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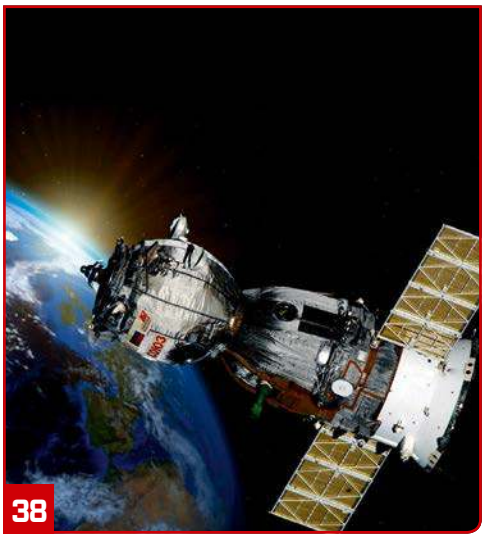


A New Year with Radio

Hello and welcome to the first issue of *RadioUser* for the New Year. I wish all our readers and writers, team members, friends and colleagues a very Happy, Prosperous and Healthy New Year.

This issue contains our Annual Index for 2019, so please make sure you consult this if you are looking for a specific article, review or feature we have published in the last 12 months. Looking over it myself, my feeling is that we have offered a good variety of diverse radio topics. However, if there is something missing – or something you would like to see covered in more depth – please do not hesitate to let me know.

This is also a good opportunity to reiterate that I am always on the lookout for potential new contributors, please bear that in mind and contact me.

In this issue, we offer a first look at the new SDRPlay RSPdx – a new SDR, which will be reviewed in full here next month. Check out our expanded *News* section for new speakers, loop aerials, and much more.

Our main development this month is the return of a column on *CB Radio* to RadioUser, as a result of significant popular demand. There is an introduction this month, and radio reviews from next month onwards.

Our other features this month are about topics as diverse as classical music on community radio, radio art across borders, and the history of Radio Luxembourg, the soundtrack to this editor's misspent youth.

In a new series, Clint Gouveia recommends the best techniques and equipment to use when out and about with your short wave radio, and Nick Ward ventures out into Space to monitor meteors.

Also new for 2020 is Tim Kirby's new column on *Signals from Space*, which has lift-off in this issue, with a look at satellites and how to receive them. This column will alternate with *Scanning Scene* in 2020.

Keith Hamer and Garry Smith are back too, with another instalment of their new column, *TV and Radio, Past and Present*, which you will come across every other month this year.

Some of our other highlights this month concern a review of the new Talkpod N59 Network Radio, and the important role of podcasts in preserving threatened radio content.

You will also learn about the very latest developments in the DAB, DAB+ and DRM radio formats, antenna splitters and, of course, all the very latest news, rallies and events.

I am very much looking forward to being with you in 2020.

Please make sure that you pay regular visits to the *Radio Enthusiast* website, for the very latest news, information and additional features:
www.radioenthusiast.co.uk

Georg Wiessala
Editor, *Radio User* Magazine

What's New

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

Cross Country Wireless Loop Antenna Amplifier

RadioUser STOP PRESS!

The new The Loop Antenna Amplifier contains all the electronics needed for home DIY construction of an active loop (magnetic loop) low noise receiving antenna. The amplifier consists of two units, a weatherproofed outdoor unit for connection to a suitable loop and a base unit to further amplify the signal and to provide DC power up the coaxial cable to the outdoor unit. The latter is housed in a polycarbonate box with stainless steel antenna connections and a BNC socket. The indoor unit is a PCB with two BNC connectors and a USB socket to take 5V from a USB socket on a PC or phone charger. Like our other active antenna products, it has RF overload protection to allow it to be used very close to transmit antennas without damaging the amplifier or the attached receiver. The loop depends on what the user has available. We have tested it with simple wire loops or deltas, coax loops and an alloy loop made from a bicycle wheel rim. We supply a 3m (10 ft) length of wire as a simple loop to make the first loop for testing. With a simple wire loop or delta and a small USB power bank, it makes a very compact and portable receiving antenna for holiday listening or covert use. The latest version can now have the head unit powered directly from receivers with a 5V bias-tee, such as the SDRplay receivers or some RTL-SDR dongle receivers with a bias-tee option.

http://www.crosscountrywireless.net

Icom releases at METS Trade Show

Icom has showcased new additions to its marine product range at the METS Trade Show. Debuting at the show has been a new Class B AIS Transponder called the MA-510TR. This new product has some great features including an attractive wide viewing 4.3inch colour screen, readable under direct sunlight. The MA-510TR also has a useful navigation function that guides the operator to specified waypoints. Icom is also delighted to announce the introduction of new versions of previously best-selling Icom marine fixed VHF radios. The IC-M400BBE (previously the IC-M400BB) and the IC-M423GE (formerly the IC-M423G) are virtually identical to their predecessor, except that they now feature an integrated GPS and external GPS antenna to meet the latest ITU-R M493-14 regulations. Both models were firm favourites with many commercial and leisure marine users. The IC-M423G was popular because of its enhanced audio and dual station capability. The IC-M400BB was popular because it was a convenient black box solution that could be stored out of sight and controlled by a remote Commandmic microphone. The reintroduction of these models also means the re-introduction of the HM-195CMI Multi-Station Commandmic Interface allowing multi-station control of the IC-M423GE and IC-M400BBE. The new radios also complement Icom's current range of fixed marine VHF range which include the IC-M330GE, IC-M506GE and the IC-M605E. Icom currently doesn't have a release date for the MA-510TR, but the firm is hopeful that it will be available for the start of the 2020 season. Both the IC-M423GE and IC-M400BBE will be available in early 2020.

http://www.icomuk.co.uk

News Extra

First Impressions of the new RSPdx from SDRplay

SDRplay Ltd. introduced their latest SDR receiver, the RSPdx, in November 2019. Before going to press, we were able to find out a bit more about the reaction from the first people to see it in action.

The very first 'public outing' for the new RSPdx was in Portsmouth at the recent open day hosted by Nevada Radio and Waters and Stanton (Fig. 1).

Jon and Andy from SDRplay were there to demonstrate the RSPdx, using a windows laptop PC running *SDRuno*. There was an enthusiastic crowd with them throughout the event.

The specific benefits for medium and low-frequency reception were demonstrated using a Bonito Megaloop FX as an antenna, mounted on a stand in the open, just outside the main warehouse building.

Nevada had their own end-fed long wire for HF fed via a matching transformer to a 50Ω coaxial cable, routed down to the demo area. An interesting side-line demo was showing the comparison of the two antennas which is made so easy with the RSPdx having a choice of (up to three) software selectable 50Ω antenna inputs (Fig. 2).

In terms of aerials, the Bonito Megaloop FX was a clear winner on 80m and below. The overall public reaction was one of appreciation for the cleanliness and clarity of the signals, as Andy and Jon moved effortlessly across the bands depending on the specific interests of the audience. Daytime 20m contest signals from around Europe and more local rag-chewers on top-band were easily demonstrated along with the lesser-known features of *SDRuno*, such as the wideband noise blanker which is perfect for people suffering from broadband DSL interference. One of the recurring comments was, *"if only this had existed 10 years ago, it would have cost thousands!"*

What's New?

The RSPdx is primarily a redesign of the very popular RSP2pro, which was introduced back in 2016. It incorporates many of the enhancements, which have been added along the way to the (much newer) RSP1A and RSPduo designs.

For example, all three antenna ports now go down to 1kHz, and a DAB notch filter has been added. By popular demand, it also includes a BNC connector for lower frequency antennas (below 200MHz).

The RSPdx has more software-selectable attenuation steps; when used in conjunction with SDRplay's own *SDRuno* software, it introduces a special HDR (High Dynamic Range) mode for reception within selected bands below 2MHz.

HDR mode delivers improved intermodulation performance and fewer spurious responses for those challenging bands. This is ideal for MW and LW DXers and those interested in NDBs (Non-Directional Beacons) at 500kHz and below, where an additional 500kHz low pass filter gives further immunity to potential intermodulation problems.

The latest *SDRuno* software automatically detects the presence of an RSPdx, and an additional set of sub- 2MHz bands can be selected as shown in Fig. 3. These include framed bands centred on popular ranges of frequencies, including the newer experimental amateur frequencies.

The new RSPdx sits comfortably at the heart of the SDRplay range, as can be seen in this summary of its capabilities between the low-cost RSP1A and the dual-tuner RSPduo (Fig. 4).

As with the other RSPs, there are lots of online video guides available for newcomers to SDR receivers.

These are accessible via the SDRplay website's *Apps and Support Catalogue* (see also Fig. 5).
www.sdrplay.com/apps-catalogue

First Reactions & Evaluations

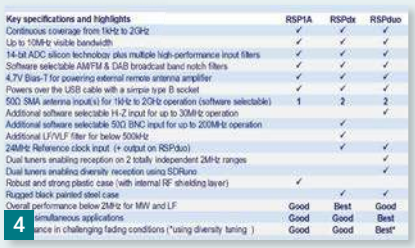
To see how other reviewers have found the RSPdx, a YouTube search for RSPdx will take you to the early videos by Tech Minds, SevenFortyOne, Labeonligne and Mile Kokotov. The latter writes, *"First Impression – Excellent! I have to say that SDRplay team did a good job with this SDR-receiver, putting better filters and redesigning the front-end to improve the dynamic range and enhance overall … The new RSPdx is very good indeed. Especially on HF and below"* (Fig. 6).

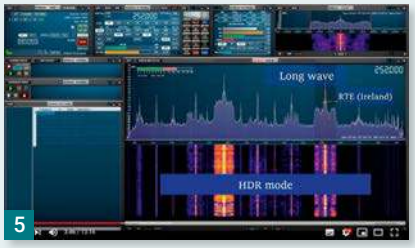
Another *RadioUser* contributor – and one of the early operators to receive a pre-production RSPdx – was Clint Gouveia, the world-travelling owner of the *Oxford Shortwave YouTube Channel*. Within a couple of days of receiving the RSPdx, Clint posted a wide selection of YouTube video demos, showing *SDRuno* and the RSPdx pulling in impressive DX signals on medium wave and elsewhere (Fig. 7).

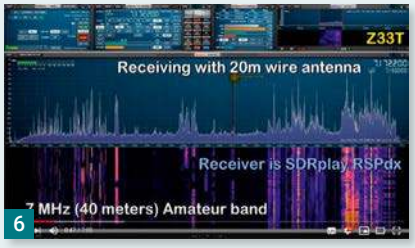
Clint posted: *"Hi there, I was lucky enough to be given one of the new RSPdx SDR receivers to test. It is proving to be brilliantly sensitive on MW, particularly with the new HDR mode engaged. Here is what is probably my best-ever copy of WFME New York using the HDR mode. Recorded in Oxford UK on 04/11/19 at 02:15 hrs UTC using a Wellbrook ALA1530 magnetic loop antenna, outdoors."*

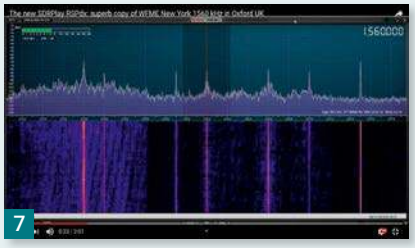
There will be a more detailed review, by Tim Kirby, in the February issue

Fig. 1: The RSPdx being shown at the start of the *Nevada and Waters & Stanton Open Day*. Fig. 2: The *SDRuno* main panel for an RSPdx includes a choice from three software-selectable antenna inputs. Fig. 3: The *SDRuno RX Control Window* now has new 'HDR' band buttons for the sub-2MHz frequency bands. Fig. 4: A comparison table, showing where the RSPdx fits in the SDRplay products range. Fig. 5: A screenshot of the RSPdx receiving clean long wave signals (from SDRplay's introductory video). Fig. 6: A screenshot from Mile Kokotov's *YouTube* video showing the RSPdx on 40m. Fig. 7: A screenshot from *Oxford Shortwave*: a transatlantic MW signal from WFME New York using HDR mode.









