tracks. If you are a motor rac-

Fig. 4: The Rock of Gibraltar.

ing enthusiast (Fig. 3) and you take a scanner along to a race event (once they are happening again), it would pay to scan the 450 to 460MHz band and see if you can find the local channel in use.

Listening Post

A reader in Gibraltar (Fig. 4) reports hearing the following from an aircraft when monitoring the airband: Aircraft: "Both wing fuel tanks indicated full on refuelling, one of the fuel tanks is now indicating zero" Gibraltar ATC: "Are you declaring Pan-Pan?" Aircraft: "Yes, Pan-Pan". Happily, The Cessna F150L single prop aircraft landed without incident and took off later after a faulty fuel gauge was diagnosed.

Reader KW from the southwestern part of England scans the VHF/UHF bands looking for unusual signals that might indicate enhanced propagation. KW monitors various amateur repeaters – including some in Ireland (Mount Leinster on 430.950 is a good one, along with 145.650 and 145.675 from the south coast of Ireland) and the Isle of Man on 145.625. These are all worth scanning if you are on the western side of the UK. KW has also noted a lot of DMR from Ireland between 450 and 460MHz. There's an amateur DMR system, also located on Mount Leinster, on 430.300MHz, which has some good coverage. I have also heard that here in West Wales.

Well, that's about it for this month. See you next month for *Signals from Space* – but in the meantime, I hope you and your families stay healthy.

POWER OF RADIO IN TIMES OF PANDEMIC:

With many people in quarantine and the need for social distancing and isolation as a result of coronavirus, statistics show a rise in the listening of radio, especially online streaming. In a recent survey by Nielsen out of the United States, 83% of media consumers say they are listening to more radio now than before the pandemic. Despite the various media options, there are in 2020, a large number are turning to the radio while in isolation... In a time of heightened uncertainty and disrupted routines, consumers are turning to radio as a trusted source of information and community connection, mirroring patterns observed during past regional and national disasters and weather events," said Brad Kelly, Managing Director, Nielsen Audio. Whilst individual schedules change, what remains clear is the need for radio in a global crisis. Radio is considered a tool for strengthening communities, providing information, and giving reassurance to all. Here are some examples of radio stations offering support during this crisis. The United Nations Peacekeeping radio stations have always been used to build support for the peace process, however, amid COVID-19, these stations are providing important information to vulnerable communities. A majority of these communities are in conflict-affected countries and therefore, the stations are playing a vital role by sharing information. For example, Radio Miraya is a station out of the UN Mission in South Sudan. The station has been responsible for providing the community with valuable information as the majority of people in this region do not have access to the internet, TV, or newspapers. The station uses songs by popular artists which include best practices to stop the spread of the virus, like handwashing and social distancing. In Australia, many changes have been made to broadcasting schedules over the last few weeks to adapt to changes as a result of coronavirus. The podcast answers questions about the pandemic and provides the latest news and research. Initiatives like this can be seen all over the globe, as the need for information grows every day. The United Kingdom has seen a rise in online streaming for radio. While schedules have changed, people continue to turn to radio for news. Global UK confirmed that online radio listening has risen by 15%, while the BBC says that streaming of its radio stations has risen by 18% in the last week. Another initiative out of the BBC has been the giving away of free DAB radios to the vulnerable people aged over 70. To ensure this group have access to news and information. (Source: RadioDays Europe 2020)

<https://tinyurl.com/yatbxg9z>

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

- RSPDUO** is a dual-tuner wideband full featured 14-bit SDR which covers the entire RF spectrum from 1kHz to 2GHz giving 10MHz of spectrum visibility **£239.99**
- RSPDX** covers all frequencies from 1kHz through VLF, LF, MW, HF, VHF, UHF and L-band to 2GHz, with no gaps **£194.95**
- RSP-1A** it is a powerful wideband full featured 14-bit SDR which covers the RF spectrum from 1kHz to 2GHz. All it needs is a PC and an antenna to provide excellent communications receiver functionality..... **£99.95**



AOR, LTD is a renowned Japanese communications equipment manufacturer established in 1978, headquartered in Tokyo, Japan, serves the monitoring enthusiasts, communication professionals, amateur radio operators and electronics industries throughout the world

Handheld

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- AR-8200D** same as AR-8200-MKIII with the following added features. * APC025 Decoding * Voice Recording * MicroSD Card Slot * 4GB MicroSD card Included * USB Port * CTCSS built-in * Voice Inversion built-in **£669.95**
- AR-DV10** 100 kHz-1300 MHz Digital scanner with TETRA DMR, NXDN, dPMR, APC025, D-STAR **£899.95**

Mobile/Base

- AR-8600** MKII 100 kHz-3000 MHz all mode analogue scanner **£599.95**
- AR-DV1** 100 kHz -1300MHz Multi mode digital base scanner **£1199.00**
- AR-5700D** 9 kHz – 3700 MHz Advanced digital communications receiver **£4595.00**

Accessories

- DA-3200** 25-3000 MHz professional discone antenna **£169.95**
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We were established in 1978 and are the largest manufacturer of Amateur, CB and Scanner antennas and accessories in the UK.

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SKYSCAN MOBILE is a great all-round scanning antenna, which should enhance the reception capability of any radio scanner. Each of the nest of four different length antenna that make up the Sky Scan are designed to pick up a specific frequency range, this method has proven to work extremely well and delivers great results over 25-2000 MHz **£24.95**

SKYSCAN DESKTOP This is the best all round wideband desktop scanner antenna on the current market. Keeping within the famous discone design but smaller for internal use has proved wonders for indoor reception. The antenna covers 25-2000 MHz and comes complete with a heavy 125mm base 4m RG58 coax and terminated in BNC. **£59.95 NOW £49.95**

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ROYAL DISCONE 2000 generally regarded as the best all round discone antenna. Not only does it cover 25-2000MHz on receive you can also transmit on 6/2/70 & 23cm **£59.95**

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CHRISSEY BRAND

Chrissy Brand
chrissylb@hotmail.co.uk

Radio and the 'New Normal'

A new arrival on the burgeoning café scene in Hastings is also the first in the area to have installed a podcast studio. Controversially-named *Crippled Badger*, it is a community café with a meeting room and workspaces. The cafe is so named because its ethos is about helping those around us on the roadside as we pass through life. The most progressive of the local newspapers, *Hastings Independent Press*, has relocated there.

The podcast studio will be put to good use by local individuals, community and political groups. There is already a vibrant podcast scene in this creative seaside town. I know individuals who host podcasts about music, gardening, grief and more. Two community service RSL stations also usually run each year, in May and August. Is this a microcosm of wider western society or are Hastings and St. Leonards-On-Sea punching above their weight?

Whatever the answer is, sadly, the podcast studio had to temporarily close before it had a chance to produce any content. *Dandelion*, a delicatessen, cafe

Chrissy Brand offers some thought-provoking insight into the many ways in which the Coronavirus (COVID-19) pandemic may have changed the radio and audio landscape forever.

and vintage vinyl and radio store in St. Leonards-On-Sea (Fig. 1) is another café that espouses creativity, and which locals hope will be able to ride the wave of the global recession.

Lockdown Live

At the time of writing, it is unclear when any semblance of normality will return to our lives, with events cancelled and people relying on social media for live music, theatre and festivals.

In years to come, we might ask each other, "How did you spend your evenings during a lockdown?" Live streaming and several other methods came into play,

to overcome the closure of theatres and concert venues. In the 'new normal', whatever form that is to take, I can see the spring of 2020 heralded as being the birth of another format that will challenge and compete with traditional radio – and even with the ever-evolving podcast market.

Some events and festivals that were cancelled took the initiative and reconfigured, streaming online instead, using apps such as Zoom and Facebook Live, as well as their websites. Using Hastings again, two examples were the annual *Beatles' Day* tribute concert and the fortnight-long *A Town Explores A Book Festival*.

This year the book chosen was HG



Wells' *The Time Machine*. There were daily live readings of this and a look at the play that was to accompany it, along with other community interaction and displays in shop windows and individuals' homes. It certainly drew me away from listening to the radio or podcasts as much as I usually would.

I am sure I was not alone in finding my lockdown entertainment away from the conventional forms of linear radio, *Apple Music*, *Netflix* or *Sky*. A series of streaming stations appeared.

Gig Buddies Coronavirus streamed live music from people's homes. *Gig Buddies* is an organisation that pairs up volunteers to take people with learning disadvantages to gigs. That is in normal times. Under lockdown, it broadcast gigs from musicians' homes to the rest of us.

<https://tinyurl.com/y8f3xwnf>

Hastings Isolation Station was created, in cooperation with the *Eggtooth Project* (a local not-for-profit organisation that works to co-create systemic resilience in children, young people, parents and families). This beamed lesser-known names onto peoples' tablets and smartphones, through Facebook Live.

This has been a sterling example of community spirit in action.

<https://tinyurl.com/yda8n3jk>

United We Stream was another channel that recreated nights out for everyone indoors. Slightly eerie broadcasts from empty, cavernous clubs. Versions of this channel were in operation from Manchester to Munich. One evening, I enjoyed and 're-broadcast' DJ Jet in Munich's Pacha club, featured on *We Stream United Bavaria*. His blend of trance and electronica music, although usually aimed at a younger audience, would also have appealed to music fans and radio listeners of the *Tangerine Dream* generation.

In lieu of a social life, most nights I streamed various events like these to my own Facebook page, thereby introducing some of my many friends around the world to new audio delights. In order to enhance my own listening pleasure, I hooked up my Samsung Galaxy S8 phone to my Denon RCD-M39DAB Hi-Fi and Tannoy speakers, sat on the sofa and drank in music and art from around the planet.

I was first introduced to the sounds of *Kasheme* – which is a 'living room record store' and studio in Zurich that streams its musical happenings – at the International Radio Festival in Valletta in 2018 (*RadioUser*, January 2019: 60-62). *Kasheme* co-owner and DJ Tim Bytqi (Fig. 2) and his equally well-respected colleagues entertained for long lockdown hours. On the night of Sunday, April 5th. Tim played Martin Luther King's *I Have a Dream* speech on a gentle soundbed, a mix of West African rhythms, some Latin American bossa nova and some chilled reggae. The Last Poets' *The White Man's Got a God Complex* was a new track to me and I liked it!

Looking down into the living room setting at the sofas, rugs and tech equipment, subtly lit with discreet lamps, created an evocative atmosphere. On other evenings, the walls echoed with the sound of the souk and the oud, along with some rockabilly mashups. Zany tunes for crazy times.

To me, *Kasheme* encompasses the spirit of international radio, delivered across today's most relevant media platforms. In this strange new world of self-isolation, with no prospect for international travel for the foreseeable future, we need contact with ordinary other people with shared views and passions, more than ever before.

The *Kasheme* ethos is surely parallel to that of most radio stations, although it is vocalised in less corporate and more flo-



Fig. 1: Dandelion, cafe and vintage vinyl and radio store in St. Leonards-On-Sea. Fig. 2: *Kasheme's* Tim Bytqi, from Zurich to the world.

Fig. 3: Networking during the Radio Tech Con masterclass. Fig. 4: Getting down to an Introduction to Broadcast Engineering.

ral language, "Standing for conscious listening of the universal language of music and also to each other. We see music as a healing force and appreciate it as a spiritual discipline. We aim to connect people from different cultures and backgrounds through music. We welcome and encourage an open culture of dialogue exchange and togetherness."

<https://kasheme.com>

Do It Yourself

New ideas and ways of reaching audiences, outside of conventional radio and podcasts, certainly sprang up and became popular or cult, in the strange Spring of 2020.

I enjoyed *Wild Mornings With Chris*, which

featured Chris Packham and others from BBC's *Springwatch*. This daily programme (0900 BST with a watch-again facility) was hosted by Chris and his stepdaughter Megan McCubbin in their New Forest garden. Along with much public participation, there were link-ups with correspondents, such as Michaela Strachan, locked down in her Cape Town home and garden.

www.chrispackham.co.uk
<https://tinyurl.com/yawf5su8>

Big names in the rock and pop world took to producing and streaming music and concerts in self-isolation, performing across split screens from their homes. Two examples being Manchester legends *Elbow* and Stockport's biggest band *Blossoms*. Both would normally be headlining summer music festivals, and gaining widespread, western world exposure across radio and television as a result. However, these are not normal times.

Noughties pop sensation Sophie Ellis Bextor is all grown up – well, to a degree. Through Facebook Live she provided glitterball fun with a regular disco from her house; Sophie singing and her young family dancing.

Television and radio face competition in a world that is being termed the 'new normal'. In the media industry, presenters, both up-and-coming and well-established, can call the shots while broadcasting from their websites and social media channels such as *Vimeo*, *Mixcloud* and *Instagram*.

Perhaps there is a correlation between podcast listeners and people who watch and listen to streamed music? These may be audiences who are younger or more into accessing innovative material, and who eschew the mainstream radio and audio on offer. If there is a correlation, I can see audiences, who are usually very loyal to their preferred podcasts, abandoning Heart Radio, BBC Radio One and their ilk, in favour of watching more from their favourite acts' home concerts. This may already have been happening pre-pandemic, but is ever more likely during and after.

Although the amount of free material will diminish post-lockdown, and the public will return to buying tickets for gigs, a new do-it-yourself method of communication with a wider fan base (which was already in operation) has been firmly cemented into place.

Will radio stations want to buy the rights to some of these impromptu concerts, for rebroadcast? Will stations and other companies with products to sell sponsor future do-it-yourself events to persuade listeners to stay tuned to FM and DAB radio?

Lockdown has given rise to a new way of existence and a new way for listeners to consume, with a weightier emphasis than ever on the power of social media platforms to stream live and recorded audio and spoken word into our homes.

Zoom became the go-to tool for community groups, workplace meetings, political rallies and gatherings. Radio and podcasts also turned to Zoom to record material from guests, as we all communicate with each other from our own silos. I learned that Zoom is better than *Skype* for recording podcasts because you can edit each speaker separately when recording interviews.

Helping Hands

As well as their public-facing offerings, parts of the radio and audio industry have been supporting each other in these troubled times.

UNESCO published a set of guidelines and audio in English, French, Spanish and Arabic. These were for radio stations to use in order to combat fake news and disinformation about Coronavirus. The messages can be summarised by the following key phrases: 'Know credible information for sources'; teach your child; beware of false experts; gauge your emotional reaction; disinformation spreads; quality journalism; fact-checking for social media content; and access to Information.

<https://tinyurl.com/vrpf62k>

US-based media company Radio Ink produced the *Radio Ink Coronavirus Daily Update* podcast. It examined the impact of the virus on the radio industry. Chuck Bergson, CEO of Pacific Media Group, was interviewed in Hawaii, where he has 20 radio stations. The islands were isolated with no flights allowed, and the tourism industry dried up overnight. This, unsurprisingly, has caused advertising revenue to drop by 60%.

Another episode was with Chaz, a presenter on WPLR in New Haven, Connecticut (he doesn't use a last name to protect privacy when not working). Chaz started in radio in 1973 but has never seen times like these. The station coped by adding phone-ins and debates to its rock music format.

The team prepared when they saw the virus story breaking, responding to what people required, who needed the most help and where the most inspirational stories in the state were to be unearthed, from medical experts to listeners.

There will be problems ahead for the radio industry worldwide, due partly to advertising revenues having dried up for radio stations. Many radio stations, large con-

glomerates and smaller outfits, as well as other businesses who use radio as a marketing tool, could be in terminal decline throughout this year.

The Radio Tech Con team offer practical advice and support all-year-round. They produced a useful video resource, covering the theory of the whole transmission chain, the *Introduction to Broadcast Engineering* online. This is the output from a masterclass that took place in July last year. It covers everything, from the transmission chain and building a studio, to apprenticeships and degrees. Plus voluntary work, experiences in the field, and references. With text, diagrams and video, this is a fantastic overview (Figs. 3 and 4).

An extract from the Transmission section states, "You have made your radio programme. You have sent the signal correctly around your building. But how do listeners hear it? That's where your transmitters come in! Martin James (Freelance), David Thorpe (Ofcom) and Richard Johnston (Arqiva) know a lot about transmission. They explain how the signal is sent, and what you need to think about when deciding what transmitters to use – including how not to kill your listeners and staff."