Clint also released four additional reception videos, stating that these clearly demonstrate a drop in noise-floor – and improvement in signal-to-noise ratio – on signals from RÚV Rás 1/Rás 2, Eiðar, Iceland 207 kHz, Medi 1 Nador, Morocco on 171 kHz, WRKO 680 kHz Boston, and VOCM 590 kHz St Johns, Newfoundland & Labrador. All of these signals evidenced the standard to the new HDR (High Dynamic Range) mode, and the improvements were very obvious.

https://tinyurl.com/hwtnoka

This British-designed and UK manufactured radio, priced at around £192 including VAT, is available from SDRplay Ltd., Martin Lynch &Sons, Moonraker, Nevada, Radioworld, SDR-Kits and Waters & Stanton. Waters and Stanton reported on the Open Day mentioned above and posted a very informative video here:

https://youtu.be/9p6bNGfaHok

Full details can be found by going to this website:

www.SDRplay.com

Radio News

AUSTRALIAN AM RADIO HISTORY: This is a very comprehensive, significant, and in-depth, study of the development of AM radio stations Down Under. It comes in two parts, and the resource is downloadable for free. The author is Bruce Carty. Highly recommended.
bruce.carty@bigpond.com
http://austamradiohistory.com

CAMBRIDGE MUSEUM OF TECHNOLOGY: The museum offers A Guided Tour of the Pye Exhibition with Bob Bates on 9th February, at 2 pm. Join a former Pye and Philips employee Bob Bates for a guided tour of the exhibition. Learn about Pye's iconic radios and hear stories of the people behind the Company and the local sites at which they worked. The Museum hosts a guided tour of the Pye exhibition at 2 pm on the second Sunday of each month (except December and January). The talks are given by one of the former Pye employees who researched the fascinating history of the company and curated the exhibition. Each tour will focus on a different aspect of Pye's activities, depending on the tour guide. Bob Bates worked for several Pye/Philips businesses across different fields. He is now a Trustee at the Pye History Trust. Bob curated the Development of Pye and Consumer Products sections of the Pye Exhibition, but he will cover all of the Company's history in his tour. The tour is included with your regular Museum ticket. Please meet in the Pye Building for 2 pm. Each tour will take around 45 minutes.
https://www.museumoftechnology.com
http://pyetelecomhistory.org/?LMCL=cHWPFI

KEITH AND GARRY ON BBC RADIO LONDON & BBC HEREFORD & WORCESTER: RadioUser columnists, Keith Hamer and Garry Smith, were surprised to receive a call from BBC Radio London inviting them to appear on the Jason Rosam Early Breakfast Show, at 06.35, on Friday, November 15th. The 'live' interview was to celebrate 50 years of colour on BBC-1. It transpired during the show that Jason is also a television buff with a special interest in identification logos. Shortly after the interview about colour television, we received an e-mail from the son of the late Dr Donald Liddle asking if we could help locate an episode of Tomorrow's World from 1965. We were fascinated by his story. He wrote: "Having just heard you on BBC Radio London, I am prompted to write to you, hoping that you will not mind this enquiry. It concerns my late father, Dr Donald Liddle. In 1965, the TV programme, Tomorrow's World, interviewed my father on the subject of a Russian woman, Rosa Kuleshova (1941-1978), who claimed to be able to discern colours by touch. This particular programme was filmed on January 2nd, 1965, and was probably broadcast on January 5th. On January 28th, 2010, the BBC Contributor Department replied to me regarding my request for a copy of the programme." The BBC said: "With regard to the copy of Tomorrow's World, and why it is unavailable, unfortunately not everything that has been broadcast is kept in the archive. Early on, some tapes were taped over and reused as the importance of keeping them was not realised. Other reasons for us no longer having it could be that film often got damaged and became non-salvageable and some other items just go missing. Unfortunately, I cannot give you the exact reason as to why the item you wanted is no longer available. I am just wondering whether a recording of this broadcast might exist elsewhere. If you can help or make any suggestions, I would be deeply grateful". We have trawled our archives but, alas, we can't find the item which David is searching for. If any RadioUser readers can help, please contact the magazine. About an hour after we had been on BBC Radio London, another surprise call came in this time from BBC Hereford & Worcester. So, at 09.20, we were once again talking 'live' about 50 years of BBC-1 in colour, this time on the Elliott Webb in The Morning Programme. This was the fourth time that we've been invited to take part in BBC Hereford & Worcester programmes.

bhi NES10-2MK4 at the WiMo Hausmesse 2019

RadioUser STOP PRESS!

Graham Somerville, of UK-based DSP noise cancelling specialists bhi, attended a massive open day event at one of Europe's largest amateur radio dealers, WiMo Antennas and Electronics GmbH in Germany. Flying the flag for the UK, bhi demonstrated their unique range of DSP noise cancelling products to the attendees, including the new bhi NES10-2MK4 DSP noise cancelling speaker, which has the latest bhi DSP noise cancelling inside, improved audio with increased audio power (5W) and all the controls on the top of the speaker for ease of use. The retail price for this unit will be £119.95, and it will be available from bhi on 01444870333, www.bhi-ltd.com or any of their authorised dealers. More information on the new NES10-2MK4 will be available shortly.
www.bhi-ltd.com

SOTABEAMS Ultra-light Carbon-Fibre Masts

Richard, of SOTABEAMS, reports that, "We have been asked several times to introduce a carbon-fibre mast to our product range. Carbon-fibre gives a much better strength-to-weight-ratio than fibreglass. However, I have always resisted as we all know that carbon fibre is lossy. That being said, it appears that quite a number of ultra-lightweight portable operators do use carbon-fibre masts without encountering any problems. My curiosity was piqued so I bought one myself to investigate. After quite a number of portable trips, I found (like others) that there was no noticeable loss. On thinking about it further it's not surprising really. I was using an inverted vee antenna that was crossing the mast at an angle of about 60 or 70 degrees so the RF would not be expected to couple strongly to the mast. But what about using it for vertical antennas? We did some measurements on a Carbon-6 mast in our lab. This showed that the resistance of the base section was about 75 Ohms per centimetre. That gives a minimum resistance of about 3,000 Ohms per mast section. That suggests that the pole overall will be an effective insulator in most circumstances. Thus I think that it would be fine for any normal application, including for vertical antennas. The only use that I would not recommend is where a loading coil or trap is wound around the mast itself. So will lightweight carbon masts replace all our fibreglass masts? No, they will not. To equal the strength of our current fibreglass range, the carbon masts would need to be a lot more substantial than the Carbon-6 - and thus will have a much lower resistance - and that might lead to problems. My conclusion is that portable operators can use a Carbon-6 in almost any situation without incurring any excess losses. It's nowhere near as strong as our fibreglass masts but it's incredibly small and light which makes it a very useable option!

https://www.sotabeams.co.uk

RadioUser STOP PRESS!

Icom IP501MB LTE Base Station

The latest addition to Icom's growing range of LTE/PoC radio solutions is the IP501MB LTE base station. Ideal for a control room or office, the IP501MB allows a dispatcher to communicate with their team via the Icom LTE network wherever they are – be it in the next town or the other side of the country. Housed in a smart enclosure with power supply, the IP501MB, together with Icom's LTE dispatcher software provides an impressive communication solution and management tool for any business. Together they will allow you to not only communicate but track your LTE radios also. The IP501MB enclosure is compact (133 mm x 185 mm x 200 mm, H x W x D) and without the need of a separate external power supply can be situated in almost any space in a control room or office. The IP501MB is supplied assembled so all you have to do is plug the unit into a mains socket and it's ready to be used. To find out more about Icom's LTE/PoC radio system, visit the LTE radio section of the Icom website.

http://www.icomuk.co.uk

Radio News

STREAMING MEDIA: Streaming media may be cutting into broadcast radio's audience, but it could also present broadcasters with opportunities. "It is no more an enemy of broadcast radio than it is a friend: It all comes down to the specific content being streamed and how that affects broadcast radio's audience share," wrote James Careless in his RadioNet column. He added: "The key to attaining this salvation is for broadcasters to go all-out in replicating the very best features that streaming media websites and apps have to offer, and then topping them with the live information and personality-driven content that radio excels at." (SOURCE: Radioworld International)

https://tinyurl.com/y3kqfsvm

BRITISH RAILWAYS AMATEUR RADIO SOCIETY (BRARS): Ian Brothwell G4EAN has been in touch to say that, "membership of BRARS is open to anyone interested in both railways and amateur radio. Our subs for 2020 are £5. Our membership year runs from January 1st to December 31st. For years we have had three membership categories (Full, Associate and Retired).

We have now merged these three membership categories into one category, which, unsurprisingly is called 'Member'. We hope to publish an additional issue of our magazine Rails & Radio in 2020. This will very much depend on how many items for publication we receive from our members." For more information about BRARS please go to:

G4EAN@BRARS.info

www.BRARS.info

Radio News

ICOM SATELLITE PTT RADIO SOLUTION WINS MAJOR COMMS INDUSTRY AWARD: Icom has won the Federation of Communication Services (FCS) 2019 Gerald David Award for Innovation in Business Radio for its IC-SAT100 Satellite PTT Radio Solution. The award was presented at the Business Radio Gala Dinner which took place at the Château Impney Hotel near Droitwich following the organisation's annual conference. The Gerald David Award for Innovation in Business Radio came into being in 2004 and recognises innovation within the business radio industry. The Icom IC-SAT100 is the world's first dedicated satellite push-to-talk (PTT) radio and is the only PTT radio offering real-time communications at the push of a button between groups of individuals, each of whom can be anywhere on the planet. The IC-SAT100 uses the Iridium satellite communication network which covers the whole earth including both poles. Using 66 Low Earth Orbit (LEO) satellites it provides broader more reliable network coverage compared to Geosynchronous Equatorial Orbit (GEO) satellites. The IC-SAT100 can be used as a communication tool in remote and isolated areas where there is no mobile phone or landline network infrastructure thus ensuring business continuity and security for customers around the world. Speaking of winning the Gerald David Award, Bob Stockley, Icom UK's Managing Director said, "I'm very proud to have received this award and the recognition it represents to both Icom and Iridium and also that the FCS team saw the innovation behind the IC-SAT100 when choosing their winner." The FCS's Head of Business Radio, Tim Cull said, "Using the satellite to expand coverage is a great approach to a difficult problem. Of course, Iridium is a resilient system and so this approach preserves the Mission-Criticality that business radio customers need." Tim added, "The entries for the 2019 Gerald David contest were extremely strong. Icom UK is a worthy winner." For further details about this new product, visit the IC-SAT100 product page on the Icom UK website. For pricing and airtime costs contact:
http://www.icomuk.co.uk

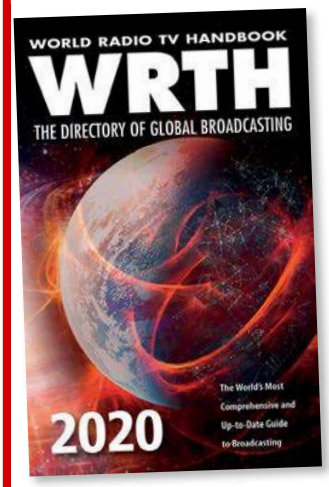
PARKER SOLAR PROBE SOLAR DATA: The SWLing Post reports that, over the past months, NASA's Parker solar probe flew closer to the Sun than any other spacecraft before it – not once but twice. The probe collected as much data as it could so that we can understand the Sun better. Now its mission team at Johns Hopkins Applied Physics Laboratory in Maryland has just received the final transmission for the 22GB of science data collected during those two flybys. That is 50% more data than expected, all thanks to the spacecraft's telecommunications system, which is performing much better than anticipated. Parker's ground team found out soon after launch that the probe was capable of a higher downlink rate.
Mission leaders are now taking advantage of this higher ability by instructing the probe to send back even more data from its second solar encounter in April. During that event, the spacecraft's four suites of science instruments kept busy collecting information. That's why the mission team is expecting to receive an additional 25GB of science data. The team will release the data from the first two encounters to the public later this year. Meanwhile, the spacecraft has now conducted its third flyby, which started on August 27th and reached the closest approach on September 1st. Researchers are hoping that the mission can gather the information we need to unravel some of the Sun's biggest mysteries, including why the sun's corona (its aura of plasma) is far hotter than its visible surface.
https://tinyurl.com/y6awsyny
https://tinyurl.com/yxndwxs5

RADIO ROMANIA INTERNATIONAL (RRI) NEWS: 1 of the 5 short wave transmitters that beam RRI's broadcasts is not working. The transmitter in Țigănești (BD 300-1 near Bucharest) is still out of work. RADIOCOM, our broadcasting service provider, has said that it will take up to several months to replace the broken component. In exchange, another short wave transmitter, in Galbeni, in the northeast of Romania, ID 300-1, has been repaired and is currently working. Due to the failure of the transmitter in, Țigănești the digital broadcasting (standard DRM) of some RRI programs in English, French, German and Russian has also been disturbed. Meanwhile, we are kindly asking you to tune in for RRI's short-wave broadcasts on the second frequency which we listed on the frequency schedule, as RRI usually broadcasts its programs on two frequencies to one target area. You'll find the frequency schedule on RRI's webpage (below). It is under the 'Frequencies' button. RRI is sorry for any inconvenience and hopes the situation will be remedied soon. **(SOURCE:** RRI; @RRInternational on Twitter 1815 UTC 4 Nov 2019, via Chrissy Brand).
http://rri.ro

SPAIN – NADA TO DAB: Lack of consumer interest and the rise of 5G might kill off DAB in Spain. The country wants to keep the analogue FM radio and will not introduce terrestrial digital radio DAB+. The Spanish government's decision to postpone discussions on the introduction of DAB in Spain has led to frustration among DAB advocates, including from the opposition party Coalició Compromís, which accuses the government to be '5G-biased' in the national digitalization process. From 2002 to 2011, 23 transmitters covered 52% of the population through three national multiplexes. Digital terrestrial radio is currently only available in the metropolitan areas of Madrid and Barcelona. Here, two multiplexes can still be listened to, via the older-system version of DAB, introduced in 1998. Total DAB listening in Spain has always been negligible: 1% or less, on a weekly basis. Neighbouring Portugal also put an end to trial DAB broadcasting 2011. Today, there are only four countries in Europe with a DAB/DAB+ listening on a weekly basis of 10% or more; the United Kingdom, Norway, Denmark, and Switzerland.
http://digitalradioinsider.blogspot.com

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

TOP TITLES



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Now on sale! The 74th edition of the World Radio TV Handbook, on sale 5 December 2019. The World Radio TV Handbook is the world's most comprehensive and up-to-date guide to broadcasting on LW, MW, SW and FM, with details on national TV. It is an extensive guide full of information on national and international broadcasts and broadcasters, clandestine and other target broadcasters, MW and SW frequency listings, Terrestrial TV by country as well as a detailed reference section.

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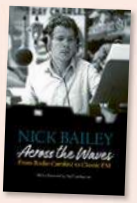
Across the Waves

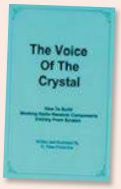
This autobiography gives a an count of Nick Bailey's life with Radio Caroline, other radio stations and finally with Classic FM. Reviewed in September's RadioUser, this is "an extremely entertaining and very readable book..."



£17.50 plus p&p

The Voice of the Crystal

Packed full of information on the fabrications of electronic components suitable for use in building crystal radio sets. Basic theory and simple analysis is combined with dozens of examples of historical practical work.



£14.99 plus p&p

Amateur Radio Essentials

For everyone interested in amateur radio. Aiming to answer frequently-asked questions that the editor has fielded on the phone while working for the RSGB, this book is edited from RSGB articles.

£9.99 plus p&p

Broadcasting Democracy: Radio & identity in South Africa

Providing an exciting look into the diverse world of South African radio, exploring how various radio formats and stations play a role in constructing post-apartheid identities.

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Electrified Voices

Looking at the early days of Japan's telecommunications, recording, radio and film industry.

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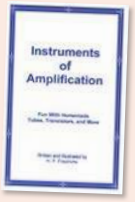
Instruments of Amplification

Rob Mannion G3XFD wrote: "A truly superb book but has chosen a title that really hides its 'light' under the proverbial bushel!"



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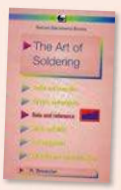
Radio Caroline

Revised since its first publication in 2003, this title details a history of offshore radio from 1958 to 1980, providing accounts of ship and fort-based radio stations and a history of Radio Caroline.

£18.95 plus p&p

The Art of Soldering

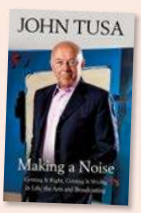
Many illustrations are included in this title to help demonstrate the correct procedures. The Art of Soldering dissolves the mysteries surrounding the subject of soldering and features some practical exercises so as to help learn to solder correctly.



£3.99 plus p&p

Making a Noise

John Tusa looks back over a long and varied career in radio, television and the arts. In this autobiography, Etched with candour, this is an entertaining memoir of Tusa's life.



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Hart Reviews

For 35 years Peter has been writing amateur radio equipment reviews for the RSGB's journal RadCom. These reviews are real world testing of performance and analytical reporting of how amateur radio antennas, radios, amplifiers, etc. really work.

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Radio User 2019 Index

Here it is: The 2019 RadioUser Index, pointing you to every article, review and feature published in the magazine in 2019.

Category	Issue

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PICTURES: GEORG WIESSALA

1

Vivaldi in the Valley

The editor meets innovative classical music show presenter Maureen Little, who has recently introduced her unique brand of programme to the Ribble Valley's community radio station, Ribble FM 106.7.

Georg Wiessala
wiessala@hotmail.com

We have covered the award-winning community radio station Ribble FM 106.7 before. I had previously visited them in March 2019. (*RadioUser*, April 2019: 54-55).

This small, multi-platform, broadcaster transmits to the Ribble Valley (Lancashire), the UK and worldwide on FM, DAB, on social media and through streaming.

Living in the Ribble Valley – now officially the 'happiest place in the UK' (see URL below) – Ribble FM is, naturally, one of the stations I listen to on a regular basis, mainly for local news and events, traffic and weather, music and talk.

https://tinyurl.com/y3mvgj4m

Ribble FM's programmes range from local business content and countryside matters to culture and education, daily breakfast and home-run slots. The station covers a variety of music genres, like Jazz, Musicals and Pop, but had, until now, not been offering a classical music programme, for which there is a big demand among the Ribble Valley's approximately 68,000 inhabitants.

This all changed in July this year. Therefore, as a lifelong classical music aficionado myself, I was intrigued when I heard that the station was putting on a classical music show from the summer onwards.

I made my way to Clitheroe again, to meet the initiator and presenter of the new show, Maureen Little (Figs. 1-3).

The following is an edited transcript of the interview I conducted with Maureen in November 2019.

A Little Classical Music

RU: So, Maureen, how did you end up presenting a Classical Music Show on your Local Radio?

Maureen: Well, like so many other events in life I ended up in the right place at the right time. Initially, I had been invited by Kath

CHRISSY BRAND

2

Fig. 1: Maureen with station co-owner and station manager Lee Roe. Fig. 2: Ribble FM's first Classical Music presenter, Maureen Little.

Lord-Green of Ribble FM in Clitheroe to go on her *Farming and Countryside Matters* Show, to talk about bees. At the time I kept bees alongside my main business, which was as the owner of a small plant centre and nursery specialising in bee-friendly plants.

I must have had a 'good face for radio', as the saying goes because Kath took me up on my suggestion to have a regular, monthly gardening slot on the show, which I still do. I cover jobs in the garden, plant of the month, and we have a 'gardeners' question time'.

***RU*:** So where does the classical music bit fit in?

***Maureen*:** It struck me that although the radio station covered lots of items of local interest and a wide range of music genres, there wasn't any classical music featured in any of the shows. By this time, Lee Roe (Fig. 1) had been appointed station manager. So I just asked him why there wasn't any classical music, when, no doubt, such a programme would appeal to a reasonable proportion of the listeners. His answer was pretty straightforward – they didn't have anyone who was both willing and equipped with sufficient knowledge to present such a show. So, grasping the bull by the horns, I said that if he would train me up, I would do it. He said he would, and now I do! I've always loved classical music and in fact, when I tune in to the radio it's nearly always Classic FM or Radio 3.

I particularly like Classic FM as it's brought classical music to the masses, as it were. So in a way, I suppose I wanted to bring that to our local radio station.

[see also David Harris's article on Classical Music on the Radio *in* RadioUser*, December 2019: 66 – **Ed**.].*

Mastering Myriad

***RU*:** Maureen. what exactly did the training consist of?

***Maureen*:** Well, because my show goes out on Sunday afternoons, and the radio station policy is currently that there are no live shows on Sundays (simply to give the presenters a proper day off) my show would be recorded.

Consequently, I had several intense learning sessions on a piece of software called *Myriad 4*, which was at first very daunting, simply because I'd never come across anything like this technology before. With brilliant tutoring from Lee Roe and another presenter, Mark Blackman, I got the hang of it and my first recorded show went out on 7th July 2019 (Fig. 2).

***RU*: I** understand that *Myriad* more-or-less sorts out the playlist for you. Is that right?

***Maureen*:** Yes and no, really. Incidentally, Ribble FM is now using the latest version of Myriad – *Myriad 5*. Amazing technology. With some of the regular shows, *Myriad* does pick the songs.