<https://tinyurl.com/yayyu7hu>

Audience Ups and Downs

A Yahoo news feature stated that podcast listening was down 20% since coronavirus hit. This decline was attributed to the fact that with so many people staying home, they are not listening to podcasts while commuting to work. That makes sense.

However, anecdotal evidence among independent and individual podcasters is contradictory. Some report a decline but others found an increase in their listenership. Perhaps it depends on the content of the programmes. In times of crisis, many people not only want to hear the latest news coverage but also want a distraction from it afterwards.

Music, and talks on wellbeing, nature and comedy, are all welcome subject matter when people look for 'downtime' from the relentless barrage of bad news stories.

Certainly, a higher percentage of the population tune to, stream or download radio and television news and feature programmes, and buy newspapers (or download or read them online). That seems perfectly understandable.

There is still a market for advertisers but will consumers have any spending power left when we emerge from the COVID-19 cocoon?

Guard Vessels, APRA, Dazzle, & a Digital Diamond

Robert Connolly
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I am sure that many of you, like myself, enjoy keeping track of shipping in your local area, if you live close to the coast, you can receive data received from the Automatic Identification System (AIS) transmissions. Alternatively – perhaps for those of you who live away from the coast – you could use one of the internet sites available, for example, the two accessible at these URLs:

www.marinetraffic.com
www.vesselfinder.com

From time to time, you will see vessels showing up as 'guard' vessels. This month I will provide information on their role, and on why many are fishing trawlers.

The role of guard vessels is to protect any vulnerable sub-sea or surface installation, including exposed cables and pipelines, from the dangers arising from fishing activities or other marine traffic movements.

They are utilised during the installation, construction and decommissioning phases on a wide range of oil and gas, renewable, and cable lay projects, for example, pipelines and cables; wellheads; manifolds and other sub-sea structures; various offshore sites during installation, operational and decommissioning phases; and renewable energy installation operations such as wind farms.

Guard vessel duties include 24hr-monitoring of vessel activity in a designated area, broadcasting messages. These inform other

Robert Connolly analyses the role of guard vessels and chase boats, introduces APRA technology, looks at some selected maritime and meteorological services and offers maritime safety advice.

vessels of construction operations and guard newly-laid pipes from fishing activity.

They also ensure that other vessels, fishing trawlers or larger commercial vessels remain clear of any of the surface or sub-sea installations that are being protected.

APRA Technology

The majority of guard vessels are equipped with an ARPA feature (Automatic Radar Plotting Aid). This is a computerised additional feature of their radar. ARPA takes a feed of the own ship's course and speed, and the target's course and speed.

It then calculates the collision avoidance data, obviating the need for users to compute those themselves.

The ARPA device is a computer – usually a component inside the radar set rather than an external device –

that supplements the traditional radar display. For each target, the ARPA computes the actual position using GPS information. It stores the target positions in between successive radar observations, so it can compute course and speed. The ARPA determines whether vessels are on an 'intercept' course, which would lead to a possible collision if both the 'own ship' and 'target' maintain their current courses and speeds.

Using ARPA, the guard vessel crew member on a watch can predict whether a vessel is going to encroach on the protected exclusion area.

If this is going to be the case, a voice warning broadcast on CH 16 (156.800MHz) to *remain clear* can be issued well in advance, allowing the other vessel to change course.

Guard vessels are required to carry properly certified crew members and to comply with health and safety regulations. Besides, it is normal for them to have access, on a 24/7 basis, to a base ashore so that any problems with the guard vessel and its equipment can be quickly rectified.

These vessels are often on a site for several weeks at a time. Therefore, they will have sufficient fuel, water and food onboard for up to 30 days or more. In the event of a serious breakdown of the guard vessel, another one must be readily available to take its place if it has to return to port.

Chase Boats

Apart from acting as guard vessels, some trawlers will also act as 'chase boats', protecting the area around seismic surveys, cable laying operations or other marine activity. Chase Boats are used to intercept any approaching vessels, which could damage ca-

Channel Number	Ship Transmit	Ship Receive	Use	Notes
0	156.000	156.000	UK Coastguard private channel	also used for coastguard-to-lifeboat communications
6	156.300	156.300	Inter-ship	SAR Communications - Ships and Aircraft.
9	156.450	156.450	Inter-ship, Port Operations	Ship to Ship Secondary Working Channel. Is often used by ship pilots.
10	156.500	156.500	Inter-ship, Port Operations	SAR, Pollution Incidents, MSI Broadcasts. Coordinated with HMCG (Back-up channel).
12	156.600	156.600	Port Operations	Ship to port and pilot
13	156.650	156.650	Inter-ship, Port Operations	International Navigation Safety Channel. Also ship movement, port operations, and. limited coast stations.
16	156.800	156.800	Int. Distress, Safety and Calling	
62	156.125	160.725	Port Operations, Public Correspondence	HMCG Marine Safety Broadcasts
63	156.175	160.775	Port Operations, Public Correspondence	HMCG Marine Safety Broadcasts
64	156.225	160.825	Port Operations, Public Correspondence	HMCG Marine Safety Broadcasts
65	156.275	160.875	National Coastwatch System	England & Wales allocation.
67	156.375	156.375	Inter-ship, Port Operations	HMCG / SAR
73	156.675	156.675	Inter-ship, Port Operations	HMCG / SAR
80	157.025	161.625	Port Operations, Public Correspondence	U. K. Marinas.
37 (M1)	157.850	157.850	U. K. Marinas and Yacht Clubs	Private UK only
M2	161.425	161.425	U. K. Yacht Clubs	U. K. Marinas.

Table 1: Commonly-Used Maritime VHF Channels.

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1

bles being towed or installed on the seabed.

Why do companies carrying out maritime work employ trawlers as guard or chase boats? For the trawler skipper, the job is not just well paid but removes the stress of actual fishing, keeping within fish quotas or not having successful catches. For the company carrying out the work at sea, the benefit from the fact that skippers of guard boats with extensive local knowledge, and of other trawlers operating close to their work areas, are much more receptive to instructions given by guard vessels. With the rapid development of new wind farms around our shores and the installation of associated undersea cables, guard vessel work can constitute a growing alternative income for many fishing vessels.

Many trawlers carrying out guard vessel duties still retain their fishing gear so the vessel can fish normally if not involved in guard duties. The trawlers will have large signs on their vessel sides displaying the word "GUARD", sometimes with the addition of "CH 16". One company local to me, *DR Maritime*, has converted several trawlers for dedicated guard duties and removed the fishing gear.

Dazzle and Protect

The part-owner of the company began his working life in the Royal Navy and was trained as a marine engineer. Also, their

vessels have been repainted black and yellow (Fig. 1).

Note the dazzle-pattern on the forward section.

In 2018/19, to mark the centenary of the 1918/19 roll-out across the Royal Navy, of the most iconic maritime design in history (Norman Wilkinson's camouflage 'dazzle'), the company incorporated dazzle into their brand.

The company says that on the water, it makes their vessels highly visible. Their vessels are directly linked, on a 24/7 basis, to their onshore support team that looks after crew well-being, troubleshooting, and emergency response to incidents.

Their sister engineering company is also linked in to assist with any faults, issues, ongoing repairs or maintenance of the vessels or the engines.

Seasonal Precautions

Now, the summer holidays are just around the corner, and you may be considering a trip or holiday at the seaside or one of our cities that are ports [*subject to ongoing Coronavirus restrictions – Ed.*].

If you do, no doubt, you will consider bringing a scanner with you to listen to the coastguard, lifeboats and shipping on the marine band. If you are a newcomer to the hobby you

will be wondering what channels to listen to during your coastal visit.

Table 1 shows the most common channels in use.

If you and your family are planning to do any activities *on the sea* during your stay, for example, windsurfing, small boat fishing or using a jet ski, I would ask that you ensure that you also have the appropriate safety equipment. Every summer is the peak season for seaside incidents involving coastguard volunteers and lifeboat crews. Many incidents can be prevented if you observe a few guidelines and take suitable precautions.

If you are going to carry out an activity on the water, please ensure that you wear lifejackets and have some form of emergency communication in case something goes wrong. While a mobile phone is useful, you should be aware that a mobile phone signal may not be always available so ideally, you should have a marine transceiver, fixed or handheld, that can be used to contact the coastguard in an emergency.

If you will be using a small boat, then please carry spare ropes and an anchor of some description. Spare ropes will allow you to get towed ashore if there is a problem. Ensure that you carry a bucket, as this can be used for bailing out water. A bucket attached to a rope thrown overboard will also act as



a sea anchor reducing your drift should you breakdown. If you and your family are going to walk along the shore to another bay then make yourself aware of the tide times and also how quickly the tidal flow is in that area to reduce the risk of getting cut off by an incoming tide.

Don't dive from rocks into the sea, this is, at best dangerous, and may be fatal. If you must purchase one of those light inflatable water toys for your children, ensure it is secured by a rope to something solid onshore. These inflatable boats etc are very easily blown out to sea, due to being so light.

Listen to the coastal weather forecast to keep as safe as possible. While you may find it very interesting listening to the coastguard and lifeboats carrying out a rescue, it is a completely different story if a member of your family is the casualty involved. Be safe and take the current Coronavirus advice of the Government. Listen to locals and lifeguards too, so as not to become the casualty.

Listening, Lights & Meteorology

If you are visiting one of our towns and cities located around our coasts that are commercial ports or marinas my table will provide the basic frequencies to listen out on. However, there are excellent resources available on the internet, providing extensive frequency de-



Fig. 1: Dazzle, Guard and Protect.

Fig. 2: A vital message.

tails for all UK ports and marinas.

In particular, the websites of the UK Government's Maritime and Coastguard Agency (MCA) and of the Irish Coast Guard (*Garda C osta na h ireann*) are good starting points for Maritime Safety Information (MSI) broadcasts, including times and frequencies, along with offering historical information on former coast radio stations, current MF frequency lists, and so on.

<https://tinyurl.com/qjuxuuv>

<https://tinyurl.com/y8b9svkz>

In addition to this, the Commissioners of Irish Lights (CIL) organisation has several buoys and lighthouses, equipped with meteorological and oceanographic (MetOcean) sensors. These transmit their data to Irish Lights headquarters located at Dun Laoghaire, south of Dublin.

<https://www.irishlights.ie>

Measurements include average wind speed, wind gust speed, average wind direction, gust direction, wave height, wave period and water temperature. The values are posted on Twitter every 20 minutes.

The data is transmitted to HQ via the Automatic Identification System (AIS) radio-based communication network.

The MetOcean data can be stored, analysed, graphed, and downloaded in different formats, on the MetOcean website at this URL:

<https://cilpublic.cil.ie/metocean>

CIL lighthouses are located at strategic points around the coast of Ireland. For monitoring purposes, the sites are being upgraded to include 3G communication capabilities.

This means that Wi-Fi and 3G are available to third-party organisations that seek to use CIL sites for equipment placement and deployment.

IDAR wind sensors, radars and seismometers have been installed on the lighthouses for data collection by academic institutions and renewable energy companies. CIL is also planning for 4G deployment.

Dublin Bay Digital Diamond

The Commissioners of Irish Lights also operate the Dublin Bay Digital Diamond (DBDD). This system is an e-Navigation demonstrator project for the Dublin Bay area. Its purpose is to provide an opportunity for users across the maritime sector to explore the potential of e-Navigation services.

The project takes advantage of existing Irish Lights and partner organisation infrastructure to provide platforms for the core communications network required. The primary stations are at Kish Lighthouse, Baily Lighthouse, Dublin Port and Irish Lights Dun Laoghaire.

These locations provide effective digital communications coverage across Dublin Bay and its approaches. The overall project involved three phases. Phase One concentrated on engaging the maritime community and demonstrating the benefits of e-Navigation across the maritime sector.

Phase Two was to deliver some of the more challenging aspects of the communications network and more advanced services. Finally, Phase Three tested the functionalities listed in Table 2.

In recent years, the navigation buoy has evolved from being a simple device to mark channels and hazards at sea to a complex piece of electronic equipment capable of providing many other services for the benefit of, not just mariners, but everyone, particularly concerning MetOcean data.

These can assist in providing more accurate weather forecasts and storm monitoring. Last but not least, my photograph this month (Fig. 2) is of the Belfast Coastguard station, located at Bangor Co. Down. Note the sign on their balcony (inset) "Lifejackets useless unless worn".

Until next time *Fair Winds*.

- Wi-Fi coverage over Dublin Bay
- The feasibility of Ranging Mode using AIS Base stations
- A smartphone app that transmits AIS data via Wi-Fi
- Web camera coverage of the Dublin Bay anchorage/approach channel
- Virtual AIS AtoN, marking the Vessel Traffic Services gates or other points for special arrivals or events.
- Virtual AIS AtoN to mark radio navigation warnings in the test area
- Met/Hydro sensors on the Dublin Bay buoy, providing wind /current /wave height data for pilot boarding area, A port traffic recorder that will record traffic passing North Bull and Poolbeg inbound
- Wind speed and wind direction readings out at a height of 20 metres from Kish lighthouse.

Table 2: DBDD Phase Three: Testing Coverage.

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'Play Nice or Play Elsewhere'

Chris Rolinson
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Over both distant and more recent columns, we have been meeting many of the 'movers and shakers' of Network Radio; for example, Karl Hobson G1YPQ from *Network Radios*, Hairy Paul MM7WAB and his off-grid experiments, Sarah Hynes from *Radio Network*, Mike Higlett G6WTM and his outdoor pursuits using the various aspects of the system.

With the help of Melvin Rattenbury, we have even visited the world of 'Private Eyes'. Furthermore, we have investigated what our US cousins have been doing, thanks to Denny Johnson of the *DigiCommCafé*.

Off to the Low Countries

This month, I thought it might be appropriate to turn our thoughts towards Europe, and more specifically Belgium, where we can catch up with friend of the column, Filip Everaert NR001 and find out how our colleagues in the Benelux Countries have been using the network (Fig. 1).

This, I hope you will agree, is of special interest, as several exciting initiatives have been emanating from our near neighbours. I caught up with Filip recently to find out more.

ZRB

I hadn't heard Filip on the 'usual' channels for a while and wondered where he had been. Unsurprisingly for a Flemish speaker, it transpires he has been frequenting channels a little closer to home in his native language, notably spending time in a group of channels called ZRB (short for 'Zello Radio Benelux', Fig. 2).

This channel began life as a Facebook page created by Ralph Sliepen back in December 2017. Filip says he only came across it as he is a little obsessed (in a nice way!) with his never-ending searches for Zello-related things.

It struck Filip as somewhat odd that this page, with numerous Network Radio enthusiasts, did not have its own Zello channel for its members! One of the great things about NR is its natural interface to modern-day Social Networking, so I can see, in a way, why that happened.

Filip got in touch with Ralph and together they agreed to open Zello Radio Benelux.

Who does it attract?

The channel appeals to not only the mem-

bers of the ZRB Facebook Group, but other Flemish and Dutch speakers, who like to talk more specifically about technical issues – this does not just include radio, but computer-based chat too.

On Sundays, they hold a net on the channel, run by two of the controllers. Most of the chat again is technology-related, but other shared interests often come up, for instance subjects such as geocaching and similar areas.

More about the Users

There is a healthy mix of licensed radio enthusiasts, non-licensed hobbyists, Belgian-Flemish speakers and Dutch users. At present, there is only one user from Luxembourg but usefully, he is a Dutch speaker – no other languages are used. So if you are reading this and fancy joining in, you will need to be pretty fluent in either Dutch or Flemish!

The channel is set to 'Zselect+' on Zello - this means people outside the channel cannot hear anything and new users can only talk to the moderation team until they are allowed in. Users are granted entry after having been made aware of the rules of the channel and the behavioural expectations.

The moderation team comprises of seven people (who Filip would like to publicly thank for their service). Three of them also curate the associated Facebook Group.

Why seven moderators? Simply because this is a hobby – it is supposed to give pleasure and recreation! All the moderators have daytime jobs, so Filip says this is the easiest way to ensure there is a moderator or two online at all times (Fig. 4). The moderators also have their own means of keeping in touch 'behind the scenes' so that every decision about their community is made as a team, and never by one person alone.