However, because mine is a 'specialist' show, I compile my own playlist. I have worked out a system that suits me and, I hope, works well for the listeners. Each programme is 2 hours long (Sundays 4-6 pm), so I have a theme each hour, such as 'The Sea' or 'Morning, Noon and Night'; this gives me a peg to hang my choices on so it's not all just a random mixture.

I'm also working through the alphabet, by composer, and I have recently introduced a

'composer's birthday' slot. And there's listeners' requests and dedications too (Fig. 3).

The timing is sometimes a bit fiddly but that's where *Myriad* is great because if you have, say, 2 minutes 33 seconds to fill, it allows you to select a piece to the second.

***RU*:** I see. Maureen, I know it's not polite to ask a lady her age; however, would I be right in thinking that you won't see 60 again? And, again, with all due respect, do you think that your age has been a barrier in any way?

***Maureen*:** No, I won't see 60 again – in fact, I'm 65 on my next birthday!

As far as whether it's a barrier, the answer is definitely 'no'. That, I think, is due in part to the fact that I don't think of myself as old. Yes, I retired from my plant centre business recently. However, rather than sitting back and letting the grass grow, I like to take on new challenges; and learning how to present a radio show is one of those challenges...

No Age Barrier

... [continued] The other part of why my age has not been a barrier is down to station manager Lee. My age was never an issue as far as he was concerned – as long as I was, and am still, willing to be open to what he can teach me, and carry out what I have learnt with sufficient competence then I'll carry on for as long as Ribble FM wants me.

***RU*:** Don't you find it a bit scary, faced with the technology and also the fact that your voice will be heard by many people you are never likely to meet face to face?

***Maureen*:** I'd be fibbing if I said that I wasn't scared. You need a bit of adrenaline in your veins otherwise you can sound a bit 'flat'. I was certainly scared the first time I went 'solo', as it were.

And, even though my show is recorded, you have to concentrate on timings and on which button to press!

However, because Lee is always at the station when I record, I know that I can call on him if there is a technical problem.

As for the actual speaking – it's really just like talking to a friend about a particular piece of music. You don't want to be too flippant or too serious – as Lee said to me, just be yourself: as well as the music, that's what the listeners want – someone they can relate to. I never visualise how many people might be listening – I think I'd run a mile if I did!

Recording Routines

***RU*:** So, Maureen, what's the usual routine for recording a show?

***Maureen*:** Well, I like to prepare my playlist well in advance at home so I have sufficient information about the composers, and how my themes, features, and any requests will sit in the overall scheme. I have my master list of all the tracks that have been uploaded onto *Myriad*, with the timings, so I basically just go through and pick out what I fancy and what I think the listeners would like.

I make a rough schedule to include the advertising breaks at roughly 20-past and 20-to the hour and the news on the hour. Experience has shown that I need about 15 minutes' worth of music for each of the six sections so I choose pieces to make up that amount of time. Obviously, I can't do exact timings at this stage because I don't yet know how long my voice tracks will take.

Then it's off to Studio 2 where I record. I bring up my programme on *Myriad*, which has already pre-selected tracks for me, so the first job is to replace them with the ones I have chosen...

3

Fig. 3: Preparing *A Little Classical Music* takes time and care.

The Fun Bits

... [continued] Then the fun bit begins – the 'voice-tracking' in between the pieces. I don't speak before or after every track – that would be boring for the listeners because they want to hear the music. However, I generally speak two or three times in each section, to introduce the music, say a bit about the composers and such like, and of course, to remind the listeners that they are in fact listening to Ribble FM!

Timings can sometimes be a bit tricky because I have to be spot on with the news at each hour, so I always allow myself some leeway so I can choose a track at the last minute to slot in.

I sometimes re-record one of my voice tracks if I'm not happy with it, but I try and be as spontaneous as possible. As soon as I have 'saved' my voice tracks and I'm happy with it all, the programme is there, ready to go out at the scheduled time. And that's it!

***RU*:** Maureen, many thanks indeed for this interview. On behalf of *RadioUser*, I wish you all the very best for your future.

*[my thanks go to Lee Roe, station director at Ribble FM, for his time, and for the permission to use the photographs reproduced here – **Ed.**].*

Ribble FM 106.7
Email: studio@ribblefm.com
http://www.ribblefm.com

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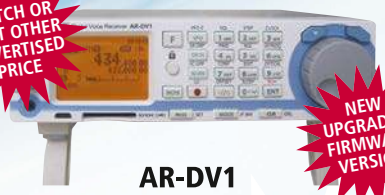

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Maritime Networks and Sail Mail

Robert Connolly
gi7ivx@btinternet.com

Robert Connolly provides an overview of maritime radio and weather information resources available to private yacht owners, reports on a local SAR mission in Northern Ireland and has reader feedback from a cruise ship.

In my last *Maritime Matters* column (*RadioUser*, January 2020: 20-23), I provided an outline of the MF/HF maritime bands used by commercial shipping. As I previously mentioned, many yachtsmen tend not to use the MF/HF marine frequencies, due to the costs involved to obtain the license to operate on these frequencies.

In addition to this, many of them are proud of their vessels and like to keep them looking as good as possible; they often feel that the addition of GMDSS MF/HF and/or satellite antennas might spoil the 'looks' of the vessel. Many would obviously also consider the potential risk of theft of expensive radio equipment while the yacht is unattended in ports or marinas, as they would feel having commercial Hf and/or satellite antennas clearly visible on their yacht is a 'virtual advertisement' to announce to everyone that they are carrying expensive marine radio equipment on board.

Apart from the potential theft of any equipment, there is also the repair costs for damage to the vessel that may have happened during the theft or attempted theft, not to mention any safety aspects (for example hull or deck damage) that may have arisen. The professional repairing of such damage to an expensive yacht does not come cheap when the owner wishes to keep the vessel looking as smart as possible.

Installing amateur radio equipment in place of commercial marine radio equipment does not mean to say that they sail on the proverbial 'wing and a prayer' in their cruising areas, or even when crossing the North Atlantic Ocean in either direction. Many opt for a cheaper option and become fully licensed amateur radio operators. Skippers simply install that type of HF equipment on their vessels. Their amateur HF antenna can be 'hidden', by using the mast stays or sail control ropes, thereby making it much less obvious that there is HF radio equipment on board.

Take the Weather with You

Obviously, reception of GMDSS information, and especially weather information, including gale warnings, is just as important to leisure sailors as it is to commercial vessels. Yacht owners can achieve this using low priced NAVTEX receivers that decode the information via their onboard computer.

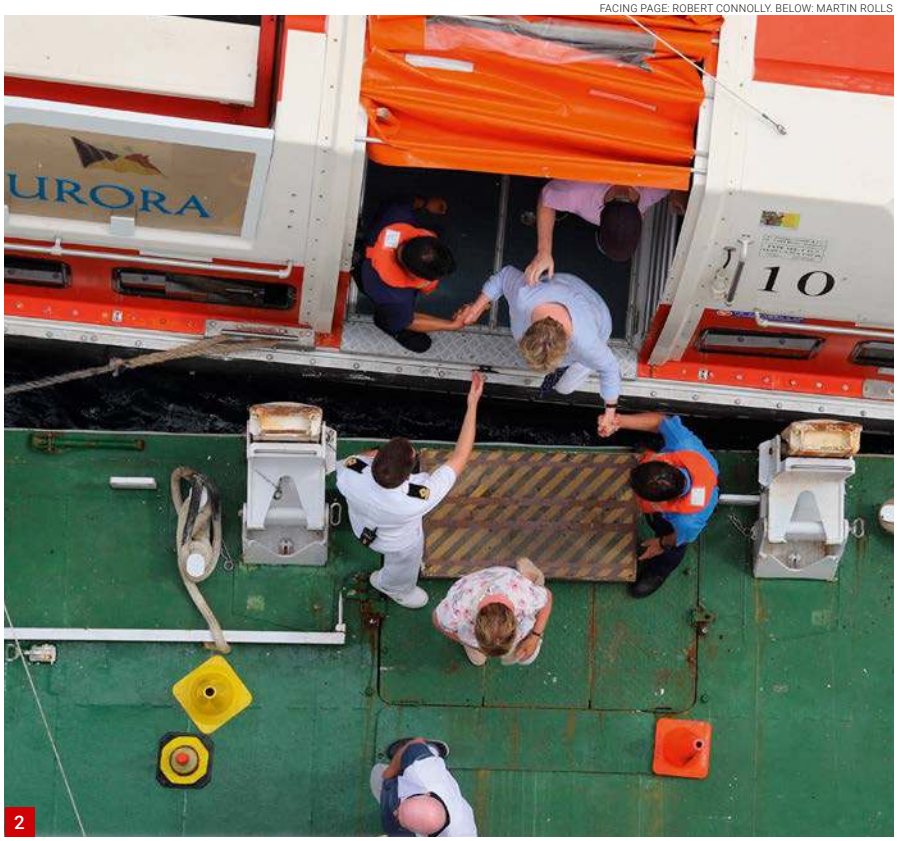
It is possible to receive weather charts using various means. Once again, some owners will make use of their onboard computer. Software is cheap and easy to obtain, and some programs, for example, SeaTTY will decode NAVTEX transmissions, along with weather data on RTTY, for example, the synoptic weather data reports transmitted from Offenbach by *Deutscher Wetterdienst (DWD)*, or their radio-fax charts.

https://tinyurl.com/y72euef9

Radiofax weather charts are also transmitted by RN Northwood in the UK, Halifax, Canada, and by the US coastguard from Boston. In addition, the US coastguard transmits weather data on HF in a similar format to the Navtex transmissions on 518 kHz and 490 kHz. As we know, all this information is receivable using a receiver that has general frequency coverage with SSB, and not just marine band transceivers.

https://www.uscg.mil

FACING PAGE: ROBERT CONNOLLY. BELOW: MARTIN ROLLS



2

Fig. 1: The Dublin-based coastguard helicopter *Rescue 116*. Fig. 2: Martin Rolls's view of the cruise ship's disembarkation station during a recent cruise.

Emergency Networks

You may think that is fine for receiving weather and other maritime safety information. However, what happens if the yacht has a serious problem or a crew member is injured, and assistance is required? Those in the yachting fraternity who are fully-licensed radio amateurs maintain their own maritime networks operating from various land-based locations around the world.

Most of these networks have set times when cruising yachts in their region call in by amateur HF radio and report their position, speed, course and so on. These networks will also provide updated weather information, including reports from other yachts in the region.

If a yacht fails to check-in for a scheduled contact, attempts are made to contact the yacht concerned. If those attempts fail, the land-based amateur control station may commence to notify the authorities and provide them with the yacht's details, including the last reported position, course and speed.

Weather data can also be obtained by obtaining GRIB files. These are a special binary format of weather data, similar to what is available on the weather forecast sites. However, since the files are highly compressed, they are ideal for downloading across wireless communication devices.

Table 1 is an overview of some amateur radio networks ('nets') for yachts. On these nets, participants can receive weather information, exchange messages and give your passage plan details to someone ashore.

SSB Sail Mail

In addition to the various nets (Tables 1 and 2), yacht-based radio amateurs also have access to SSB Sail Mail provided by Kiel Radio (DAO) from Kiel Germany, MarineNet Radio (WKS) from Jupiter, Florida, and Global SSB Email service from Brugge (Bruges, Brügge), Belgium, along with other locations across the world.

https://tinyurl.com/s6rn56n

The transmission mode of these is PACTOR.

Table 3 details European stations and frequencies believed to be currently active.

The frequencies shown are ship-station dial frequencies, in kHz.

As you can see, the maritime communications available for yachts not wishing to carry full GMDSS MF/HF radio equipment provides extensive coverage and, in some respects, even more so, when compared with official marine MF/HF.

The networks in Northern Europe are not used by just as many operators, compared to the Mediterranean and Caribbean areas, where they are extensively used. Many of these networks are receivable in the UK and, in the past, I have found it interesting to listen to traffic on the Caribbean nets. The best time for listening is between 0600 and 0930 in the morning and from 1800 to 2100 in the evening.

False Alarm with Good Intent

Recently there was a major search and rescue task in my local area. A lady walking her dog on the local beach spotted a male removing his outer clothing and entering the sea. As it was dark, she was concerned that he was about to harm himself and decided to notify the Coastguard.

However, she was unable to get a mobile phone signal below the cliffs; she then left the beach for the higher ground to make the phone call. Immediately on receipt of this information, the Coastguard launched a major SAR operation, deploying several local Coastguard rescue teams and the local inshore lifeboat. They also requested police attendance. To assist in the search, the Maritime Rescue Coordination Centre (MRCC) requested the Dublin-based coastguard helicopter *Rescue 116* (Fig. 1) to attend.

It carried out shoreline searches using its 'night-sun' searchlights and thermal imaging camera.

While the helicopter search operation was ongoing, the coastguard MRCC was advised that a drone (not part of the search) was operating within the helicopter search area. This information was immediately passed to the helicopter. The latter opted to move off-shore, while a land-based team was despatched to get the drone operator to cease flying immediately. In the meantime, quite a number of locals became aware of the search operation as a result of the local 'jungle-drums', or social media as it is now called. One local resident was driving home and noticed many locals in the area, so he stopped to inquire as to what was happening before continuing his journey home.

Back at the search area, the rescue helicopter reported that it would have to return to base to refuel. It seemed as if the operation was going to be scaled down, as a possible false alarm. At the same time, the police notified the MRCC that a local person

had just reported her husband as missing, so the search operation was continued.

A Sudden Realisation

An all-weather lifeboat from further up the coast was tasked to assist, and our local ILB had a crew change and refuelled. Shortly after midnight, the rescue helicopter returned on the scene for a further search. The local resident who had earlier stopped to enquire as to what was happening had what could be referred to as a 'light- bulb moment, when he suddenly realised that he *was, in fact, the casualty who was being searched for*.

He had been for a swim in that location just after dark, something he frequently did to unwind after a day's work. He immediately contacted the authorities to advise them. Police had also advised the MRCC that the missing husband had also turned up.The SAR operation was then terminated and classed as a 'false alarm with good intent'.

All communications were carried out on Channel 0 (156.0MHz), the UK Coastguard private channel. This is a UK-only channel and not part of the international marine frequency band.

Until last year, Irish Coast Guard rescue helicopters were not equipped with this frequency. However, as the Dublin- and Sligo-based helicopters are frequently tasked to Northern Ireland, the Irish Coast Guard helicopter fleet was enabled with this frequency for use it on UK taskings.

Cruise Ships and Mobility

Reader Martin Rolls contacted me recently to tell me that he had been on another 'maritime adventure' (a cruise – artistic license!) around the Mediterranean. Like many cruises, one port of call involved going ashore by tender, and this raised some questions regarding cruise passenger safety.

Martin's cabin was directly above the disembarkation station (Fig. 2). Looking down, he had a good view of what went on. Martin said, "*During the afternoon, passengers began being ferried back to the ship. By this time, the wind had increased, not by much, just enough to make the lifeboat move, which made it difficult for the lifeboat crew to get alongside. After about ten minutes, they managed to get as close as they could; it left about a foot between the lifeboat and the ship.*

"As I watched, a number of people got off, some with difficulty. When everyone was off, a wheelchair was offloaded by the crew, then an elderly lady appeared ready to get off. Over ten minutes passed, and the lady was still unable to leave the lifeboat for the ship.

"I thought she was not going to be able to leave the lifeboat. Eventually, two crew members stood on each side of her and lifted her from the lifeboat to the ship."

More and more people, especially elderly people, are taking cruises, and many have mobility issues. Martin goes on to say, "*As I watched what happened, I began to ask myself what would happen if an emergency did happen, and the ship has to be evacuated? On this day the weather was calm, and we were not far from shore. I wonder what would happen out at sea, at night and in rough weather. Surely it will not be long before such a rescue has to take place?*"

Cruise ships are getting larger and larger, carrying several thousand passengers and catering for all ages and abilities. Martin's thoughts are something that I have also wondered about.

Just what would happen to wheelchair passengers if an evacuation of the ship was required in rough weather? Obviously, a disabled passenger could be lifted by crew members into a lifeboat, as long as the ship was still vertical.

However, what if the ship had capsized, similar to the ill-fated *Costa Concordia*? Have authorities given any thought to this scenario, given that a disabled person has just as much right to survival as anyone else?

A Happy and Healthy New Year to you.

Until next time: *Fair Winds and Good Listening*.

Resources

Irish Coast Guard: **https://www.gov.ie/en/policy-information/eda64a-the-irish-coast-guard**
NOAA (USA) Worldwide WXFAX: **https://www.nws.noaa.gov/os/marine/rfax.pdf**
Royal Yachting Association (RYA): **https://www.rya.org.uk/Pages/Home.aspx**
Sail Mail Association: **https://sailmail.com**
Yachtcom (Marine Weather): **http://info.yachtcom.co.uk/weather.php**

NORTHERN HEMISPHERE

Mediterranean: 8122 kHz (0530 UTC)
Atlantic ('Herb', I believe, is the operator): 12359 kHz (2000 UTC)
Caribbean Weather and Cocktail Net: 7086 kHz (0730 and 1630 local time)
Caribbean Calling and Frequency Net: 8104 kHz (1215 UTC 0815 AST)
Bahamas Weather Net: 4003 (0700 AST)
Northwest Caribbean Net: 8188 kHz (0800 AST)
Cruisheimer's Net: 8152 kHz (0830 AST)
Caribbean Weather Watch: 4045 kHz (1030 to 1100 and 1200 to 1300 UTC), 6221 kHz (1330 to 1345 UTC), 8104 kHz (1230 to 1300 UTC), 8137 kHz (1100 to 1200 UTC), 12350 kHz (1300 to 1315 UTC), and 16526 kHz (1315 to 1330 UTC).

Table 1: Maritime Amateur Radio Networks.

AMATEUR RADIO MARITIME MOBILE NETS

UK: 14303kHz (0800 and 1900 UTC)
European: 14297.5kHz (1900 UTC)
Trans-Atlantic: 21400kHz (1300 UTC)
Intermar (German Net): 14313 (1630 UTC)
Maritime Mobile Service: 14300 kHz (1600 to 0200 UTC)
South African Maritime Net: 14316 and 7120 kHz (06:30 and 11:30 UTC)
Pacific Seafarer's Net: 14313 kHz (0325 UTC).

Table 2: Primary Simplex Ship-to-Ship Frequencies (in kHz).

KIEL RADIO

RX	TX	CH ID
2628.5	2550	DA0-2A
4242.5	4164.5	DA0-4A
8637	8336.5	DA0-8B
12762	12412.5	DA0-12A
12831	124165	DA0-12B
17046.5	16609.5	DA0-17B

BRUGGE

RX	TX	CH ID
6329	6329	OSY
8420.5	8420.5	OSY
12579	12579	OSY
16806.5	16806.5	OSY

Table 3: European SSB Sail Mail Stations.

A Medium of Seemingly Endless Contradictions

David Harris
mydogisfinn@gmail.com

David Harris reviews an exciting and comprehensive new book on radio, which ranges widely over a plethora of technical, cultural, social and historical topics connected to the medium.

This well-illustrated hardback is published in association with the Science Museum, London, which is frequently the site of radio-related exhibitions, such as the *Top Secret* show at the moment.
https://www.sciencemuseum.org.uk

It has been written by an academic at the University of London and is likely to be found in the book shops of our national museums.

Essentially, the title is a long essay, which takes a very broad-brush approach to the history of radio. It is not a comprehensive history of broadcasting, nor a full overview of the technology of radio.

The author makes the point that radio is now into its third century and that some 95% of the world's population can receive radio broadcasts. There are around 2.6 billion radios in the world, and he describes radio as an "everywhere-medium".

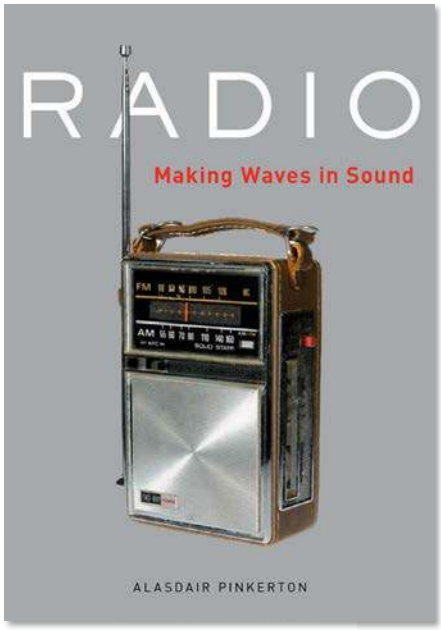
In the book, Pinkerton blends information about the technological development of radio with facts and figures, for instance, about the tallest radio masts and the most remote radio stations.

Interestingly, he also includes Very Low Frequency (VLF) transmissions and how they were used to communicate with submarines. The ability to monitor natural sounds from the atmosphere ('nature radio') is also covered, under VLF communications.

There is quite a bit of discussion about the early days of the radio, and how this was a complex invention drawing upon the discoveries, over a long period of time, of a number of scientists. He talks about the early roles of Tesla and Marconi and the radio pioneers of many countries.

There are lots of facts, such as that the USA has over 15,000 radio stations, the first being KDKA, which began in Pittsburgh in 1920. This station is now owned by CBS and continues to broadcast on 1020 AM to the Pittsburgh area.

The author also acknowledges the role of radio amateurs in the early days of radio. In the UK, there were 2000 hams in 1913, and there are around 75,000 today. Radio was important in announcing the independence of countries such as Israel, Pakistan and India.



Pinkerton, A. (2019)
Radio – Making Waves in Sound
Reaktion Books/Science Museum London;
240 pp.; hbk; £18.00
ISBN 9781789140781
www.reaktionbooks.co.uk

There is material on the need to regulate radio frequencies, which resulted in the *1926 Geneva Plan* and the formation of the International Telecommunication Union (ITU).
https://www.itu.int/en/Pages/default.aspx

The author also talks about pirate radio, analysing how it helped transform broadcasting in the UK.

The chapter on international broadcasting is of particular interest. The first international broadcaster was PJCC, run by Phillips of The Netherlands. It was followed by Radio Moscow in 1929, and by the BBC in 1932.

The tradition of a Royal Broadcast on Christmas Day originated in 1932. The slot at 3 pm British time was then seen as an optimum time for broadcasting to Britain's colonies.