The Joys of Moderation

I would like to digress just for a moment here, as I feel a more general, but important, point needs to be made about this kind of 'gate-keeping' on NR channels.

Zello is arguably the most frequently used PTT app used by Network devices – there are many good reasons why, but amongst them is



the ability to check how people access it.

If you are not aware, built into Zello are controls to help channel organisers and moderators keep your corner of the digital world running smoothly. For example, let's say you create a channel for your local radio club. You can password-protect it as a first 'line of defence' – only your members will know the password and only they can access it. So far, so good!

Then you can stipulate that any new members, having entered the correct password, need to be 'trusted'.

This means that everyone has to await a moderator's say-so to allow them full access to that channel.

But that is not all! Once trusted, if you 'misbehave', you can be 'muted' (no transmission rights – listen-only allowed), blocked (for any period) or even summarily kicked off!



3

Can you see where I am going with this? Much poor operating on hobby radio (Ham and CB) in the past has been 'uncontrollable'. Had moderation of this kind been possible on radio channels and repeaters in years gone by, a lot of the poor operating and bad behaviour would have gotten nowhere. This is not easy to control or moderate in an analogue world. But in a digital world like Network Radio, it is quite easy to implement, exactly as Filip and his colleagues have done here.

Those who, somewhat bizarrely in my view, get a 'kick' and delight in abusing the various systems, get short shrift on systems using apps like Zello. Providing at least one moderator is known to be monitoring, people either conform to the protocols in use or are reminded of the rules and may have sanctions applied to them if appropriate.

I like Hairy Paul's saying: "Play nice or play elsewhere!"

Of course, miscreants often go on to complain about 'heavy-handed' moderation, but that's usually because they have pushed the boundaries too far and have been caught out – if only they were man/woman enough to admit when they got it wrong!

I have even heard of banned users attempt to threaten channel owners with legal recourse because they were disciplined on a channel! This, of course, is a fruitless line to explore. At the end of the day, a Zello Channel is not a democracy and not ruled by any radio 'laws' either; the channel owner decides on how his or her channel is run; you exercise your choice to go with it - or you leave, voluntarily or otherwise!

The more desperately sad members of society have even been known to resort to creating 'copycat' channels to 'disrupt' original ones. However, this is in breach of Zello's own Ts and Cs and such groups usually get taken out by Zello themselves as a final line of moderation.

If you are interested, you can read more of my thoughts on moderation (from a year or two back) at this web address:

<https://tinyurl.com/yc8pch4z>

ZRB across Social Media...

Back to our story – ZRB uses various modes of Social Media hand-in-glove with Zello. The Facebook page and Zello channel have now been supplemented by a website, complete with a contact form so that potential new users can get in touch or just ask questions. There is also a Telegram chat group and



4

more recently a Forum.

Now one might think of a Forum as a slightly outdated form of social media these days, but Filip tells me that things like 'tips and tricks' are a far easier way to search for (and more importantly, to find!) in a forum-based environment, whereas Facebook is proving better for time-limited messages that are transient.

To be fair, how often do we perform a search on Facebook? Point taken!

A Community of Like-Minded Enthusiasts

Concerning the way the users interact, Filip explains... "We try to be as complete as possible, covering as many bases as our users want. At this stage, we have one main channel, rather than a suite of them."

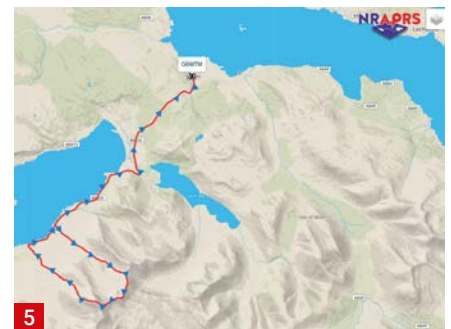
"We do have a second channel, but that's only open for special events. All conversations are done in one single channel. The more channels that exist, the harder it is for the moderators. This single-channel approach works very well but this is the result of all our users working together. I believe that our simple set of rules helps with this."

"In our case, it's not only about Zello. For example, 2 mods are also experimenting with making small movies that come along with topics in our Sunday net. In the future, it may be possible to have a live stream when we have meetings."

"All this would never be possible without a good team of moderators AND users by the way. And of course, NRAPRS is also a nice addition."

Network Radio Automatic Position Reporting System

I'm glad Filip mentioned this - the whole concept of NRAPRS started in the ZRB channel! (Fig. 3). This is also the home of the system, even though ZRB co-operates fully with the Network Radios channel suite in the UK.



5

Fig. 1: The Benelux Countries. Fig.2: The ZRB Homepage. Fig. 3: A ZRB Moderator – definitely in Belgium! Fig. 4: The NRAPRS Logo Fig. 5: An NRAPRS Track from a hike in Scotland.

There are even some emergency services that have special callsigns so they can access the map if needed.

Marc Huyghebaert ON3PHP, one of the moderators at ZRB, is the creator of NRAPRS. It began as a very small project just to track a few devices.

However, it has grown into a complete system to give Network users something very similar to the amateur radio APRS system.

<http://aprs.fi>

However, NRAPRS has been designed to be easier to set up and use. You can see a track from Mike G6WMT here (Fig. 5) to appreciate just how clear and accurate the positioning is.

Marc created NRAPRS initially just for fun and in his own spare time.

However, as Filip notes, it has now grown to give ZRB and NR users more of a complete positioning system, just as Radio Amateurs have. It should be noted however that NRAPRS is *only* meant for Network Radio users, whether you are a Ham already or not!

A full explanation of how to get on and use NRAPRS can be found here:



Fig. 6: A Telo TE590 – Clearly in Belgium!
Fig. 7: A Very Belgian Network Radio.

constitute only a small market?). Here, the whole Network Radio scene is still quite new and appears to be growing rapidly. Filip continued: *“Many people love this way of playing with the different aspects and our systems and get new users daily.”*

Thirdly, licensed Hams in the Low Countries generally see the ZRB channel as just ‘another’ mode, rather than a competitor and ‘not real radio’, while unlicensed users can join in with the licensed people and communicate at the same level. As Fil noted, *“...there are no borders in ZRB”* (Fig. 7).

Easy to Access, Easy to Use

Filip also pointed out that all you need to join in (and this goes for all countries of course!) is a device of some kind, a free app (Zello) and, optionally, a SIM card if that device needs to connect to the cell network rather than Wi-Fi.

For many people, this is so very easy to do and lowers the barrier to entry to the communications hobby. Isn’t that something that we should all welcome?

Finally, Filip points out that licensed hams who for various reasons, can’t erect antennas or get on the air in the ‘traditional’ way, really enjoy the channel.

Moreover, unlicensed enthusiasts also feel part of the group as they can join in without the hassle of having to do a course and take an exam.

Nonetheless, Filip (who, it should be noted, is not a licensed amateur himself and has no aspirations in that direction) points out that there are quite a few ZRB users who become so interested in the communications hobby, that they have been motivated to go and find a course to become a licensed Ham!



RADIO ASTRONOMY. IO, EUROPE, AND JUPITER’S MAGNETOSPHERE:

Jupiter’s two innermost moons, Io, and Europa play a central role in interacting with the planet’s magnetosphere. This is the vast region where Jupiter’s magnetic field influences a swirling mass of charged particles surrounding the planet and its many moons. In a new review, Bagenal and Dols pull together decades of research on this intricate system. While prior reviews have focused on either Io’s or Europa’s space environment alone, this paper addresses both in harmony. It draws on data from the early Voyager missions, later flybys by other spacecraft, the latest Earth-based observations, innovative computational modelling efforts, and more. The researchers paint a detailed picture of what is known about the two moons’ atmospheres. While Io’s is thought to consist mostly of sulphur dioxide, Europa’s is mostly oxygen. Each moon’s atmosphere interacts with the magnetosphere’s charged particles, known as plasma, causing clouds of neutral atoms to escape from the atmospheres. In turn, these neutral clouds serve as the primary source of new plasma in Jupiter’s magnetosphere: Existing plasma electrons ionize neutral atoms, transforming them into charged plasma particles. Read more here: (Source: Journal of Geophysical Research)

<https://tinyurl.com/yd6s3ahj>
<https://tinyurl.com/ycms2pbs>

MEDIUM WAVE INFO NEWS: Australia: CROCMEDIA announced it would launch three ‘pop-up’ radio stations to be known as SENTrack to support Australia’s racing, harness and greyhound industries, while those sports are still able to operate under COVID-19 guidelines. SENTrack will launch in Melbourne on 1377SEN+; in Perth on the 657AM frequency, and in Wollongong, NSW, on 1575 AM. It will commence broadcasting from tomorrow, and stay on as long as the three codes keep racing in the uncertain months ahead.

<https://mediumwave.info/news.html>

www.zelloradiobenelux.be

The information is in Dutch (Hint: use Google Translate!)

Why So Much interest?

I had to question Filip on why there seems so much interest in ZRB. He felt there were a few reasons; the first being that Network Radio devices have finally become available in Europe over the last couple of years.

Filip thinks that was even the catalyst. He said, *“Before these devices were here, I had been on Zello for years with only a handful of people.”* This is not an uncommon observation in the UK too.

I often come across people who have had Zello on the phones for years and hardly used it (Fig.6).

Filip also feels the Benelux countries lag a little bit behind others (perhaps because they

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What To Listen to in International Radio This Month

I consume an inordinate amount of radio content, hearing it live and on-demand, on FM, short wave and medium wave, Mixcloud and DAB, podcasts, radio station websites, plus in myriad other ways. Programme content comes in many forms but the trickiest part can be unearthing good quality content amidst the plethora of audio choices.

From this month, I plan to share, in a more structured way, some of the interesting and diverse broadcasts that I have heard and that you might want to tune into or stream.

What follows is my list of recommendations for June 2020.

Sonorific Six

We start with a music programme on a new radio station that started in March. Radio Northern Europe International's *This is a Music Show* is an hour-long, weekly broadcast on 6070kHz (Fig. 2). Check the Radio Northern Europe website for times. Roseanna was the programme host and, true to the station's aim, she played music played from all

In a slight change to the structure and content of her column, **Chrissy Brand** recommends six key programmes from the world of radio and audio.

over Scandinavia, from Iceland to Finland, the Republic of Ireland and the UK.

It opened my ears to some uplifting, evocative and entrancing pop and dance music. Past programmes can also be heard on Mixcloud and at the station website. The station received over 40 reception reports, from Canada to Japan, for its first broadcast. There was also an MFSK 64 section to decode. You can send reports by email.

qsl@rnei.org
<https://rnei.org>

The next on my music list *The London Ear*. This programme is curated by ghostwriter and critic Ben Thompson, on London arts station Resonance 104.4 FM, possibly the most experimental of the UK's community radio stations? The programme description states that Ben, "presents a DFS Algonquin Table for the post-thought era."

The first programme I heard, in early March, included a visit from Ben Ayres and Tjinder Singh of *Cornershop* and, along with some fine and varied music, touched

Fig. 1: Happy times in the Rockies and listening to Canadian radio. Fig. 2: Radio Northern Europe International, a welcome newcomer to short wave this year. Fig. 3: Radio Codogno provided support in northern Italy. Fig. 4: The Radio Zona Rossa programme on the air. Fig. 5: This IRRS QSL card carries a strong message.

on diverse thoughts, from Allen Ginsberg's home decor to Harold McNair's hair. Have a listen if you fancy a mixture of good-humoured and intelligent chat, interspersed with some uplifting, lesser-played music.

<https://tinyurl.com/ya6p7286>

The *Dr Karl Podcast* is a weekly programme on ABC Triple J Radio in Australia. Dr Karl Kruszelnicki, Linda Marigliano and their scientific guests present an "injection of science, myth-bashing and answers."

Fast-paced and humorous, this show perfectly balances being both informative and highly entertaining. Dr Karl's infectious enthusiasm spills out, as he shares his vast wealth of knowledge in a programme that I imagine appeals to a very broad listenership. If Dr Karl sounds familiar, that will be because he also appears on BBC Radio 5 Live's overnight slot in the *5 Live Science* programme. This is also available as a podcast.

To whet your appetite, some of the topics covered in the *Dr Karl Podcast* this year so far have been brain-freeze, life on Mars, static electricity, iced coffee, mosquitoes, fat birds, surfing, and holding in farts! Despite sounding quite youthful, Karl Kruszelnicki was born in 1948 in Sweden, to Polish parents. The family moved to Sweden when Karl was a toddler. Check out his website to see books he has authored, appearances on ABC radio and more.

<https://tinyurl.com/y7r7lrrc>
<https://drkarl.com>

Co-presenter of the *Dr Karl Podcast*, Linda Marigliano, also has an interesting background. The 35-year-old is based in Sydney and has Italian and Chinese-Malaysian (*Peranakan*) parentage. She is a radio announcer on independent youth music station FBI Radio as well as Triple J. Linda is also a bass guitarist in indie rock band *teenagersintokyo*.

Real Stories

BBC World Service's *The Real Story* is always a good listen, with global experts and decision-makers discussing, debating and analysing a key story. Throughout March, this 48-minute long programme inevitably looked at the impact of



Coronavirus (COVID-19). *How Will it Change Us?* gave some positive examples of how the outbreak can, in time, lead to new perspectives (March 27th).

Previous episodes are available at the BBC World Service website and BBC Sounds, stretching back over several years and many topics, for instance, who controls the River Nile, whether young people can change the world and how the world's languages are dying.

Dr Nora Young presents *Spark* on CBC Radio One. In my view, Canadian radio is the best there is in the English-speaking world (Fig. 1). In *Spark*, listeners are guided through, "digital life by connecting you to fresh ideas in surprising ways." This weekly 55-minute long programme covers a different topic each time.

Nora, with her warm and mellifluous tones, has covered *Canada, Communications and a New Decade* (Episode 467), *Technology and Oppression* (Episode 457), and *Disability Design* (Episode 453). You may not know what the next week's subject matter will be but it is guaranteed to be worth tuning in for.

www.cbc.ca/radio/spark

I often enjoy spoken-word radio and audio that verges on the weird and wonderful. The recently-launched *Edge of Belief* podcast certainly delivers this. It consists of about an hour of unlikely and bizarre news stories from across the planet. In the first episode, rest assured that China is not sending a giant duck army to defeat Pakistan's locusts.

While, in Episode 4, listen to the rumours



about four British cryptids (species not known to science): the Shug Monkey, the Bat Beast of Kent, the Felixstowe Fire Demon and the Rat Man of Southend.

www.edgeofbelief.com

Radio Response

The international and domestic radio scene was quick to respond to Coronavirus (COVID-19), as would be expected. This was good in some cases, bad in others.

Bad in the case of Radio Canada International, All India Radio and RAE Argentina al Mundo (previously known as Radiodifusión Argentina al Exterior or RAE). These were amongst the broadcasters who suspended some of their programmes. Radio Canada International's *The Link Online* was paused, although the Shortwave Service continued to air repeats of previous programmes from Kall in Germany, on 6005kHz at 1030 UTC.

www.rcinet.ca/en/podcasts

Radio Exterior de España also suspended its regular short wave programming and carried RNE Radio 1 instead of its English language programme.

In the USA, Radio Ink.com reported on some collaboration in troubled times. Seattle news station KIRO partnered with music stations KQMV, KRWM and KNUC to air its hourly local Coronavirus updates. In exchange, KIRO encouraged listeners to listen to music radio as a relaxing distraction from the constant bad news.