The role of international radio as a propaganda tool began in the late 1930s with Germany and Italy spreading their own ideologies via the airwaves. After the Second World War, we see how international broadcasting became an important weapon in the Cold War; in this era, Russia, China and the USA all broadcast around the world. Although Russia no longer bothers with short wave today, China and the USA are still major international broadcasters, long after the ending of the Cold War.

Pinkerton covers an extensive range of topics, including radar, drones and 'hate-radio', investigating, in particular, the role played by Radio Rwanda in the ethnic cleansing of that country in 1993/4. He traces hate radio back to Father Charles Coughlin, an antisemitic broadcaster in the USA in the 1930s.

Radar was originally developed in the UK as a means of detecting enemy aircraft, and it is now used in marine and aviation communications, and in other fields. Contemporary drones are also discussed, as an application of radio control technologies to a potential weapon of war.

The book is comprehensively referenced and has a short bibliography. On almost every page, there is a historic photo or image that is related to radio. The images do not necessarily relate to the text on that page but are well-chosen and attractive to look at.

Although it is not published in a large format, this could be seen as a 'coffee-table-book', rather than an academic treatise. It is very well written and, unlike some academic books, it is very easy to comprehend.

Dr Pinkerton is Associate Professor in Geopolitics in the Department of Geography at Royal Holloway, which is part of the University of London. *Radio: Making Waves in Sound* is his first book. He is also the author of numerous academic articles, including several on broadcasting.

Milestone for the North Atlantic Space-based ADS-B Trial

David Smith
dj.daviator@btinternet.com

David Smith has news on the new space-based ADS-B system over the North Atlantic and finds a free online training course for hobbyist drone fliers. He also outlines ATC operations at Jersey Airport.

The transformation of air traffic services over the North Atlantic has taken another step forward, with the trial introduction of new, reduced, lateral aircraft separations. The minimum distance between aircraft 'wing-tip-to- wing-tip' has been reduced from 23 to 19 nautical miles (nm), enabling greater flexibility in how the available airspace capacity is used.

This follows the reduction in the minimum safe 'nose-to-tail' separation between aircraft from 40nm to 14nm in March and represents another step towards the end of the traditional system of rigid oceanic tracks; it is, therefore, something that will give airlines greater opportunity to fly the most efficient routes and levels, reducing fuel burn and harmful emissions.

The change has been made possible following the introduction of near real-time aircraft surveillance, using the *Aireon* global space-based ADS-B service. At the end of March 2019, NATS and NAV CANADA started an operational trial of satellite-based ADS-B surveillance to improve the safety, predictability and fuel efficiency of air traffic over the North Atlantic; the world's busiest oceanic airspace with over 500,000 flights a year.

The ADS-B service has augmented the traditional ADS-C messaging system that delivers aircraft position reports every 14 minutes, with low-latency updates at least every 8 seconds. That leap has made it possible to safely position aircraft closer together, freeing up capacity on the most fuel- and environmentally-efficient routes, while also making the airspace safer.

Martin Donnan, NATS director Prestwick, said: *"Our trial has been going extremely well, and we're delighted to have progressed its scope as planned. We're starting to see the realisation of benefits for our airline customers and we're able to offer the flight levels and routes they want more often, while also enabling them to fly at their preferred speeds."*

Since the trial began at the end of March last year, 4,414 flights have been assigned

more fuel-efficient levels, and over 3,400 have been able to fly more direct routes than over the same period in 2018. Over 52,000 flights – more than a third of all eastbound crossings – were able to fly their most cost-efficient speed, totalling more than 45,000 flight hours.

NATS and NAV CANADA continue to collect data for their trials and expect to further reduce lateral separations to 15nm, from November 2020, when ICAO is due to formally publish new separation standards.

https://www.navcanada.ca/splash.htm
https://www.nats.aero
https://www.icao.int/Pages/default.aspx

Global Space Weather Aviation Forecasting

In a major new development, civil aviation is going to have access to consistent, world-wide, space weather information. On 7 November 2019, in response to an International Civil Aviation Organization (ICAO) mandate, the world's major space weather centres started issuing global advisories related to disruptions in HF radio communications. These comprise of communications via satellite, Global Navigation Satellite System (GNSS)-based navigation and precision location, and enhanced radiation risk to aircraft occupants.

Initially, this will involve a trio of global service providers: the National Oceanic and Atmospheric Administration's Space Weather Prediction Center (SWPC) in the United States, the Pan-European Consortium for Aviation Space Weather User Services (PECASUS), and the consortium of Australia, Canada, France, and Japan (ACFJ).

https://www.swpc.noaa.gov
http://pecasus.eu
https://previ.obspm.fr

Additional consortia may be added to the roster of global services providers in the future.

While space weather has been part of military aviation mission-planning for some time, civil aviators have not had consistent, world-wide, access to space weather information. ICAO recognizes that better preparing flight crews, operators, air navigation service providers, and civil aviation authorities for potential impacts of space weather will improve the safety and efficiency of aviation operations.

These unified-threshold products were approximately 100 years in the making. World War I saw the first use of aviation wireless transmissions, leading to a strong

ATC Profiles 20: Jersey Airport

ICAO Code: EGJJ IATA Code: JER

FREQUENCIES	(MHZ)	HOURS OF OPERATION
Jersey Approach	118.555	0545-2100
Jersey Approach	120.305	0545-2100
Jersey Tower	119.445	0515-2045 Sun
Jersey Ground	121.905	As directed by ATC
Jersey Control	125.205	0545-2100
	120.205	0545-2100
ATIS		
Jersey Information	134.680	0545-2100 (Tel: 01534 446 301)
Jersey Fire (non-ATC)	121.600	Fire vehicles attending aircraft on the ground
NAVAIDS	ILS CAT I Runways 08	and 26
	JSY VOR 112.200MHz	
	JW NDB 329.000kHz	
RUNWAYS	08 1706m x 45m	
	06 1706m x 45m	
HOLD	JSY VOR	

NOTES (A-Z)

CAT II/III Operations
Jersey Airport is not equipped for CAT II/III operations, however, Low Visibility Procedures are used to protect CAT I and Lower-Than-Standard (LTS) CAT I operations. When ATC notifies Low Visibility Procedures, Taxiway Echo is not available as a runway exit. Intermediate taxiway stop bars will be used to reinforce taxi clearance limits. Runway 08 Arrivals: Arriving traffic on Runway 08 will vacate the runway via Rapid Exit Taxiway Foxtrot or at the runway end via Taxiway Alpha. Runway 26 Arrivals: Arriving traffic on Runway 26 will vacate the runway at the runway end via Taxiway Bravo and report vacated after passing the yellow/green section of centre-line lighting.

Handling Agents
The airport is not available under any circumstances between 2359-0700, except for emergency or ambulance flights. Handling is mandatory for all arriving aircraft. Arrangements should be confirmed in advance with one of the following handling agents: Menzies Aviation Ltd. (Frequency 129.750MHz); The Private Jet Company Ltd.; Rendezvous Handling Ltd. (Frequency 131.425 MHz).

Helicopter Operations
Helicopters are to use the main runway for all arrivals and departures, as no specific helicopter landing area exists. Helicopters under 1,400kg may be handled by the Aero Club and parked on the grassy area southwest of Holding Point Hotel, space permitting. Helicopters over 1,400kg must be handled by Gama Aviation and parked on their apron. All helicopters requiring Jet A-1 fuel must be handled by Gama Aviation.

Noise Abatement
Wherever possible pilots should avoid overflying the island below 1,000ft Above Aerodrome Level (AAL). Circuit Altitude: Whenever cloud base permits, aircraft should maintain the following altitudes and make the majority of the circuit over the sea: Standard circuit altitude for propeller-driven aircraft is 1,300ft Above Mean Sea Level (AMSL; 1,023 ft AAL). Standard circuit altitude for turbo-jet aircraft is 1800ft AMSL (1523ft AAL). The Noise Abatement Zone for turbo-jet aircraft covers the whole island and extends for 5nm beyond the coastline. Noise technique reduced power should be maintained until clear of the Noise Abatement Zone. The Noise Preferential Routeings and Procedures are supplementary to the noise abatement take-off techniques as used by piston-engined, turbo-prop and turbo-jet aircraft. All aircraft departing from Runway 26 at Jersey and routeing to the south of the airport under VFR, must climb straight ahead to 800ft AMSL (523ft AAL) before turning left and must route via Corbière Lighthouse. Thereafter, as much of the flight as practicable must be conducted over the sea. These requirements may at any time be departed from to the extent necessary for avoiding immediate danger.

Sark Restricted Area
Pilots are to note that flight is not permitted at a height of less than 2,000ft above ground level within 3nm of the Island of Sark (Restricted Area R095), except with the permission of the Channel Islands Director of Civil Aviation or from Guernsey ATC as necessary.

Use of Runways
Runways 08 and 26 are suitable for Lower-than-Standard (LTS) Category I operations supported by an ILS Classification of I/T/3. Runway 26 is suitable for Lower than Standard Category I operations supported by an ILS Classification of I/T/3. Operators must inform ATC when they intend to fly an LTS Category I approach, in order that the required safeguarding can be ensured. Practice LTS Category I approaches will not be afforded any safeguarding. Operators' attention is drawn to the likelihood that the local terrain on final approach to both Runway 26 and Runway 08 is considered to be challenging for radio altimeters and auto-land procedures.

Visual Circuit Procedures
All circuits will be to the south of the aerodrome unless advised by ATC. Wherever possible, the majority of the circuit must be carried out over the sea. Standard circuit altitude for propeller-driven aircraft is 1,300ft Above Mean Sea Level (AMSL; = 1,023ft Above Aerodrome Level, AAL). Standard circuit altitude for turbo-jet aircraft is 1800ft AMSL (= 1,523ft AAL). Visual circuits will not be permitted when the cloud ceiling is lower than 600ft AAL.

Visual Reference Points (VRP)
Jersey VOR (JSY); Guernsey VOR (GUR); Dinard VOR (DIN): Alderney Lighthouse; Cap de la Hague; Carteret Lighthouse; Casquets Lighthouse; Corbière Lighthouse; Fort Le Marchant; Fremont TV Mast; Hanois Lighthouse; Héauville; Herm Island; Minquies; Noirmont Point Lighthouse; North West Corner; Pointe de Rozel; Roches-Douvres Lighthouse; South East Corner; St Germain; St Martin's Point.

Warnings
Pilots may experience turbulence and variable wind conditions caused by nearby cliffs on final approach and landing on Runway 08. Some directional control difficulties can be experienced in strong crosswinds from the southeast and southwest, due to the effects of the wake from the aerodrome buildings. Skydiving may take place all year round, except on Christmas Day, during airport hours, over St. Aubin's Bay, from the surface to Flight Level 110. Jersey ATC may temporarily re-classify a portion of the Channel Islands TMA radius 10nm centred on Jersey Aerodrome from FL 80-FL 110 as Class D Airspace to permit this activity. Pilots are reminded that airspace to the north of 50 degrees North (the London Flight Information Region) is subject to London Area Control Centre, and airspace to the east, south and west (the Brest FIR) is subject to Brest ACC; it is the responsibility of pilots to acquaint themselves with the requirements of the respective UK and French authorities.

post-war interest in radio communications. In 1919, the *Union Radio Scientifique Internationale (URSI)* was created to study radio science and radio-telegraphy.
https://www.ursi.org/ursi_mission.php

Radio communications 'effects' from sunspots and electric and magnetic disturbances in Earth's upper atmosphere were apparent. URSI inaugurated a daily service of radio (dot-dash) bulletins broadcast from France's Eiffel tower in 1928.

One year later, the United States replicated the service for land, marine and aerial needs. In 1939, The US Department of Commerce, National Bureau of Standards- Radio Section initiated a formal service for forecasting radio transmission information and maximum useable frequencies.

Eos, Transactions of the American Geophysical Union (AGU) first published the method to forecast the monthly mean sunspot number, then a key parameter for high-frequency radio propagation, in 1949.
https://www.agu.org
https://eos.org

Subsequently, during both wartime and peacetime, aviation has flourished. Flight safety is now tightly coupled to aviation communication, positioning, tracking and avionics integrity, all of which can suffer from solar-terrestrial disturbances.

In this century, the World Meteorological Organization recognized that aircraft operating in newly opened polar routes could be subject to solar radiation storms that could affect 'health, communication and the global positioning system'.
https://public.wmo.int/en

As a result, ICAO has structured a space weather advisory system that will be used by national forecasting agencies, federal and international civil aviation authorities, domestic and international commercial airlines, and private companies. AGU is a staunch supporter and publisher of research that has elevated space weather as a discipline, especially in journals like *Space Weather* and *Space Weather Quarterly*.
https://tinyurl.com/ql8tty4
https://tinyurl.com/spkpp4n

As the space weather advisories are integrated into the global aviation system there will likely be new opportunities to research: unanticipated geophysical conditions reported by aviators, radiation effects on humans and avionics, and the scope of radio disruptions on aviation radars, communication and navigation.

Two Millionth Flight of the Year

In September 2019, NATS handled 237,906 flights in UK airspace, an increase of 0.4% compared to September 2018. There was growth in several areas of the operation compared to the same month last year – non-transatlantic international overflying traffic increased by 12.1%, and traffic grew at both of NATS' ATC centres at Swanwick (0.4%) and Prestwick (1.4%). There was also growth at six of the 14 airports where NATS provides the ATC service, including two of the 'big five' London Airports – London City and Luton. NATS handled almost 24% of all the traffic in Europe in September with 98% punctuality across the 237,906 flights. In the year to date, the average air traffic control delay per flight is 9.7 seconds.

NATS Launches Online Drone Hobbyist Training Course

A new, free-to-use, online training course for drone users is now available on the NATS website. Designed with new drone owners and hobbyists in mind, the animated course presents an overview of current UK flight safety rules and regulations governing drone use and features a series of interactive quiz questions based on key elements of responsible drone operation.

Steve Graham, Head of Business Engagement at NATS, said: *"We hope new and existing drone users will find our new online hobbyist course useful as a fun-to-use tool with a serious message. NATS strongly supports fair and equal access for all types of aircraft, manned and unmanned, in integrated airspace. It is important that all users of airspace do so safely, responsibly, and with due regard for the needs of others.*

"By designing an animated video with clear and accessible voiceover narration and multiple-choice quiz questions, our aim is to provide accurate and practical information as a reference guide that will be helpful for all drone operators, especially new drone owners and hobbyists."

The new *NATS Drone Hobbyist Online Course* is available on the NATS website:
https://www.nats.aero/apps/hobbyist

Drone Monitoring Tools on an ATC Workstation

The *Raytheon* Company and *AirMap*, the leading global airspace intelligence platform for drones, have integrated AirMap's unmanned aerial systems (UAS) monitoring capabilities onto a working prototype of Raytheon's next-generation controller workstation.
https://tinyurl.com/yxyrfpop

This is called 'Multi-platform ATC Re-hosting Solution', or MARS.

MARS now offers controllers streamlined access to UAS monitoring designed to improve the safety of drone integration. When drones fly in controlled airspace, they are sharing the skies with many other types of aircraft.

Air traffic controllers need real-time airspace awareness and clear alerts to unusual drone activity.

This is a key step on the path toward safe drone integration into the national airspace system.

In this context, *AirMap's* intelligent airspace management tools, such as real-time remote identification, airspace authorization, and dynamic geofencing, provide controllers access to UAS flight data through automated digital technologies.

In the virtual demonstration, the AirMap technology alerts the MARS user of a drone exhibiting unusual or non-conforming flight behaviour within the controlled airspace surrounding a major airport.
https://tinyurl.com/rg22co3

Changes to SSR Transponder Code Procedures

The CAA is alerting airspace users to changes to SSR transponder code procedures within United Kingdom airspace. These will take effect on 27 February 2020. They will enable pilots to indicate – by means of particular SSR conspicuity codes – the flight rules under which their aircraft is being flown.

This will enable ATS units to better determine how to respond to an unknown aircraft, according to the flight rules being followed by the pilot. To enable this, separate Visual Flight Rules (VFR) and Instrument Flight Rules (IFR) conspicuity codes will apply in all airspace classifications as follows:
a select transponder code mode A7000 when operating in accordance with VFR and not in receipt of specific instruction from ATC concerning the setting of the transponder; and
b select transponder code mode A2000 when operating in accordance with IFR and not in receipt of specific instruction from ATC concerning the setting of the transponder.

The aircraft photograph of the month is of a US Coast Guard HH-65 Dolphin framed by a USCG HC-130 Hercules tail, both seen at the 1998 Fairford Airshow.

The Talkpod N59 A User Review

Chris Rolinson looks forward to some exciting future Network Radio developments in the new year and offers the UK's first magazine review of a new handheld radio from Talkpod.

Chris Rolinson
g7ddn@g7ddn.com

Happy New Year! Another year, another new column. Perhaps this is an appropriate time to take a look ahead and to garner an overview of some possible future developments in the world of Network Radio.

OFCOM has announced proposals to release new frequencies to meet the growing demand for mobile data (on which NR of course depends). The next auction is in just a few months' time.

This spring, companies will bid for spectrum in two different frequency bands; the new 700MHz band and the 3.6-3.8GHz band. An initial 80 MHz of UHF Spectrum, on what was until recently terrestrial TV frequencies, will provide better quality coverage both indoors and outdoors across wide geographical areas.

This will include more remote parts of the country and will support NR coverage in what are currently considered 'difficult' areas. The 120MHz of bandwidth in the 3.6-3.8 GHz band that is up for grabs will most likely be deployed in larger conurbations; these frequencies are part of the primary 5G band.

There is a new two-stage process for OFCOM auctions. First, companies bid for frequencies to determine how much spectrum each of them can 'own'; second, this is then followed by a round of bidding to determine the *specific* frequencies in that spectrum that the 'winners' will be allocated.

Furthermore – and as a new addition into the mix – is the fact that the successful companies in the 3.6-3.8GHz band will have an opportunity to *negotiate among themselves* their frequency placements within the band. This, according to OFCOM, will make it more straightforward for bidders to join the new spectrum they win with their existing holdings, and reduce the possibility of 'fragmentation' in the wider 5G bands.

Following the Government's announcement that mobile network operators have committed to deliver good- quality 4G coverage to at least 92% of the UK over six years through a *Shared Rural Network*, OFCOM said they no longer propose including coverage obligations in the design of future auctions.
https://tinyurl.com/y5r5xqpt

Whether this proves to be a good thing rather seems to depend on how well the four private companies agree amongst themselves. Hopefully, this will be approached in a 'grown-up' fashion and we won't be left with companies simply protecting their own commercial interests at the expense of coverage for users in remote parts of the UK.

We may expect then, that coverage should continue to improve this year, and into the new decade (Fig. 1).

You can read the relevant news release in more detail at this URL:
https://tinyurl.com/y5sc459m

The Talkpod N59: A User Review

Readers may know that the first Network Radio I ever purchased was a Talkpod N58. Notable for its rugged build quality and immensely loud audio, the Talkpod has accompanied me on many journeys and been an exhibit at all presentations I have given on Network Radio, including at the *RSGB Convention* in 2018.

Thanks to my friends at Talkpod in China (whose client list, by the way, is very

impressive and includes Amazon, UPS, Caterpillar and Disney) I finally got my hands on its successor, the N59 (Fig. 2).

My impressions are that this is a worthy upgrade to what was already an excellent device.

Same Same – But Different?

The Talkpod N5x product range comprises the N50, N55, N57, N58 and N59. The latter two are top-of-the-range, multi-touchscreen, radios. The others have full, limited (or even no!) keypads or screens.

At first glance, there looks to be little difference between the N58 and N59 (Fig. 3).

However, dig a little deeper and you find that there are several important upgrades.

I have summarised them in Table 1.

Cleverly, Talkpod has kept both the desktop charger and the removable battery pack compatible between the old and new models, making them completely interchangeable – very useful indeed. A programming cable was also supplied in the box I received.

The TBL01 battery pack appears to have lost (or gained, according to your point of view) an 'N' suffix, but I cannot see any difference between the two physically, and they are both rated at 1650mAh capacity (Fig. 4).

Battery life between the two models is very similar – in other words good, but arguably not as long as on other models where the supplied battery capacity is higher. This is not a problem though: Talkpod can supply the extra-high-capacity TBL02, at 3200mAh, as an option.

Other things that have remained ostensibly identical between the old and new models are the 2.4" touchscreen, the PTT buttons and the two extra side buttons. The bottom of these is very useful, as it turns the screen on and off by default. This is great for power management.

I also love the gasket-sealed compartment for the SIMs and memory card. However, if you need access, you will have to get in via 4 small screws (Fig. 5).

The extension microphone socket on both models is of the two-pronged 'Kenwood' design (Fig. 6), and there are many examples of speaker/mics that will fit.

I use a Retevis-branded mic I found on eBay, and this works well.

It is when you turn the radio on that you get perhaps the real surprise in this new device - this is the first Network Radio I have used that runs on Android 9 Pie.

LEON BROOKS - WIKIMEDIA COMMONS

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GEORG WIESSALA

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Given that the N58 was still on Android 4 Kit-Kat, this is a *major* difference. Even such ubiquitous devices like the Inrico T320, much talked about in NR circles, run only on Android 7.

What does Pie bring? Well in truth, for a Network Radio, probably not that much, in terms of how the device works, especially if you are using it only on Zello or another similar app.

However, it does bring more in the way of features and security, being so much more up to date. Inevitably though, as with many Far Eastern manufacturers, there can be occasional hiccups.

Any Spyware?

When radio enthusiasts started playing with Network Radios, it was noticed that many devices had unusual software 'baked' into the ROMs; some suspected it may have been adware or spyware. It is thanks to the work of enthusiasts like Filip Everaert NR001 that we now have custom ROMS that have such things removed.

While the N59 does indeed run Android 9 and has an authentic Google Play Store installed, curiously the latest OS updates report themselves as 'January 2019'. Clearly, this is not correct as Pie is much more up-to-date than that. Might this imply that any server that might be used to feed updates to the N59 is not 'owned' by Google? This should come as no surprise – the N59 is not alone here – how often does your NR get OS updates, for example?

Remember too, that most NRs are made for *business* use and are expecting 'bespoke' software. As hobbyists, we often re-

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Fig. 1: More coverage is a good thing, isn't it? Fig. 2: The N59 makes its debut at the 2019 National Hamfest. Fig. 3: New and old – which is which? Fig. 4: Can you spot the difference?