A new station in The Netherlands, called Radio Corona, came to the internet. It is on weekdays from 0600 to 1600 UTC, including

IRRS QSL card
2020
coronavirus
pandemic

Stay home, stay safe:
Listen to Shortwave

5

a nature programme and another for the elderly. Presenters include Astrid de Jong from Dutch station NPO Radio One, with *Day Nurse* and Barry Brand (no relation) with *Fire in the Afternoon*. A different musical genre is featured from noon local time (1000 UTC), in *The Twelve Hour*, such as dixie, jazz and sixties.

www.radiocorona.nl

The BBC World Service and some national BBC stations altered their schedules to cover for staff shortages and the need for staff to work from home. BBC Radio 5 Live temporarily dropped *Up All Night*. Sixty-six-year-old Rhod Sharp has been one of the presenters of the programme for 26 years, usually from his home in Marblehead, Massachusetts, USA. However, Rhod was already planning to leave the show at the end of March, to work on other BBC projects. Look out for Rhod's other new ventures at his website.

www.rhodsharp.com

Italy Calling

Radio Codogno broadcasts from the Italian town of Codogno in Lombardy (Fig. 3). It broadcasts a regular special programme called *Radio Zona Rossa* (Radio Red

Zone), supporting and informing the local community about the latest Coronavirus news. Some of the programmes are also aired on the Radio Zona Rossa Facebook page (Fig. 4).

www.radiocodogno.com

<https://tinyurl.com/y9cee276>

Elisa Oddone reported Radio Zona Rossa, for the Qatari state-funded broadcaster, Al Jazeera. She quoted Pino Pagani, an 82-year old presenter on the station, who explained how elderly listeners who feel even more alone under the quarantine find the radio station comforting.

A message from listener Diego Lazzanoni summed up the feelings of many, when he stated, "*We are here in our homes to fight with our childhood friends and families. Although we are on our knees right now, I feel the silent vicinity of my town. Even if the streets are empty, and no sound is to be heard, I know that when this nightmare is over, we will be partying as we alone know-how. We don't and won't give up.*"

<https://tinyurl.com/w9unn63>

The station I listened to the most in April was the online stream of Milan-based IRRS Nexus. It extended its daily broadcasts

to cover Europe, Africa and Asia and the Pacific with daily news and commentaries on Coronavirus (COVID-19) in English. The station can be heard from 1700 to 2100 UTC on 594kHz. Shortwave frequencies to Europe are 7290kHz at 1700 UTC daily, 9510kHz at 0800 UTC on Saturdays and 0930 UTC on Sundays.

The quality, as well as quantity, of the programme content relayed by IRRS, was impressive. The US programme *Between the Lines* was an interesting listening experience with a progressive stance. It has been a weekly programme since 1991. The WYNC programme *On The Media*, with Brooke Gladstone, was also relayed including a useful look at virus conspiracy theories. Meanwhile, the independent FSN (Feature Story News) news bulletins from London with updates from all around the world were delivered in a nicely measured tone.

In between the news stories, there were some welcome musical interludes, including an uplifting piece of music called *Mavi Mavi* by Pangia, a band playing the oud and specialising in Middle Eastern music.

IRRS also issued a special Coronavirus e-QSL card (Fig. 5) and has been streaming

Short Wave Logs

UTC	kHz	Station and Location	Language	SINPO	Initials
0405	6125	TRT Voice of Turkey	English	45544	GS
0410	9700	TRT Voice of Turkey	Turkish	25544	GS
1200	6070	From The Isle Of Music, Rohrbach	English	34333	NT
1230	11945	Reach Beyond, Australia	English	23232	NT
1331	7285	Voice of Vietnam, Hanoi-Sontay	French	45233	LC
1444	15770	Supreme Master TV, via WRMI, Okeechobee	English	45444	LC
1450	11825	TRT Voice of Turkey, Emirler	Turkish	45344	LC
1455	9705	Furosato no Kaze, Paochung //9560	Japanese	45222	LC
1457	9540	FEBA Radio, Tashkent	Hindi	45334	LC
1502	9345	FEBA Radio, Iba	Chinese	44544	LC
1556	7585	Radio Farda, Lampertheim	Persian	45232	LC
1615	9690	Radio Exterior de España	Spanish	45444	OR
1700	7290	IRRS International Radio Relay Station, Milan	English	45454	LC, NT
1830	5915	ZNBC Radio 1, Zambia	Vernacular	23222	OR
1915	7475	Radio Thailand	English	44444	OR
2002	7475	Radio Thailand, Udon-Thani	German	45444	LC
2006	6110	Adventist World Radio, Moosbrunn	Dyula	45555	LC
2012	7280	Voice of Vietnam, Hanoi-Sontay	German	55444	LC
2035	12050	BBC World Service, Ascension Island	English	35333	LC, OR
2051	7475	Radio Thailand	Thai	45344	LC
2052	12050	Radio Ndarason, Ascension Island	Kanori	35333	LC
2056	11900	Voice of America, Pinheira	Hausa	35233	LC

Transatlantic Medium Wave Logs

UTC	kHz	Station and Location	Language	SINPO	Initials
590	2242	VOCM, St. John's, NL, Canada	English	32222	SC
680	0402	CFTR, Toronto, ON, Canada	English	22222	SC
700	0510	WLW, Cincinnati, OH, USA	English	32222	SC
730	0400	CKAC, Montreal, QC, Canada	French	32332	SC
750	0057	CBGY, Bonavista Bay, NL, Canada	English	32222	SC
769	0055	WJR, Detroit, MI, USA	English	32222	SC
930	0056	CJYQ, St. John's, NL, Canada	English	33333	SC
1010	2358	CFRB, Toronto, ON, Canada	English	32222	SC
1010	0400	WINS, New York, NY, USA	English	22222	SC
1100	0401	WTAM, Cleveland, OH, USA	English	22222	SC
1130	0058	WBBR, New York, NY, USA	English	32222	SC

online for 24 hours a day during the crisis.

<https://btionline.org>

<https://nexus.org/mp3>

Readers' Reports

Lionel Clyne logged IRRS on 7290kHz broadcasting and caught the tail-end of a discussion about the lack of short wave broadcasting in Australia. Lionel summarised, "There has been a lot of agitation within Australia to re-introduce a short wave service because of the reach and resilience of this medium, especially in times of emergency. I heard during this discussion that New Zealand had been openly critical of the Australian shut-down

and has advocated a reopening due to the mutually beneficial effect it could have in that region."

Graham Smith noted that The Mighty KBC had moved back to the frequency of 9925kHz for the summer period. He also wrote that Radio Timișoara in Romania on 630kHz might be heard now that BBC Three Counties Radio has left medium wave. Another bonus was that French station Bretagne 5 is back to full power on 1593kHz.

Graham heard that Australia's biggest radio programme *The Kyle and Jackie Show*, on KIIS 106.5 in Sydney, gave away toilet

LOG CONTRIBUTORS: GS = Graham Smith, Bury St. Edmunds, Suffolk. Sony ICF-SW600 and a telescopic antenna. LC = Lionel Clyne, Faversham, Kent. Lowe HF-150 and a random wire or homemade loop. NT = Nicky Tesla, Sheffield. XHDATA-D808. OR = Owen Rutherford, London. Lowe HF-150 and a Wellbrook loop. SC = Scott Caldwell, Warrington, Cheshire. AOR 7030, Lowe HF225, Sony ICF2001d, Wellbrook Loop, Realistic DX 394, SDR Duo.

paper as a prize in a competition called *Beat the Bog*. You can hear a game of it online and, should you wish to listen regularly, check out the KIIS website.

<https://soundcloud.com/radiowereld-2019>
<https://tinyurl.com/y7lgwy9a>

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CDS-P Licenses and Emergency Warning Functionality

Kevin Ryan

kevin@kpr-web.co.uk

Kevin Ryan reviews the current Ofcom plans for small-scale DAB, reports on the A20 DRM schedules, looks at the digital Emergency Warning Service and outlines some of the changes at DAB stations in the UK.

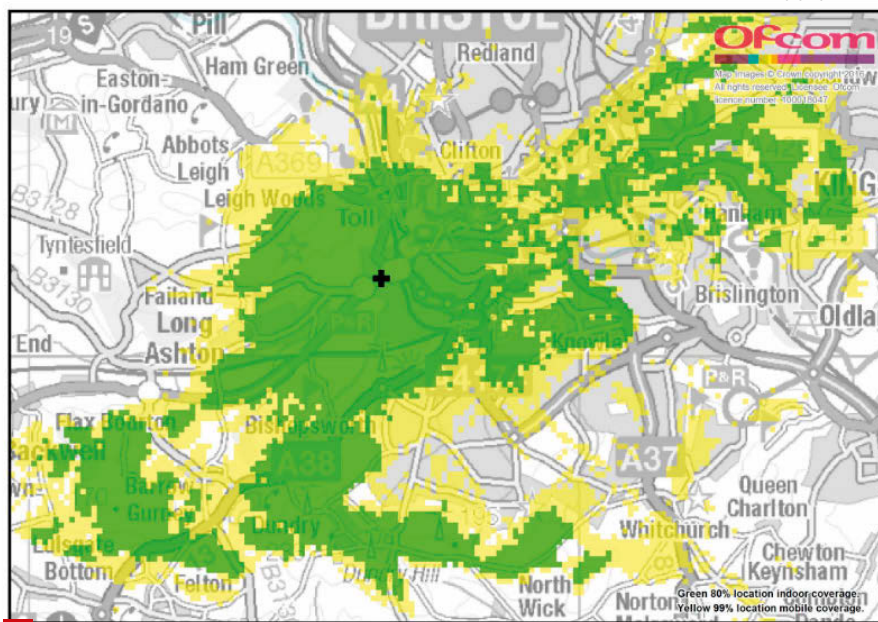
Ofcom has created a new category of licence called Community Digital Sound Programme (C-DSP). It is for new or existing community radio stations wishing to broadcast on small-scale DAB (minimux) or a local multiplex service. These licences will only be for not-for-profit groups, and they will remain in force for an indefinite period. Groups will only be able to apply for a C-DSP licence once Ofcom has invited applications for the small-scale DAB (SSD) multiplex, which the proposed C-DSP service will use.

New SSD Multiplexes

Ofcom will advertise licences for small-scale DAB in batches that will either comprise licences for services in different parts of the UK (Round 1) or a specific region (Round 2 in the North West of England). For example, the proposed Round 1 will be for 25 areas across the UK. Picking a few from the list gives places like the Isles of Scilly, Kings Lynn, Welsh Valleys, Birmingham (North & South), Leeds and Bradford, Tynemouth and South Shields, Edinburgh and Londonderry.

Round 1 will include five of the current trial multiplex areas, which I understand to be Birmingham, Bristol, Cambridge, Norwich and Glasgow. It looks like Birmingham and Bristol (Fig. 1) will have two minimuxes, covering different parts of the cities. Manchester is included in Round 2. Ofcom extended the licences for ten trial small-scale DAB multiplexes once again until the end of 2021. Besides, a former clause stipulating that Ofcom could terminate any multiplex licence with 30 days' notice, has now been removed.

Round 3 will be nationwide, and similar to Round 1. The licensing for multiplex areas in the South East of England will be



1 Trial small scale DAB trial predicted coverage. April 2016.

in Round 4 because Ofcom needs a full international agreement to use spectrum in that part of the UK. Ofcom suggests that there will be a further four rounds, which, I suspect, will be nationwide. Each licensing round will last for nine months; Round 1 is likely to complete in February 2021 and Round 2 in December 2021.

Protecting Local DAB

With a few exceptions, Ofcom decided to apply a 40% limit on the population of a local multiplex that can be covered by an overlapping small-scale multiplex. There may be a very small number of cases where the 40% limit will be waived, so that an area can be served by a single small-scale radio multiplex service, instead of covering it with two or more multiplexes. Ofcom cites Aberdeen. Here, a small area encompassing the city itself accounts for an exceptionally high percentage of the total population of the geographically much larger Aberdeen local radio multiplex service.

Technical Issues

Multiplex operators have to reserve capacity of 144kb/s (based on three C-DSP services each using 48kb/s either in DAB+ or

EWf for Digital Radio Unique Benefits for Information Dissemination

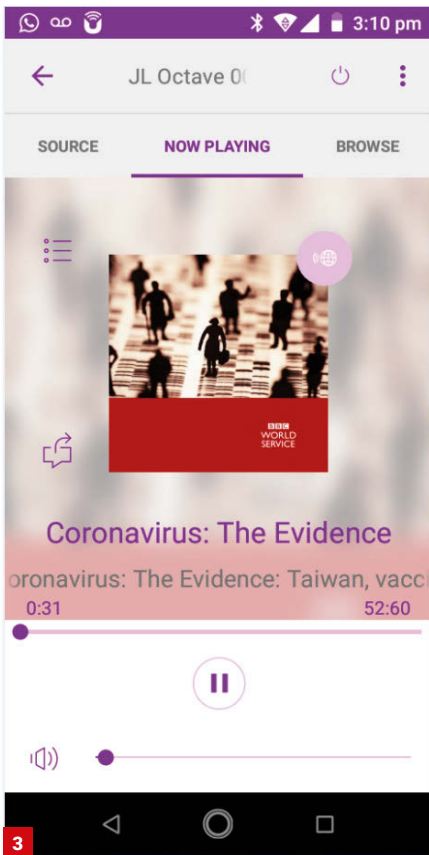


- Digital Radio has EWf – Emergency Warning Functionality – as default feature of the standard:
 - Alarm signalling sent to receivers
 - Automatic station re-tuning + Automatic receiver switch-on (opt.)
 - Visual signalling + volume increase
 - Emergency program with audio + multilingual text

2

DAB) solely for the broadcast of C-DSP services, and this capacity cannot be allocated to other programme services, not even on an interim basis. Even if the multiplex has no C-DSP services, it must keep 144kb/s of capacity empty and ready for use at all times. Where community stations opt to use less than their allocated 48kb/s capacity, any spare capacity must be kept free.

Ofcom proposes to use six frequency 'blocks' (7D, 8A, 8B, 9A, 9B, 9C) from the VHF Band III, sub-band 2 range and will possibly use blocks 10B to 12D of VHF Band III, sub-band 3 to meet local demand. This sub-band 3 spectrum is currently used by existing local and national radio multiplex services, though some blocks are unused in



certain geographic areas.

Ofcom is planning to use a minimum predicted field strength level of 63 dBµV/m to define both indoor and mobile reception. The transmitted signals will be vertically polarized, and main transmitters (above 50W Effective Radiated Power, ERP) will have to comply with international standards on filtering the output signal, to minimize adjacent channel interference. Below 50W, it is expected to be used for infill-transmitters, Ofcom may allow the use of a less rigorous standard because the resultant interference will be low-level.

UK DAB Updates

Global has closed Smooth Extra & Heart Extra after a decade of broadcasting and replaced them with Smooth UK & Heart UK respectively. The content on these 'Extra' variants gradually overlapped so much with the London-branded stations, that Global decided to use their slots on the D1 multiplex to broadcast them nationally in DAB+. Capital UK is now using DAB+. The spare capacity was quickly used by Smooth Chill (also on the London 1 multiplex for the moment). The multiplex is now at capacity until another service switches to DAB+.

Regarding loveSPORT



The postponement of so many sporting events forced loveSPORT to make significant changes to its business. The dedicated service for London closed in early April, and when I tuned into the national service it sounded more like a news channel. Their slogan was "loveSPORT bringing you the lockdown lockdown during this corona crisis".

The BBC Sounds TV App

The BBC Sounds app started rolling out on Virgin Media and YouView devices (only Humax boxes so far) and including some Sony and Samsung TVs in April 2020. The app will provide access to live and on-demand radio from the BBC's 18 national and 40 local stations, in addition to music mixes and podcasts.

DAB EWF

Built into DAB and DRM is an emergency warning (EW) option to trigger either a siren (EWS) or to interrupt/activate receivers (EWF, where 'F' is for 'functionality') to relay audio service messages and text from the authorities. The coverage can be local, regional or national. I've only read of this in the DAB and DRM specifications. Austria implemented this functionality in mid-March 2020 on the Vienna multiplex, because of the COVID-19 virus.

EWF uses the Announcement feature in DAB/DRM that allows a listener to be temporarily redirected from the currently selected audio service to another audio service that provides the notice. Geographic 'flags' specify how widespread the alerts should be.

EWF (Fig. 2) is the advanced version of the Alarm Announcement function that I don't think is mandatory in DAB+ receivers for use in the UK. The last specification on this was issued in 2013. It required that in-car receivers should support just the sim-

ple traffic announcement. When the City Mux in Vienna started in July 2019, I didn't spot that it had an Emergency Warning service in German in the list of DAB+ services. In March 2020, three more EW services were added in English, Turkish and Romanian. There was also a multilingual service in three Balkan languages. The messages are similar to those broadcast in the UK. I am not sure if these EW messages actually interrupt the receivers or just operate as information channels. There are interesting snippets on information on several websites. <https://tinyurl.com/yb8sbv52> <https://dabplus.at/empfang> <https://www.citymux.at/ensemble> <http://11c.radiotechnikum.at>

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<https://tinyurl.com/yb8sbv52>

<https://dabplus.at/empfang>

<https://www.citymux.at/ensemble>

The web-based monitoring system lists all the channels, but my PC refused to open the contents of the m3u files labelling it 'unsafe'. You can look at the Programme Associated Data (PAD) and see the labels that would appear on the receivers.

<http://11c.radiotechnikum.at>

Frontier Smartradio

The frontier silicon portal for internet radio stations is available on the web. I hadn't logged in for a while and the stored URL and password in Google Chrome

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Fig. 5: The BBC World Service has a Journaline service in its two broadcasts, and DReaM is currently the only way to decode it.

seemed to be out of date. I was successful with this URL.

<https://smartradio.frontier-nuvola.net>

My John Lewis Octave DAB/Internet radio had picked up the range of podcasts added automatically by Frontier Silicon. Under a menu item called 'COVID-19', I found podcasts from the BBC, ITV News, the Guardian and LBC (Fig. 3).

The COVID-19 menu will only appear in countries that have COVID-19 Podcasts. These are currently Australia, Austria, Brazil, Canada, China, Denmark, France, Ireland, Italy, Mexico, New Zealand, Norway, Portugal, Spain, Switzerland, The Netherlands, UK, and the United States.

Moreover, DAB radio stations are being created to inform people of updates to the COVID-19 situation; for example, Health Info DAB Radio in the UK.

[See also the RadioUser News and Products section this month – Ed.]

Frontier Silicon-based digital radios will automatically show any new DAB stations without the user needing to perform a new scan. These radios mostly use the Venice 6.5 FS2026-5 module that includes Internet radio, DLNA, network streaming, UPnP, DAB/DAB+ and FM-RDS products. Venice 6.5 streams radio and music files in a variety of formats including AAC, AAC+, MP3, WAV, WMA, and FLAC.

Netherlands

The Telecom Agency (AT) licensed the first local radio stations to broadcast on DAB + in April. However, these are temporary licenses, valid until the end of August 2022. There will be 22 multiplexes for this temporary distribution. There is a lot of information in different places on the internet including coverage maps and the Band III channels for each area. Multiplexes will use channels from block 5 to block 12.



<https://tinyurl.com/ycazv3sn>
<https://tinyurl.com/yccot9gq>
<https://tinyurl.com/y8qz64ao>

All India Radio (AIR)

All India Radio cancelled all their international broadcasts on short wave that included their DRM broadcasts to Europe and East Asia. The External Services Division (ESD) launched a new YouTube service at roughly the same time with a 30-minute news bulletin and features in English that has a link on their ESD website. The YouTube (Fig. 4) service may be as a result of the COVID-19 crisis but it may also seal the fate of these very welcome DRM broadcasts.

<http://airworldservice.org/english>

AIR also cancelled all pure DRM mode broadcasts within India on medium wave, thus allowing only hybrid mode (analogue and digital) transmissions. This change only applied to the transmitters with set daily periods of pure DRM and would now have to run in the usual hybrid mode all day. The change did not affect transmitters, such as Delhi A on 1368kHz, which always used the pure DRM mode only.

DRM Highlights

The A20 broadcasting period runs until the end of October when the B20 season starts. WINB introduced a new frequency of 15750kHz for the week-

day DRM tests to Europe from 1100 to 1700 UTC. I also logged the station before 1100 on 9980kHz, in its standard DRM configuration.

China National Radio's domestic service relay is between 2025 and 1805 UTC from Beijing on 6030kHz, and from several other transmitter sites between 2200 and 1100 UTC, using frequencies in many shortwave bands. I monitored 11695 and 9870kHz just before 0800 UTC and noticed that both frequencies were using the old-style AAC encoding again.

KTWR reduced their DRM schedule to just two broadcasts. You can check its current schedule on their blog that is usually up-to-date.

<http://ktwrdrm.blogspot.com>

RNZI registered their usual range of frequencies. It is best to check the website for the latest schedule, which can be subject to changes at short notice.

Radio Kuwait registered their usual range of frequencies. However, the only active DRM transmissions are the English service to Asia from 0500-0800 UTC on 11970kHz, and the Arabic service to Europe on 15110kHz from 0925 to 1345 UTC. I can't understand why the station is not broadcasting their evening service to Europe from 1800 UTC on 15540kHz (11995kHz would be a better choice) when they have both a working transmitter and DRM encoder.

BBCWS continues with its one-hour transmissions to Europe (0500 UTC/3955kHz) and Asia (0800 UTC/15620kHz). The BBCSWS is currently the only station to broadcast a *Journaline* text service (Fig. 5).

Reception of Radio Romania International (RRI) is as frustrating as ever because the broadcaster insists on using the more error-prone 64-QAM for the audio service.

By contrast, China uses the more robust 16-QAM system. Therefore, the Chinese DRM signals are less prone to noise and interference.

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Time Signals: Thoughts on Time, Frequency & Propagation (Part II)

Georg Wiessala
wiessala@hotmail.com

Ruth Belville (1854-1943, Fig. 1) was, arguably, the first real 'time signal' in Britain. A human time signal. Ruth was the daughter of John Henry Belville, and, in 1834, John had been put in charge of implementing a project to distribute Greenwich Mean Time (GMT) to the world. John took his responsibilities very seriously and embarked on regular trips to all the main chronometer, watch- and clockmakers in London (67 of them, at one time) bringing to bustling Victorian London the correct time from Greenwich – which became legal time for Great Britain in 1880.

His wife Maria continued until the *Jack the Ripper* murders put an end to her London walks. Her daughter, Ruth resumed the same work until she passed on in 1899. She used a *John Arnold Chronometer* ('No. 485', Fig. 2). Ruth Belville became known as the *Greenwich Time Lady* (de Carle, 1947: 107/8; Rooney, 2008). She retired in 1940, aged 86 when World War Two made it impossible for her to continue walking the streets safely.

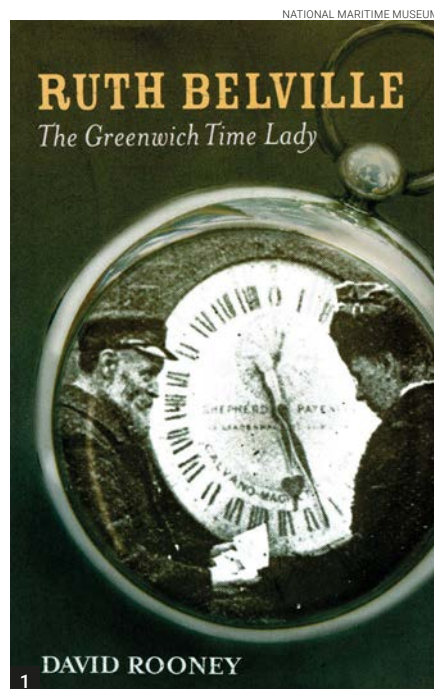
<https://tinyurl.com/y9gmvhwy>

This era also saw the beginnings of an electric (telegraph) time signal from Greenwich, distributed via the Post Office. While public clocks had once been managed by a plethora of private companies, from 1870, the Post Office took over control of telegraph companies and the distribution of time. The *1884 Meridian Conference* (Rooney, 2008: 64/5) created the *Prime Meridian* and *Universal Time*. In the same period, the anarchist Martial Bourdin's bomb in 1894 provided the model for Joseph Conrad's novel *The Secret Agent*.

There is a direct line from Ruth Belville's time to Standard Time and Frequency Transmissions (STFT), to the Rugby Radio Station (from 1926, Hancock, 2017) and the more modern STFT stations, such as Prangins, Anthorn and Mainflingen [Frankfurt], Buenos Aires and Tokyo.

Miss Ethel May Cain (1909-1996, Fig. 3; Rooney, 2008, Ch. 8) was, arguably, no less

The editor takes a deeper look into the links between radio and timekeeping, taking in Standard Time and Frequency (STF) Transmissions, the International Beacon Network, and a radio station that plays for 1,000 years.



famous than Ruth Belville.

She had a marvellous voice – one that, it seems, men, adored. Therefore, she was chosen as the voice of 'TIM', the *Speaking Clock*, following a visit of a British Post Office Delegation to Paris in 1933. From 1936 to 1963, TIM (short for 'TIME', the number to call on the alpha-numeric telephone dials of this era) was available to subscribers, its last three 'dots' were GMT. Ethel, by the way, had to enunciate passages from Milton's *L'Allegro*, prose from *Treasure Island*, and sentences relevant to the job, during her 'golden-voice' competition.

<https://tinyurl.com/y9mal9wp>

It was in this same period, let us not forget – and merely three years after the discoveries of Guglielmo Marconi (1874-1937) – that Howard Grubb hit upon the



idea to transmit time signals on those new-fangled Hertzian waves (Schiffhauer, *RadioUser* October 2018: 40).

Standard Time and Frequency Transmissions (STFT)

In this period and shortly after (from around 1915) even the Eiffel Tower was used as a clock. There is a wonderful resource on *Radiotelegraphic Time and Weather Signals Transmitted from the Eiffel Tower, and Their Reception*, which will give you a great introduction to the time measuring technology at the time.

<https://tinyurl.com/y9f3qcbk>

Moving forward in time, via Louis Essen (1908-1997, see reading list) and Jack Parry, and their first NPL atomic clock of 1955, and the SI definition of a 'second' (9,192,631,770 oscillations of

For the latest news and product reviews, visit www.radioenthusiast.co.uk

Fig. 1: David Rooney's 2008 book about the 'Greenwich Time Lady'.

Fig. 2: The John Arnold Chronometer.

Fig. 3: Ethel Cain, the 'Golden Voice' of TIM, the Speaking Clock.

Fig. 4: Azimuthal map of the IBP beacons.

Fig. 5: The MFJ DX Beacon Monitor in Action in the Editor's Shack. Fig. 6: The main FAROS software suite interface.

a caesium-133 atom), the time signal station, in Prangins (Switzerland), like others since, transmitted from 1966 to 2011, broadcasting on the VLF frequency of 75kHz (The VLF band ranges from 3 to 30kHz).

<https://tinyurl.com/y9klm7xh>

Transmissions by other time signal stations have fluctuated, for technical, economic, and political reasons, and there are few reliable lists today. Apart from the WRTH, and the books published by Jörg Klingenfuss, I have found that lists of time signal stations are neither always reasonably up-to-date, nor accurate.

The list on *Standard Frequency and Time Signal Stations on Longwave And Shortwave*, formerly provided by Klaus Betke, DL4BBL, like other compilations, is of some historical interest, but some stations listed there remain in service.

You might also wish to check out the latest publications of the International Telecommunications Union (ITU) and the *Meinberg List* at the following URLs:

<https://www.itu.int/rec/R-REC-TF.768/en>
<https://tinyurl.com/zkuano6>

The NCDXF/IARU International Beacon Network

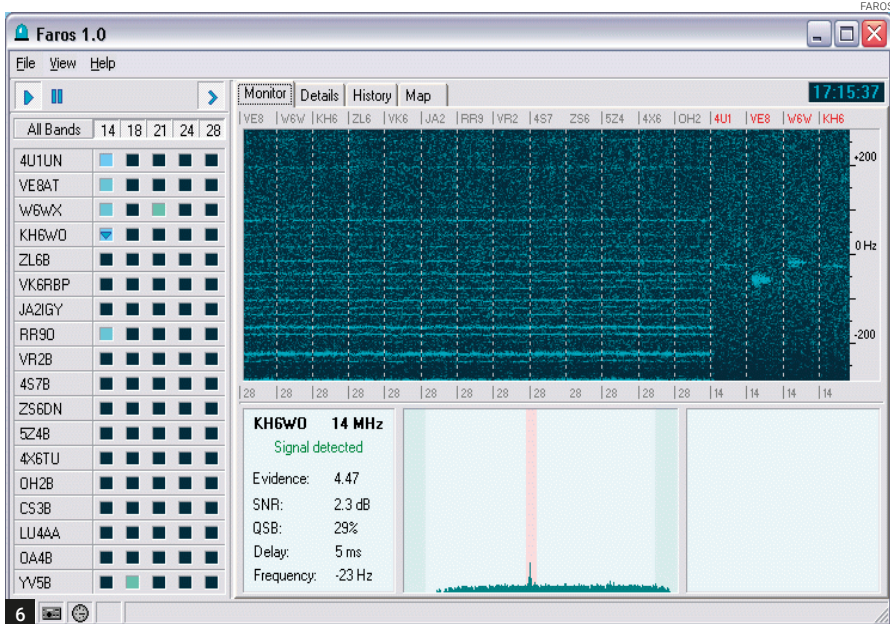
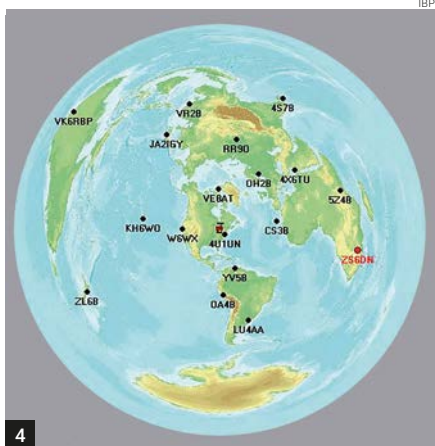
However, few schemes illustrate the intimate relationship between radio signals, time and HF propagation forecasting as well as the International Beacon Network (IBP), in operation since 1979. This CW network is run by the Northern California DX Foundation, in conjunction with the International Amateur Radio Union (IARU; Reitz, 2019).

<https://www.ncdxf.org/beacon/index.html>

<https://www.ncdxf.org/index.html>

<http://www.iaru.org>

The 18 beacons in this network are shown in Table 1 (see also Fig. 4). They are set to transmit to a fixed schedule. The slots in the table indicate the order of transmission. Each transmission is staggered by 10 seconds so that no two beacons are on the same frequency at the same time. Each beacon once every three minutes in each band, 24/7.



The Beacon Signals

An IBP transmission consists of the callsign of the beacon, sent at 22 wpm (words per minute). This is followed by four one-second dashes ('-'). The callsign (Table 2) and the first dash are sent at 100W, and the remaining dashes are transmitted at 10W, 1W, and 100mW. The letter 'b' is sent, indicating that this is a beacon station. At the end of each 10-second transmission, the beacon steps to the next higher band, and the next beacon in the sequence

begins transmitting. The beacons transmit on 5 frequencies: 14.100, 18.110, 21.150, 24.930, and 28.200MHz, and in a three-minute cycle. A network timetable ensures that no two beacons transmit at the same time on the same frequency, and the accurate timing is shown on the *Beacon Transmission Schedule* page:

<https://tinyurl.com/sdfuo6q>

The idea is that the *more of the beacons you hear, the more open the band is to different parts of the world. The more*

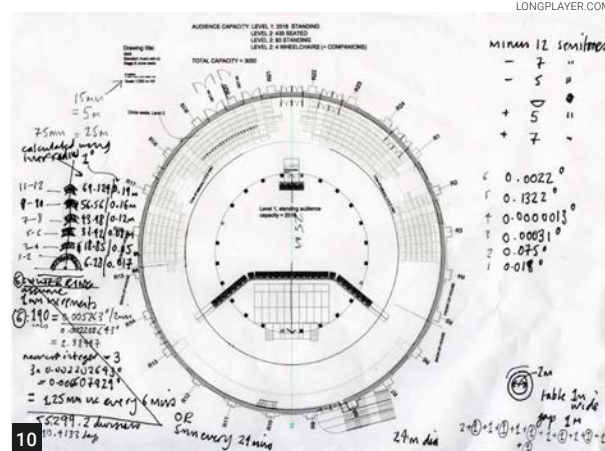


Fig. 7: BAZ Special Ferrite loops LFM 2000-14000/24 and MSF60/HBG75/DCF77.5. Fig. 8: BAZ Special Ferrite loop optimised for the reception of signals from MSF60/HBG75/DCF77.5. Fig. 9: The Russian (and other) VLF time signals stations. Fig. 10: An early concept drawing of Longplayer. Fig. 11: A Prototype of the Clock of the Long Now, at the London Science Museum. Fig. 12: A map of the sound of Big Ben (de Carle, 1947).

to offer a fixed-frequency receiver for one of the IBP frequencies (14.100kHz).

<https://www.pongrance.com>

Alternatively, you wish to build the *BeaClock Project* ('Tick-Tack-Quarzuhr', in German) here:

<https://tinyurl.com/udqo9ua>

My MFJ-890 DX Beacon Monitor, from Waters and Stanton, is one of my favourite pieces of equipment. Sitting next to my Lowe HF-250 (and an HF125, currently on loan from Scott Caldwell), I have it running most days (Fig. 5).

www.wsplc.com

There is something relaxing about watching the LEDs span the globe, each in its proper turn. Regular, well, as clockwork. The MFJ Beacon Clock has a built-in WWVB atomic clock receiver to provide synchronization with the GPS-synchronized beacons. For the UK, switching some of the internal jumpers in the monitor aligns it to MSF at 60kHz (JMP1 to 'H'; JMP2 to 'L', and JMP3 to 'L'). You can also sync the monitor by hand.

FAROS - A Radio Lighthouse

The Faros 1.4 software suite (Fig. 6) is an automatic NCDXF beacon monitor for radio amateurs, SWLs, HF engineers and other interested parties. It is a nifty piece

of software, which allows you to monitor the beacons in this network automatically. It only requires an audio device set to an exceptionally low level, to perform precise timing measurements, plus showing the signals coming via the usual short part or long path.

<http://www.dxatlas.com/faros>

As an alternative to FAROS, there is the (skightly older) *Beacon Tracker* by W6NEK: <http://www.w6nek.com>

Besides, you can find PA3EWG's Dutch Beacon Monitoring Station at the first URL (below). Some advice by Peter VE3SUN on *How to Create a Faros Beacon Monitoring Web Page* is at the second website.

<https://monitorstation.ccms-best.nl>
<http://faros.ve3sun.com>

Aerials for Best Results

My Wellbrook ALA1530 loop aerial or Moonraker X1-HF Vertical 1-50MHz trapped coil receiving antenna both keep bringing in time signals from long wave to short wave with admirable clarity.

<https://tinyurl.com/y7ftwsk>
<https://www.moonraker.eu>

However, if it is *specifically* time signals that you have an interest in, there are a few specialist aerials you might want to invest in: The *BAZ Spezialantennen* BAZ

'dashes' you hear per beacon, the better the quality of propagation, and the more stable the band. If you hear the 100mW dashes from many beacons, you know the band is wide open.

Therefore, in just three minutes you'll know what band conditions are like worldwide.

The beam heading and distance from your location to the beacons is shown on the *Beacon Azimuthal Map* page (Fig. 4). You can, of course, use web-based SDRs, such as the *KiwiSDR*, *OpenWebRX*, *WebSDR*, and others, for this.

<https://tinyurl.com/v56qxtd>

Receiving the Beacons

Aside from a traditional hardware receiver, web-based SDR, or SDR receiver, you may wish to try other alternatives for catching the beacons. For example, *N3ZI Kits* used

- 1 United Nations 4U1UN New York City FN30as UNRC
- 2 Canada VE8AT Eureka, Nunavut EQ79ax RAC/NARC
- 3 United States W6WX Mt. Umunhum CM97bd NCDXF
- 4 Hawaii KH6RS Maui BL10ts Maui ARC
- 5 New Zealand ZL6B Masterton RE78tw NZART
- 6 Australia VK6RBP Rolystone OF87av WIA
- 7 Japan JA2IGY Mt. Asama PM84jk JARL
- 8 Russia RR9O Novosibirsk NO14kx SRR
- 9 Hong Kong VR2B Hong Kong OL72bg HARTS
- 10 Sri Lanka 4S7B Colombo MJ96wv RSSL
- 11 South Africa ZS6DN Pretoria KG44dc ZS6DN
- 12 Kenya 5Z4B Kariobangi KI88ks ARSK
- 13 Israel 4X6TU Tel Aviv KM72jb IARC
- 14 Finland OH2B Lohja KP20 SRAL
- 15 Madeira CS3B São Jorge IM12mt Delegação Madeira
- 16 Argentina LU4AA Buenos Aires GF05tj RCA
- 17 Peru OA4B Lima FH17mw RCP
- 18 Venezuela YV5B Caracas FJ69cc RCV

Table 1: The 18 NCDXF IBN Beacons.

power-ferrite bar optimised for time signal stations (Fig. 7 and 8) pulls in the signals strongly, as you would expect, have a look at the LFM/ZZ1-N model, or have a special ferrite bar made for you. The firm also makes aerials for many other frequency bands, including HF.

<http://www.spezialantennen.eu>

The aerials made by *Meinberg* are also worth looking at in this context, especially the AW-01 (indoor) and AW-02 (outdoor, Fig. 9) models.

<https://www.meinbergglobal.com>

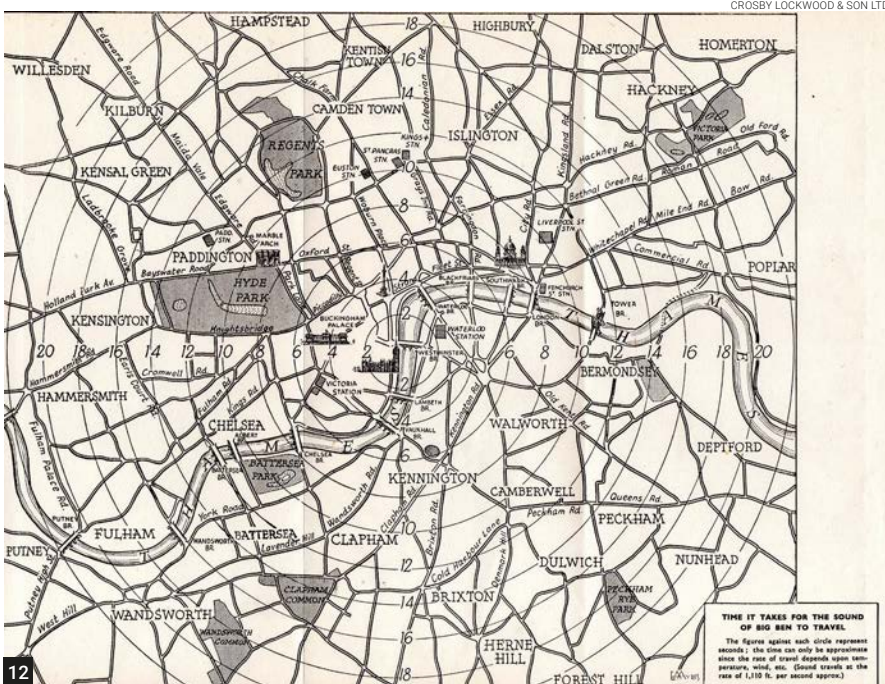
Furthermore, *Grahn Spezialantennen* makes special aerials for radio amateurs and hobby scientists. The LW1 and LW3 modules (LW = 'Langwelle', long wave) cover DCF77 and MSF. There are also magnetic loops and HF aerials.

<https://tinyurl.com/ycxm2cwg>

In the 20-25kHz VLF time signal stations region, covering the 'Beta' time signals emitted from the six transmitters in the west and east of Russia, as well in two of Russia's neighbouring countries (Belarus and Kyrgyzstan, Fig. 9), I have used the VLF loop made and sold by the UK Radio Astronomy Association (UKRAA) with some success. I rely on some Facebook (VLF) Groups, to see when the transmitters are (intermittently) active.



GEORG WIESSALA



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Fig. 13: Levels of five STFT stations from 60 to 198kHz, over 24 hours. Fig. 14: STFT from the CIS, on 25kHz (Both: Nils Schiffhauer).

<https://tinyurl.com/yc75ygsr>

Just as an aside, and related to 'propagation' rather than 'time-measurement' (metrology), you may also wish to try the 10m beacon band (28200 to 28300MHz), which has a lot of regular monitors (Source: Reitz, 2019).

<https://www.qsl.net/wj5o/bcn.htm>
(wj5o@amsat.org)

Longplayer and The Clock of the Long Now

As I finish this article, my DAB radio (Roberts *Stream 107*) plays a most unusual station: *Longplayer* is a time-signal of a quite different kind indeed. It is 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*. Without going into too much detail, it works 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 way that *no combination is repeated* until exactly one thousand 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 DAB digital radio (Fig. 10). I think that its effect is nothing short of mesmerising.

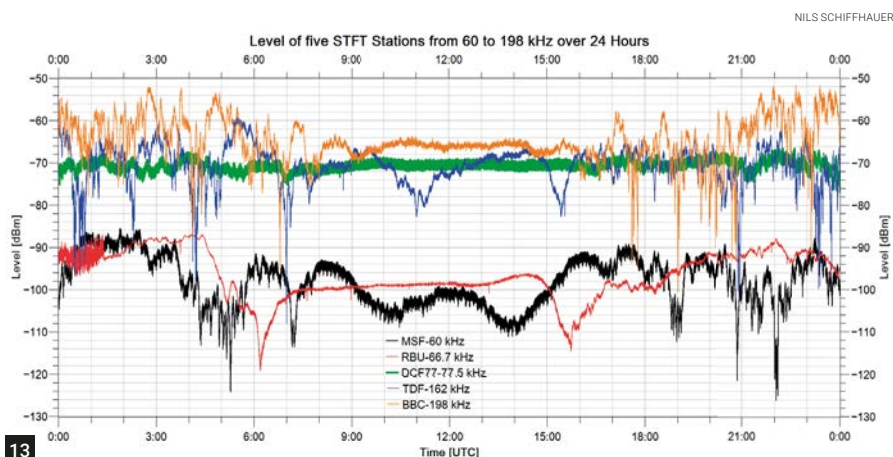
<https://longplayer.org>

<http://www.trinitybuoywharf.com>

<https://www.artangel.org.uk>

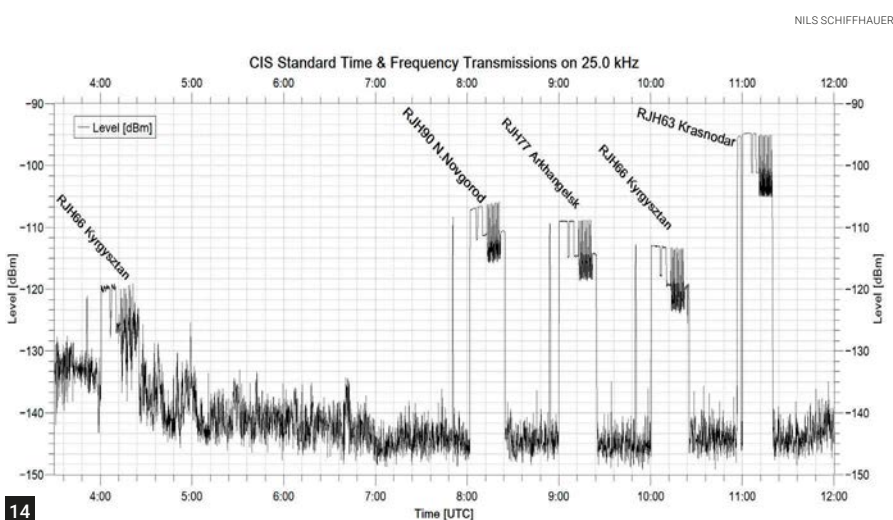
A slice of eternity, indeed. The philosophical concept behind *Longplayer* is, perhaps, similar to the *Clock of the Long Now* (Fig. 11). You can see an early prototype of this truly mind-blowing device at the Science Museum in London. The project is described as a monument scale, multi-millennial, all mechanical clock, and as an 'icon to long-term thinking'.

It is a beautiful mechanism, currently being built into a mountain in Texas, and capable of telling the time accurately for



13

NILS SCHIFFHAUER



14

NILS SCHIFFHAUER

10,000 years. The *Long Now Foundation* is responsible for its upkeep.

<https://tinyurl.com/ydhxugyj>

<http://longnow.org/clock>

Finally, the use of SDR receivers, such as the SDRPlay RSPdx or the AirSpy HF+ Discovery, and the matching software will enable you to make precise screen shots of the Anthon time signal and others.

The image in Fig. 12 shows a beautiful historical map, illustrating the time it took for the chimes of Big Ben to reach parts of

London - at the time (de Carle, 1947).

I hope that my little excursion into radio and time has sharpened your appetite and that you may try and learn more about the metrology, radio, and time beacons. This NPL guide is a good start.

To finish with, Figs. 13 and 14 show 24-hour recordings of some key STFT transmitters, kindly supplied by Nils Schiffhauer. [Warm thanks to Nils Schiffhauer for these, and the advice given on this article; *Vielen Dank* – Ed.]

Further Reading

- Admiralty List of Radio Signals (NP282); see: RadioUser, February 2012: 46-49
- American Radio Relay League (ARRL, 1998) The NCDXF/IARU International Beacon Project (<http://ncdxf.org/beacon/QSTpart3.pdf>)
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Lord Haw-Haw and the Nazis

History still regards William Brooke Joyce (1906 – 1946) as a traitor who actively supported Hitler’s ‘Third Reich’ in its war of aggression against the free world. His legacy is assured in the public consciousness by his frequent portrayals in film scripts, novels, plays, and radio programmes.

Frustratingly for historians, Joyce left few personal papers, making it a difficult task to depict his complex personality. There is even a historical debate on his actual date of birth, numerous sources suggesting the birth year as being 1904 or 1906.

To make matters more complicated, Joyce constantly lied to enhance his public image. Fascist propaganda was not unique to Germany and Joyce. Italy had their own ‘Lord Haw-Haw’ in the form of James Strachey Barnes (1890 – 1955) who broadcasted programmes from the Italian Fascists’ perspective.

Scott Caldwell examines the life and propaganda broadcasting activities of William Joyce, who achieved notoriety as ‘Lord Haw-Haw’ and became the last person in Britain to be executed for High Treason.

Family Life

Joyce was born in New York City on April 26th, 1906 to Anglo/ Irish parents Michael Francis Joyce and Gertrude Emily Brooke. His father’s background was Irish-Catholic, while his mother was English. However, his time in the USA ended after just three years, when his family settled in Galway (Ireland). As a young child, he became fascinated by powerful historical figures, mostly Napoleon Bonaparte and his military campaigns aimed at European

dominance. This interest alienated Joyce from peers who began to perceive him as a ‘strange’ child. On 30th April 1927, Joyce married his first wife, Hazel Kathleen Barr, at Chelsea Registry Office. The marriage ceremony was a distinctly low-key affair; no parents were in attendance, and the young couple promptly returned to their respective family homes. Their first marital home was at 44 Jubilee Place, Chelsea. They had two daughters together, Heather Brooke was born on the 30th July

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CHRISSEY BRAND

Fig. 1: William Joyce, the Voice of 'Lord Haw-Haw'. Fig. 2: British Propaganda to Counteract the Influence of Lord Haw-Haw'. Fig. 3: A Universal Pictures Film on the Subject (1942).

1928 and Diana Patricia Brooke on the 20th July 1931.

However, the marriage was short-lived, and they were divorced in 1936, on the grounds of his adultery. Remarkably, three days later Joyce re-married. His new wife, Margaret Cairns White, became his wife and soul mate, and they shared similar political views and outlook. She was a regular campaigner for the British Union of Fascists (BUF), which then held regular political rallies outside of Carlisle Market Hall. In 1935, fate intervened when she met Joyce for the first time at a BUF rally in Dumfries. In later life, Joyce rarely revealed that he had been married twice and he was reluctant to discuss the reasons for his divorce.

Political Aspirations and Inter-War Britain

Britain was still traumatised and disillusioned after the First World War (1914 – 1918). The General Strike of 1926 was also an indication of the inequalities of wealth in British society. Three years later, the world was facing an unprecedented depression, leading to mass employment and virtual economic collapse.

This, in turn, facilitated the rise of political extremism, as traditional political parties were unable to deal effectively with the impact of the depression. Besides, there were significant political developments in Europe: Italy turned to Fascism under Benito Mussolini (1883 – 1945). In Germany Adolf Hitler (1889 – 1945) was attracting significant popular and electoral support at the time.

Joyce's initial political career was more mainstream and far less radical, with links to the Conservative Party and the Chelsea branch of the Junior Imperial League. In 1924, while employed as a steward at a Conservative Party meeting at the Lambeth Baths in Battersea (London), Joyce was the victim of an unprovoked attack. He received a very deep and vicious wound from a razor blade that left a scar. It sliced across his right cheek from behind his earlobe and extended to the corner of his mouth. This attack had a significant impact on his political views and his later support of the European fascist movement.

Joyce remained convinced that his attackers were Jewish communists who

resented his nationalistic views. However, historian and author Colin Holmes provides evidence in his book (*Searching for Lord Haw-Haw: The Political Lives of William Joyce*) that it was most likely an angry Irish woman that attacked him and caused the wound. A witness to the attack provided the following statement:

"Someone jumped him from behind, a man he later identified as a Jewish communist. Something struck his face, though he did not at first realise what it was. The man who jumped him had gone, and the crowd about him was drawing back in horror. He felt blood on his face but still did not realise the full extent of the wound. Someone handed him a filthy handkerchief to staunch the flow. Others cleared a way through the crowd, and he was helped outside to Lambeth Infirmary".

In 1932, Joyce changed his political allegiance to the more extreme British Union of Fascists (BUF), under the leadership of Oswald Mosley (1896 – 1980). Joyce's rapid promotion within the hierarchy of the BUF reflected his unique public speaking abilities. Joyce was initially promoted to the directorship of the BUF's propaganda section; eventually, he obtained the coveted position of deputy leader, answering only to Mosley within the BUF. This position enabled Joyce to change the political doctrine of the BUF, focusing on anti-Semitism in British society.

In 1933, Joyce falsely applied for a British passport, claiming he was a British national, an action he would later greatly regret. His biographer, Nigel Fardale concluded that "Joyce had unwittingly signed his own death warrant, from this moment one, he was a condemned man".

BUF and the Purge of 1937

Joyce's political relationship with Mosley began to show serious strain in the mid-1930s. They differed over ideological views and the extremely controversial issue of antisemitism. These internal disputes finally resulted in Joyce, John Beckett (1894 – 1964), and A.K Chesterton (1899 – 1973) leaving to form the National Socialist League. In a pamphlet published in the aftermath, entitled "National Socialism Now", Joyce openly expressed extreme racial views similar to those advocated by Adolf Hitler.

This is Germany Calling!

On 18th September 1939, Joyce was employed by the *Rundfunkkammer* (the German Broadcasting Authority -in Berlin)



as an 'Announcer of English News'. He left Britain just before Germany attacked Poland on the 1st September 1939, to set up a new life in Germany, a country more suited to his radical form of National Socialism. His style and presentation were similar to what has been dubbed the English style of 'haw-haw- dammit-get-out-of-my-way' variety and perfectly fitted into the German perception of English society.

However, Joyce had attracted other nicknames in the English popular press, most noticeably the 'Humbbug of Hamburg'. Joyce frequently informed listeners why he had turned his back on democracy – not that he told the full story:

"I lived for months with friends who loved England – could not get enough to eat from her. These men all hoped that out of



their sacrifice, a greater England would be born. Their misery was indescribable when it seemed that all their efforts would be wiped out by war. They were benumbed at the thought that there was to be a conflict between their country and all the beliefs that they had held dear".

Changing Perceptions

The initial view of 'Lord Haw-Haw' was that listeners tuned in to have a good laugh. However, nightly listening soon became a habit, most predominantly as the long winter nights became colder and darker.

The comforts of the home were more inviting, given the nightly enforced blackout.

Eventually, this enforced change in lifestyle changed the demographics of the listening audience; 'primetime' how shifted

from 6 pm to 9 pm. The BBC initially offered its listeners little in the way of alternative:

A comparable programme (*Outlooker*) soon disappeared, given poor feedback. Therefore, listening to Lord Haw-Haw offered the listener a welcome source of variety, to the traditional monotone content offered by the BBC, who initially restricted their service to a single programme the *BBC Home Service*.

Technical factors also favoured listening to German broadcasts from Hamburg: The output power of the transmitters was remarkable, acknowledged as the second most powerful amongst international broadcasters. In contrast, the BBC's signal was maintained by a network of several transmitter sites that were often subjected to periods of fading and blasting,

predominantly in regions between the sites.

Concerned about the impact of German propaganda broadcasts, the British Institute of Public Opinion issued a survey to a carefully selected sample population. The survey was based on an initial single 'yes' or 'no' question: "Do you ever listen to foreign radio stations?" The response rate revealed that 53% admitted to listening to foreign broadcasts. More worrying was the fact that over half of the respondents (33%) indicated that they listened to German broadcasts.

Another section of the survey concerned the role and service provided by the BBC and was based on the question: "Are you satisfied with the way BBC is doing its wartime job?" The response rate was quite varied and suggested that there was no indication of a link between tuning in to foreign radio stations and any failure of the BBC in its programming content.

It was estimated by 1940, that Lord Haw-Haw had six million regular listeners and as many as eighteen million occasional listeners. Although listening was actively discouraged by the media and the government, it was not declared illegal – unlike, the repressive controls in Nazi Germany which attempted to deter its citizens from listening to the *BBC Home Service*.

Publications and War

In January 1940, Joyce managed to complete his major political publication, entitled *Twilight over England*. It failed to capture the imagination and attention of the German population and sales figures remained rather modest. However, sales of the English version were more successful. Some copies were made available to POW camps, in the hope of gaining the support of Allied servicemen.

Joyce claimed that the Nazis gave him a free hand in his writing. However, attacks on Bolshevism were not openly encouraged by the regime, who were still observing the terms of the Nazi-Soviet Pact (The Molotov-Ribbentrop Pact of 23rd August 1939).

The issue of Irish nationalism was also not addressed in any great detail. However, Joyce did portray Britain as suffering from a decline that limited her military, economy, and political system in prosecuting their war effort. Joyce also concluded that Britain was governed by a corrupt political system that was essentially 'Jewish in purpose' and exerted more influence than any other group in British society.

The early stages of the Second World War (1939-1945) did not unfold as Joyce had anticipated. The 'Phoney War' was a period of relative calm on the Franco-German frontier. However, a radio propaganda campaign was instigated from Berlin. It attempted to demoralise the British public by focusing on the previous 'Policy of Appeasement' and other defeatist sentiments. They usually concluded with the following remarks: *"Why not enter into peace negotiations with Germany? Why fight in a Jew's war?"*

Another segment of Joyce's broadcast was based on two characters "Schmidt and Smith" who debated Britain and the problems that they faced: *"The whole system of English so-called democracy is a fraud. It is an elaborate system of make-believe, under which you may have the illusion that you are choosing your own government, but which in reality simply insures that the same privileged class, the same wealthy people, shall rule England under different names. Your nation is controlled by big business newspaper proprietors, opportunist statesmen like Churchill, Camrose, and Rothermere"*.

Joyce even managed to gain the praise of Josef Goebbels (1897 – 1945), who recorded in his diary entry of 11th September 1940 that *"we are re-orienting our radio service. The English language and the Freedom stations to produce terror and panic. We're really stepping up the pressure. Lord Haw-Haw is brilliant"*.

In 1941, Goebbels lavished even more praise on Joyce and his work, describing him as *"the best horse in our stable"*.

Counteracting Lord Haw-Haw's Influence

The images in Figs. 2 and 3 show contemporary examples of British counter-propaganda to thwart the influence of Lord Haw-Haw. On 11th December 1939, Aylmer Vallance (1892 – 1955) of the War Office wrote to the BBC's Director-General William Ogilvie (1893 – 1949) about the Lord Haw-Haw menace to the morale of the British population. He said, *"The Hamburg broadcasts in English are becoming a definite factor affecting public morale in this country. The transmissions are, I think you will agree, ingenious, and though the British public's first reaction was one of amusement, I am not sure that the constant reiteration of Lord Haw-Haw is not having a bad effect"*.

In response to the death and destruction bought on by the Blitz, Joyce was keen

to remind his listeners that responsibility did not rest solely on Germany: *"Those who drove their nation into a senseless war, just in order to save the interests of a small group of Jewish financiers and inveterate warmongers with Winston Churchill at their head, these men are responsible, not Germany"*.

In September 1940, Joyce was formally declared a German citizen by naturalisation. Subsequently, the popularity of Lord Haw-Haw fluctuated along with the German's fortunes of war. There was considerable concern within the British Coalition Government that his audience was growing with the disastrous military setbacks of 1941, the loss of Crete and the sinking of HMS Hood. The British press responded by encouraging people to openly ridicule Lord Haw-Haw, in an attempt to downplay the impact of his propaganda broadcasts.

However, in parallel with German military victories in the West, the content of Joyce's broadcasts eventually became more threatening. He regularly taunted British radio listeners with statements like, *"Their country might have a new Prime Minister – Churchill, the whisky-guzzling, cigar-chomping, bovine decadent liar..."*

Operation Barbarossa and the Downfall of the Lord

The German invasion of the Soviet Union launched on 22nd June 1941, provided a new audience and outlet for Joyce's propaganda. A broadcast transmitted on 27th June 1941, set the future tone when he informed listeners that Bolshevism was fundamentally corrupt and fortified by Jewish interests.

The year 1943 witnessed many military setbacks, most noticeably at Stalingrad. This defeat led to three days of national mourning in Germany, and the end of social luxury. This setback also posed a significant problem for Goebbels and his Ministry of Public Enlightenment and Propaganda.

In an attempt to inspire the German population to even greater sacrifices, Joyce and other apologists were instructed to focus programming content on the 'Red Threat'. This was in conjunction with a policy of 'Total War', called for by Goebbels. Joyce later acknowledged that the defeat at Stalingrad was a 'monumental tragedy' the German military never recovered from.

During a routine search, the Red Army discovered some of Joyce's scripts and personal correspondence in the N. 8 Studio in the Funkhaus (Broadcasting

House). This was an archive of Joyce's brief but spectacular career in radio propaganda. The Rundfunk (Broadcasting) faced significant equipment shortages as the war progressed into a truly global conflict, resulting in broadcasting tapes being wiped clean for reuse. Therefore, historians are forced to access the BBC recordings who routinely monitored and transcribed the content of the broadcasts. This archive is currently housed at the Imperial War Museum, in London. However, the archive is far complete, many of the facetious and comical remarks have simply been discarded, reducing their value to historians. Many of the listeners to Lord Haw-Haw often commented that his broadcasts were very entertaining in their content and delivery.

The final broadcast of Lord Haw-Haw was uncharacteristically rambling and drunken. His political ambitions, along with National Socialism were in ruins, his teenage daughters were far away in the relative safety of England, and his final words from Hamburg were transmitted on 30th April 1945.

On 18th June 1945, Joyce was formally charged with, *"Committing high treason, in that between 2nd September 1939, and 29th May 1945, being a person owing allegiance to his majesty the King's realm to wit in the German realm contrary to the Treason Act, 1351"*. The legal debate surrounding justification for the execution of Joyce created political controversy. But was Joyce actually a British citizen?

An Execution

On 3rd January 1946, at 9 am Joyce paid the ultimate price for his devotion to the political ideology of Adolf Hitler. The Labour Government justified his execution based on 'High Treason'. The execution was conducted at His Majesty's Prison at Wandsworth and it was confirmed by a formal notification on the prison gates.

In a later interview, the prison governor claimed that Joyce made no complaints before his execution.

Joyce was one of only three British subjects executed for treason and collaboration with the Nazis (Fig. 4).

The defence counsel based their case on the issue that Joyce did not have a valid British passport at the time of his employment in Germany. However, the jury deliberated for merely 23 minutes before concluding that Joyce was guilty of the act of treason against the King. The Welsh legal scholar Professor Glanville Williams was

VHF NEWSLETTER: 23cm Band is under Scrutiny: Issue 85 of the VHF Newsletter reports that IARU R1 is already been actively participating in the regulatory work taking place in CEPT to consider coexistence between the secondary amateur (and amateur satellite) service and the primary radio navigation satellite service, principally the Galileo system. The Galileo services are delivered in several bands and one occupies the 1260-1300MHz band. The Galileo team has witnessed interference from amateur TV transmissions, which resulted in station shut-down, and it experienced interference from high-power EME operations too. Work is at an early stage, and the IARU will continue to try and minimise the impact on amateur operations. However, some changes will likely be necessary to the way amateurs use the band. The topic is closely related to the WRC-23 and agenda item 9.1b reported in the last newsletter. Contact the SRLC for detailed information. There is planning for a joint informal PRC/SRLC meeting in Friedrichshafen which will discuss the problems in spectrum management.

(Source: IARU R1 VHF-UHF-MW Newsletter)

<https://tinyurl.com/ybxaz5wk>

TECSUN AUSTRALIA SW GUIDE: Tecsun Radios Australia has a free pdf guide to how short wave radio works, including to why frequencies change seasonally, at this URL: <https://tinyurl.com/uoqqobh>

THE JOYS OF SHORT WAVE: Quote: "Shortwave listening introduces you to the flavour and excitement of foreign broadcasts. With shortwave radio, you can hear the BBC live or, if you prefer, Radio Australia or Radio Japan. So tune in and get out into the world of shortwave radio." This is a web site that caters for the novice MW & SW DXer. Its home is seemingly abroad in Canada so be aware that when it talks of channel spacing of 10kHz for MW, here in Europe it's 9kHz. It covers receivers, aerials, band plans – suffice to say pretty much all you need. Visit the link then click on 'Shortwave' on the left-hand side of the menu: (Source: Bob Houlston G4PVB) www.kwarc.org

MOUNT EVELYN DX REPORT: The Australian Mount Evelyn DX Report is a blog for DXers, short wave listeners and amateur radio operators. For SWLs, for example, there is a piece on 'A Closer look at SINPO' (18th January 2020). Check it out at: www.medxr.blogspot.com.au

4

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ONE PENNY FOR KING AND EMPIRE FRIDAY, MAY 4, 1945

CELL READY FOR LORD HAW-HAW AT THE TOWER

■ Reports of traitor's capture in Germany
■ His date with the hangman draws near

A CELL is ready in the Tower of London for Lord Haw-Haw, William Joyce, the radio traitor who fled to Germany in 1939 and broadcast propaganda in English to audiences in this country on behalf of his Nazi masters.

Introducing his radio programme with the words 'Germany calling, Germany calling', Haw-Haw spent five years trying — and dismally failing — to indoctrinate British families with the Führer's vile creed.

Reports from Europe last night told of his capture, although there was confusion as to his whereabouts and no confirmation in London.

Even if he remains at large, at the Tower all is prepared for him and the guillotine is standing by. It is expected he will be held in the cell once occupied by another traitor, Norman Bailey-Watson, who fled to Germany in the Tower and imprisoned for five years in 1937 for betraying military secrets — passing 'Traitor's Oats' and the 'Bloody Tower' on his way in.

After his release, Baillie-Watson went to Germany with the Nazi girl to whom he disclosed the secrets and, like Haw-Haw, broadcast German propaganda.

Some say that tale of the Tower for Lord Haw-Haw is a diversion, and he could go instead to Wormwood Scrubs or to Wandsworth Prison.

Whatever the truth, his fate is sealed — and he knows it. When he made his last broadcast this week, Lord Haw-Haw was very drunk.

His understudy, Edward Dietze, took over for him last night, addressing England guiltily on the Wilhelmshaven emergency.

Regular troops are fighting small but fanatical S.S. formations.

News that Montgomery's armour had entered Denmark came as Albert Speer, once Hitler's Armaments minister, admitted on the Danish radio that Germany is defeated. He stated that all future German broadcasts will come from Copenhagen.

Throughout yesterday, telegrams recording the progress of the Allied Armies across Germany were coming in. But just how this rout of the once proud German army is going to end is a matter of conjecture.

A declaration that Germany has been defeated — arrived by consultation between Britain, Soviet Russia and the United States — is not expected until there has been a triumphal march through Berlin by the Allied Armies, headed by the Russians.

Meanwhile in Denmark, German garrisons have begun to wage war among themselves. Some want to fight on, but the great majority clearly wish to surrender.

BY DAILY MAIL REPORTER

Now the Nazis are fighting each other

BY WILSON BROADBENT
DIPLOMATIC CORRESPONDENT

TRAITOR: Joyce wearing Nazi uniform and Hitler moustache

TURN TO NEXT PAGE

later to claim that Joyce was executed on a 'pure technicality.' His supporters were more outspoken and emphasised that Joyce's actions never claimed a life directly, unlike his fellow senior Nazis who were now being sentenced to death in the Nuremberg War Trials (*Kriegsverbrecherprozesse*).

According to the BBC, Joyce, remained unrepentant and defiant before his execution, stating, "In death as in life, I defy the Jews who caused this last war, and I defy the powers of darkness which they represent".

The place of Joyce in British history is secure, and to this day he remains the last person to be executed for acts of 'High Treason'. His remains as per the protocol were buried in unconsecrated grounds within the prison complex. His wife was saved from the death penalty and some historians have speculated that Joyce

Fig. 4: The Daily Mail front page, of 4th May 1945.

made a deal that protected her from additional charges. She would tragically drink herself to death in 1972.

Conclusion

On 21st August 1976, Joyce finally got his last request, when his remains were laid to rest at Galway's Bohernmore Cemetery, within the segregated Protestant section of the graveyard. In analysing Joyce's life, it has become apparent that there is a considerable amount of legend as well as historical source evidence. This makes formulating an accurate conclusion rather problematic. In many respects, Joyce was a product of the times, in terms of his political radicalisation towards the doctrine of National Socialism.

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British DX Club Update

Chrissy Brand

chrissylb@hotmail.co.uk

Chrissy Brand provides a Summer 2020 update to the British DX Club's activities, looking at its publications, club events, programmes and membership benefits.

Another year of radio developments and DXing opportunities is unfolding for members of the British DX Club (BDXC). Since its formation in 1974, the club has kept its members up to date each month with DX tips, members' logs, articles on all aspects of broadcast radio, QSL information and other news affecting the world of DXing. Despite a decline in short wave broadcasters in recent years, the number of club members has held pretty steady, now with over 500 members in the UK, across Europe and the rest of the world (including Canada, Indonesia, Japan, New Zealand and the USA).

Communication

BDXC members receive a monthly magazine, *Communication*, either as a printed magazine in the post or as a pdf by email. As is the case for most successful clubs and organisations, the magazine is produced to a well-practised routine to ensure members receive each issue with minimum delay. A dedicated team of volunteers compile the monthly logbook sections, gather radio news and DX tips, including a section focussing on UK radio

developments. These regular sections are supplemented by articles about broadcast band DXing and other issues in radio, both contemporary and historic.

A typical issue of *Communication* (usually 56 to 64 pages) includes Members' letters, QSL Report; logs from the tropical bands, free radio, shortwave, medium wave and FM; Southern European Report, free radio news, programme reviews, details of community radio and international broadcasters, a technical helpdesk column and more. Recent contributions have included articles on *DXing in Egypt*, *the AM band listening in the USA*, *DRM on WebSDRs*, *A Visit to Oamuru Heritage Radio* and a *Sheigra DXpedition Report*.

Broadcasts in English is sent to all members twice a year: an up-to-date time order listing of English language broadcasts with frequencies, including a section on music programmes on shortwave. Copies of *Broadcasts in English* can also be bought by non-members, as can copies of *Radio Stations in the United Kingdom & Ireland*, now in its 27th edition (see club website for details).

The club's operation and finances are overseen by a board of six, most of whom have had careers in broadcasting: Chris Greenway (Chair), Dave Kenny (Co-Founder and Treasurer), Alan Pennington (Printing), Andrew Tett (Secretary), Stephen Howie (Social Media) and Chrissy Brand (Editor, *Communication*).

A Social Summer

Two regular summer meetings are held. One is the annual gathering in Twickenham by the River Thames (where the club was originally founded in 1974), where people gather to talk about radio over a drink or two, before moving on to one of the nearby curry houses. The date of this year's Twickenham meet up is currently being decided.

There is also a day of FM DXing on the Dorset cliff tops. Some of the club's keenest members will meet at Durlston near Swanage in Dorset. on Saturday, June 20th.

Members also attend the regular Reading International Radio Group Meetings at the Reading International Solidarity Centre in the town. The next two meetings, open to all radio enthusiasts, take place on Saturday, May 16th and July 18th, starting at 1430 BST. Mike Barraclough coordinates

these and gives talks on a wide range of subjects. The March meeting covered radio to and from Romania from the end of World War 2 until 1989, including recordings of Radio Bucharest during that period and interviews with staff. There was also a look at early student radio stations.

The British DX Club is also a member of the European DX Council and sends delegates to EDXC's annual conference. This year it will take place in Bucharest, Romania, from September 10th.

<https://edxcnews.wordpress.com>

Check the BDXC and EDXC websites for updates regarding meetings, in the light of COVID-19.

Audio Circle

A couple of years after the club started in 1974, the BDXC Tape Circle was introduced for members. This monthly programme was presented by a team of individuals, many with broadcasting experience. Tape Circle consisted of 90 minutes (the length of an audio cassette tape) of DX tips, recordings of contemporary DX catches, holiday and travel material, archive recordings, members' musings and radio news.

This popular service continued into the Noughties, when CDs replaced tapes. There was also a change of name, moving with the times, to the more appropriate moniker of BDXC Audio Circle. Nowadays, the Audio Circle is made available as a free mp3 download to all BDXC members.

For the past few years, due mostly to the huge increase in audio and radio choices that are available elsewhere, the Audio Circle has become an annual or biannual programme.

Join Us!

Membership details, an archive of articles, diary dates, a free sample copy of the monthly publication *Communication* and a wealth of other information can be found at the club website. There is also an IO Group for members to tell each other about the latest DXing tips and radio news. See also BDXC's public Facebook page and *The British DX Club: A Review of 2018* (*RadioUser*, February 2019: 68-69).

bdxc.org.uk

www.facebook.com/BDXCUK

[N.B.: At the time of publication, club meetings are subject to the ever-changing COVID-19 situation. They may need to be postponed. Please check the BDXC, EDXC and *Radio Enthusiast* website for updates and announcements – CB].



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Bob's Radio Miscellany

Bob Houlston G4PVB offers a cornucopia of radio-related news, stories, reminiscences and snippets for both radio amateurs and short wave listeners.

The Buzzer: UVB-76 (4.265MHz)

UVB-76: What is the point? According to the Internet, "The function of the mysterious transmitter has been revealed: UVB-76 is used to transfer orders to military personnel along with the time at which they should be executed." But more than that it is a useful and for the most part a reliable radio beacon that can aid our study of radio propagation. As the sun appears to move West then the land it leaves behind goes dark. At this point, an observer in the UK experiences dusk and the gradual increase in strength of UVB-76 4.265MHz announces yet another session of enigmatic broadcasting.

<https://en.wikipedia.org/wiki/UVB-76>
<https://tinyurl.com/pu8pvmt>

Cigarette Packet Radio Reminiscences

At 11 years old I took my father's discarded cigarette packet and installed the internal parts of a broken plastic case pocket MW AM radio with an earpiece. I was so proud of it that I took it to school and showing it off in the bike shed when a sixth former snatched it from me: "These aren't cigarettes!" Then pushed it back to me in disgust. You can see an example of a cigarette packet radio via the link below.

www.tinyurl.com/serviceradio

Channel Your Inner DXer

Being off tune is like having bad breath... not even your best friend will tell you. At first, it may be considered only applicable to licensed transmit but short wave scholars need to know about it too. Have you ever typically trawled through the MW AM band and

found it difficult to know if you're spot-on with the frequency your radio is set at? You could refer to the World Radio TV Handbook (WRTH) but consider that in Europe MW channel spacing is 9kHz, and in the USA it is 10kHz. So if we start with Absolute Radio at 1215kHz and keep adding nine to the frequency we will eventually arrive at Gold Greater London 1548kHz. Go on, try it if you like or just take my word for it. There's probably a more efficient mathematical way of doing it but you get the gist of it all. If you wish you could list all the 9 kHz channels and then tune to those in confidence. Some radio receivers will allow you to set the 9kHz steps so you will always be in tune, except for stations or unusual signals between the 9kHz channel spacing. Please be aware that some signals not destined for UK civilian consumption. This applies typically if you're DXing to America, where, as I said, channels are spaced 10kHz apart.

www.tinyurl.com/9khzchannel

Community Radio

At a time of global crisis then local community radio is even more valuable for the disabled, elderly, infirm, pregnant mothers, children, church – all of us. Where is the local food bank and when is it open? When & where will the facility for drinking water be situated? Where is a pharmacy open? Freddie Mercury of Queen: "Everything I had to know, I heard it on my radio." Well, here below, is a link to all you need to know to get started with your community radio. It talks about the business side of things. If you've got an idea then Ofcom wants to hear from you:

www.tinyurl.com/gtjax8l

International Short Wave League (ISWL)

Do you know what they say about sharks? They have to keep moving or they're dead. So it is, it seems to me, with the radio hobby. If you only use your wonderful JRC NRD-545 wide-band receiver to listen to 198kHz BBC Radio 4 you'll soon begin to wonder why you bothered.

The obvious progression is SWL, Foundation, Intermediate, Full licence. But if you prefer a sideways approach then consider the link below to The International Short Wave League (ISWL). They cover a wide range of interests especially their nets (ISWLs can monitor) available from their homepage: www.iswl.org.uk

RF Connector Guide

Even the most humble of short wave monitors will require knowledge of RF connectors sometime. The HUBER AND SUHNER RF connector guide is free via the link below. At 164 pages it is quite substantial so I went to page 133 first for TEST AND MEASUREMENT 4.3 DOS AND DON'TS then worked my way from there. It's dated 2007 but the laws of maths & physics rarely change:

www.tinyurl.com/rfconnectors

Solar Cycle 25

The current solar cycle is slowly developing and expected to be with us in significant strength by 2023. Cycle 24 has given us the longest low solar activity for a century. So now, at last, we can expect a return of considerable HF short wave activity.

www.tinyurl.com/y66qq180

In next month's RadioUser

- The History of Early Airband Communications in Britain
- Messengers from Space: Meteor Scatter
- Review: The Boxchip 900A all-in-one Network Radio
- Ronan O'Rahilly: His Life and Times

Plus your favourite regular features & columns

The July issue is on sale on the 25th June 2020





RECEIVERS

ICOM IC-R8600

100kHz-3GHz Receiver with SDR Technology from IC-7300.



The IC-R8600 replaces the IC-R8500 wideband receiver and features technology incorporated into Icom's best selling IC-7300. The IC-R8600 receives a wide frequency range from 0.01-3000MHz frequency in analogue and various digital modes (D-STAR, P25, NXDN and dPMR). The IC-R8600 also features a larger 4.3 inch touch screen display which displays a fast moving spectrum scope and waterfall display.

ML&S: £2499.95

Includes an Icom AD-55 PSU worth £49.95!

AR-7400 RECEIVER

Capable of four-wave simultaneous reception.



KEEP CHECKING WEBSITE FOR FURTHER DETAILS

AR-5700D RECEIVER

Advanced digital communications.



Frequency range 9kHz-3.7GHz. Tuning steps 1kHz-999.999kHz.

ML&S: £4595.95

ELAD FDM-DUOr

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



10kHz-54MHz Direct Conversion SDR Receiver.

ML&S: £729.95

AOR AR-DV1

Communications Receiver



Covers 100kHz to 1300MHz in traditional analogue modes (SSB, CW, AM, FM, S-FM, W-FM) as well as various digital modes. In fact, we know of no other radio in this category that can decode Icom's D-STAR mode, Yaesu's new C4FM mode, Aincos's digital mode, NXDN (note: 6.25kHz only), P25 Phase 1, etc. Plus lots of interesting features!

www.HamRadio.co.uk/ardv1

ML&S: £1199.95

SDR RADIO

SDRPLAY RSPdx

New Mid-range SDRplay Radio.



Complete redesign of the popular mid-range RSP2pro 1kHz-2GHz.

ML&S: £194.95

Multiple antenna selection, Improved pre-selection filters, Even more software, Selectable attenuation steps, Special HDR (High Dynamic Range) mode for reception at frequencies below 2MHz. **Designed and made in Britain.**

SDRPLAY RSP1a

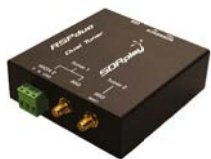


Brand new design, the RSP1a is a major upgrade to the popular RSP1

ML&S: £94.95

Offering a powerful wideband full featured SDR covering 1kHz to 2GHz & up to 10MHz visible bandwidth. Better still, it's "Built & Designed in Britain"!!

RSPduo DUAL TUNER 14-BIT SDR



Dual-Tuner wideband full feature 14-bit SDR, 1kHz to 2GHz, 10MHz of spectrum visibility.

ML&S: £239.95

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

FUNcube Dongle Pro+

Wideband SDR Receiver. 150kHz-1.9GHz incl SAW Filters.



ML&S: £149.95

Expert Electronics

Colibri DDC

Small-size receiver covering the HF frequency band 0.09MHz to 55MHz, and also (with the help of external filters) to receive frequencies up to 800MHz whilst working together with a PC.



ML&S: £339.95

Colibri Nano

14-bit ADC, up to 3 MHz sample rate. A 0.5ppm local oscillator. The ColibriNANO is compatible with every popular HAM software such as HSDR, SDRSharp and ExpertSDR2.



ML&S: £249.95

DIGITAL & ANALOGUE

UNIDEN UBCD3600XLT

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

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

ML&S: £449.95



ICOM IC-R6E

The 100 Ch/Sec Wideband Signal "Search Machine"

Communications handheld receiver. While retaining basic features of its popular predecessor the IC-R6, the IC-R6E contains many improvements including 100 channel per second scanning speed, 1,300 memory channels, 15 hours of continuous receive capability, optional drop-in charger stand and voice control squelch.



ML&S: £199.95

WHISTLER TRX-1 DIGITAL SCANNER



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

ML&S: £419.95

AR-DV10

The ULTIMATE all mode all band scanner.

100kHz-1300MHz Analogue & Digital Modes.



ML&S: £939.95

ICOM IC-R30 SCANNER

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



ML&S: £569.95

ML&S IS STILL OPEN FOR BUSINESS

Our showroom, workshop & Training Academy are temporarily closed until restrictions are lifted but we can still deliver to your home. Call 0345 2300 599 or order from our website for rapid delivery.

Latest news from the Staines Superstore & indeed my merry bunch of Lynchetts dotted around the UK still working from the comfort of their homes is "all good". Deliveries from the factories are restricted, as we expected, and indeed costing more to arrive. It could be a lot worse of course with no deliveries at all, so think positive!

Stay safe & all of us at ML&S appreciate the continued support from all my customers worldwide.

ANTENNAS

BONITO RANGE AT ML&S

THE ANTENNA JET



A USB powered antenna splitter designed to work between 9kHz and 300MHz. Now you can use your one antenna with up to 3 receivers simultaneously. Finally, you can listen to marine band traffic, The Archers on Radio 4 and the air band at the same time (provided your antenna will cover it all!)

ML&S ONLY: £234.95

ANTENNA JET ASM-300



A USB controlled antenna switch and mixer. It can be used as a simple switch, or can be used to switch in more than one antenna, to aid receiving to an optimum performance.

ML&S ONLY: £189.95

BONI-WHIP (PSU needed)

The active antenna that is raved about. Covering 20kHz to 300MHz and ideal for times when you can't erect a wire antenna. For home, for travelling and for DX camps. And despite the whip being only 4 inches long, it actually works!



ML&S ONLY: £109.95

GigActive GA3005



A portable active antenna capable of covering 9kHz to 3GHz. Perfect if you are say on holiday and want to have a listen to the bands. You'll need to provide it with 5V via a USB cable (included) and some coax but it is just ready to go.

ML&S ONLY: £386.95

You can order from ML&S for delivery on a Saturday or Sunday! Order before 2.00pm as late as Friday.

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