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Fig. 5: Two SIMs and an SD card.
Fig. 6: Kenwood-style sockets for the easy connection of accessories.

- **A new quad-core ARM Cortex A53 processor running at 1.5GHz – the N58 had a Mediatek MT6572 running at 1GHz.**
- **Front and rear cameras - the N58 had no optical devices.**
- **4G LTE capability - the N58 is 3G-only.**
- **The antenna is therefore also new, although the same style has been kept.**
- **There are now 2 SIM card slots, instead of one.**
- **Internal memory has doubled from 4GB to 8GB.**
- **There is now space for a microSD memory card – the N58 had no memory expansion.**
- **The N59 is (perhaps surprisingly) thinner and lighter than the N58.**
- **The N59 reports it has an accelerometer present, whereas the N58 does not**
- **The N59 has an orange emergency button on the top edge.**

Table 1: The Talkpod N59: Major Features and Upgrades.

ceive them minus those features, which we then have to put back in other ways.

Practice 'Safe Radio'

As I see it, this is nothing to be overly worried about, as long as you take steps to circumvent this. One is to create a Google Account that you *only* use for your NR hobby; you can still share purchases to it from your main account, but only use the NR account on your NRs.

Second, whenever possible, use one of Filip's 'de-bloated' ROMs for your device.

At the time of writing, there is no third-party ROM for the N59, so for now, just play things safe and don't use a Google account that has sensitive information attached to it on your Network Radio.

This might sound a little scary, but it is just simple 'account management' that we should all be practising as a matter of course anyway. In terms of the N59, it is, in my opinion, no more or less safe than any other Network Radio at this time, provided you practice safe NR-ing.

The Plus Points

Android 9 brings some very slick screen gestures, and the overall feel is of a very fast and responsive device. It all feels so much more professional than the N58. Being slightly lighter than its predecessor is also good when on long conversations.

I undertook a few experiments with the supplied antenna, using the well-known *'Network Cell Info'* application. I live in a poor area for a signal on my preferred networks, but the external antenna performed well, getting me a 4G signal even indoors.

The difference when taking the antenna off was remarkable – the signal just disappeared!

The antenna socket allows for further experimentation too, of course.

I really appreciated have the dual SIM-slot, as I was able to use a second SIM from another operator, for comparisons. Again the external antenna markedly increased the signal on receive, and one would assume by extension, on transmit too.

The Quirks

The role of LEDs on NRs always puzzles me, and it does here too. As someone used to 'traditional' RF radios, where the LED turns red on transmit and is green on receive, I still struggle to get used to the fact that Android treats devices as 'phones' and not radios. I do wish manufacturers would look more closely at this, though I believe there are some LED apps you can tinker with, in true enthusiast style, to make them do more of you would like them to do.

Button Mapper Pro is an essential app for most NR users, as it allows reprogramming of physical knobs and buttons. However, one should note that it is limited, to some degree, by the hardware. With my N58, for example, I could programme the notched rotary knob on the top to anything I wished.

However, on the N59 I just could not get it to map at all, rendering the knob effectively useless.

The same applied to the orange 'SOS' button. I was really looking forward to seeing what I could make that do, but again, I just couldn't get BMP to 'see' it. Perhaps another app might work?

Let me know if you have any success.

Part of the problem is that such hardware buttons are really designed for business use and would be programmed by the bespoke software that the radio would be supplied for.

It seems that, once again, as hobbyists, we have to find workarounds, but isn't that part of the fun ultimately?

I was pleased to note that the side buttons could easily be programmed.

Conclusion

I have always rated the N58, so inevitably, I feel very positive about this new N59. I love its ruggedness, the 4G capability, the loud 1W audio, the extra little functionalities that Android Pie brings, the slick faster processor, the dual SIM slots and memory expansion.

The negatives are relatively small – button mapping issues (at the moment), small screen (but of course, good battery life as a result). It is a solid professional-feeling device – just use it for hobby use and don't keep sensitive information on it.

The biggest problem with this radio though might actually be getting hold of one!

At the time of writing, I can only find Duarte Braga at retailing these devices to the hobby market.

https://tinyurl.com/t28zxaj

My sincere thanks to our friends at Talkpod for their kind assistance in supplying the review radio. I very much appreciate their assistance with this review and I look forward to seeing what the firm has up its sleeve next... .

www.talkpod.com/en

Feedback

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

Corrections & Clarifications

Scanning Scene, RadioUser, November 2019: 38-40 (Clarification): Inmarsat (*not Intelsat*) provides the space-segment for what Tim referred to as STD-C (Inmarsat C). Furthermore, Inmarsat has been the market leader in providing global satellite-based maritime mobile communications for the past 40 years. An Inmarsat C or mini C mobile terminal – sometimes referred to as a Mobile Earth Station (MES) – uses L-band for its uplink/downlink to/from the Land Earth Station (LES) through which it sends and receives data. Hence, Tim's references to specific L-band frequencies. Please note that *strictly speaking*, all Inmarsat mobile terminals are VSATs (Very Small Aperture Terminals) – where 'aperture' refers to the size of the dish. *Intelsat* does, indeed, provide maritime mobile communications – see *Intelsat's What We Do - Mobility Services – Maritime* on the website. However, if you look at the Intelsat Satellite Fleet webpage, you won't see any reference to L-band, only C, Ku and Ka-band. Furthermore, if you check out Intelsat's *Maritime Solutions* webpage, you'll see the following *"Our powerful C- and Ku-band global mobility beams provide you with always-on broadband connectivity that rivals any land-based networks."*

Feedback

Anne Reed, from the Gloucester Amateur Radio and Electronics Society, contacted our *Utility Monitoring* columnist Nils Schiffhauer DK8OK to say, *"[...] I must admit to being quite excited to read in my November issue of* RadioUser *your super article and it certainly brought back so many memories; I see that hardly any of the HF frequencies have changed. A friend of mine sadly died this week; Stan Gibbs G4YYR, who actually worked for the Birdlip Radio Station for HF many years ago and a marvellous book on Birdlip Radio Station was recently written by Colin McKeeman who lives in Ireland [...]".*

Nils replied as follows: *"Dear Anne - thank you very much for your nice and surprising e-mail! The fact that most channels have not changed over the decades should be read as an indication of consistency in this ever-changing world. I read a bit about your region, which must be very nice. So far, I have not bumped into Colin's books, but I just wrote him a mail - thanks for the hint! " [Dear Anne thanks for getting in touch with Nils. I am looking for new writing talent in this area: if you – or indeed any readers out there – have any suggestions, please get in touch – **GW**].*

Art Donahue W1AWX wrote in from about 24 miles southwest of Boston in the USA, to say: *"My family was in Scotland in September and I bought both* Practical Wireless *and* RadioUser *magazines in Edinburgh. A few days later, we got to Fort William, and I was thrilled to see that the October issues were in the bookstores. I just wanted you to know that I enjoyed them thoroughly and wish we had such quality publications over here. I had a 45-year career in television news photography and was very involved with generations of police/fire scanners and ham radio for the last 40 years. When I got back to Massachusetts, I was inspired by your magazine to attempt to record one AM radio station on every North American AM MW frequency from 530 kHz to 1700 kHz with a Yaesu FTDX 1200 and 2 long wire antennas strung in the trees. It's a complete AM band scan with station IDs for all 118 AM radio channels, from 530 kHz to 1700 kHz, recorded off the air from my 2 long wire antennas in the trees here in Franklin. There is one station on each frequency with call sign, location, power, day/night/greyline reception, distance and year of first broadcast info on the screen with each audio ID. I have put a video on YouTube*: "Tribute to a Century of Radio Broadcasting [...]."

https://youtu.be/iKRZJ5uO2Mw

Dear Art, many thanks for your activity report, compliments and e-mails, I will also pass on our kind words to Don Field, editor of our sister magazine Practical Wireless. *SDR technology is a 'game-changer' in many respects. We will have the first full UK review of the SDRPLay RSPdx in the February 2020 issue of* RadioUser. *Meanwhile, have a look at pp. 8 and 9 in this issue – **GW**.*

Keith Ballinger G0RQQ got in touch about our article on *SAQ Grimeton & VLF Monitoring* (*RadioUser*, December 2019: 32-35). Keith wrote: *"Hi Georg, I was reading the VLF article in the December RadioUser and noted the comments about commercial VLF upconverters. Another manufacturer - and UK-based to boot! - is Heros Technology in London. I purchased their VLF converter a while ago, and I have been very pleased with its performance. It gives the impression of having been designed 'up' to a spec, rather than 'down' to a price The build quality is excellent - commercial grade. There is a block diagram of the converter as well as some additional information on the company's web site [...]."*

www.herostechnology.co.uk

*Dear Keith, many thanks for your e-mail, I had not come across these before. I am happy to pass on this information to our readers – **GW**.*

Mike Higlett G6WTM, Controller of the *Nidderdale RAYNET Group*, wrote to our *Network Radio* columnist Chris Rolinson, to say, *"Hi Chris, my copy of December RU was on the doormat when I got in last night. Lunchtime today I have just read your column. With regard to falling numbers (on Network Radio channels) - I agree with you entirely, I think it is just a dilution effect. Take Scoutsnet as an example, set up by Pete Mallam & Bruce Lenton. This was established* because *of the success of Network Radios Channels,* not *as a competitor. We've just tweaked it slightly, to produce a safe Scouting environment within the rules of our organisation [...]."*

*[Dear Chris and Mike, this is a good example where new technology can lead to innovation at the local level. Mike, I am looking forward to your report on JOTA/JOTI soon! - **GW**].*

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The CB Renaissance

David Ogg
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Rejoice, for CB Radio is back in RadioUser! In his inaugural column, European CB expert **David Ogg** outlines the historical development of this fascinating hobby, offering many personal reminiscences on the way.

Hello, and welcome to my first regular Citizens' Band Radio column in *RadioUser*.

My name is David Ogg and, as some of you might remember, I previously contributed articles regarding this great part of the hobby, including a *History of CB Radio*. I have also written various radio- and aerial- related product reviews for this magazine, for its predecessors, and in a range of other publications.

Whilst I have been a licensed radio amateur for the past two decades, holding the call-sign of M0OGY, it is in the field of United Kingdom Citizen's Band Radio, where my love of radio is strongest.

In future articles, I will, amongst other things, showcase my work as the United Kingdom Delegate of the European Citizens' Band Federation (ECBF), which I joined in 2014.

http://ecbf.eu

I will also endeavour to bring you a taste of the current scene within the United Kingdom, as well as offering you the very latest in radio, aerial and CB product reviews.

A Little History

Back in the 1970s, after the massive CB Boom in the USA, and following films such as *Smokey and the Bandit* (1977) and *Convoy* (1978) captured the hearts of UK operators. Many illegal FCC-specification Amplitude Modulation ('Aunty Mary') radios were all over the country by 1980. Every city, town and village was on the air, catching the government off-guard and keeping the Post Office Detection Units on overtime. The latter was fondly known as 'Busby', after the famous Telecom advertising bird of that era.

By 1980, William 'Willie' Whitelaw had managed to put forward a proposal known as the *White Paper*, to allow service on what later became the 934MHz band.

In the end, the United Kingdom received – on 27MHz and in Frequency Modulation mode (FM) – a set of offset frequencies with 40-channel spacing.

There was also, as you may remember, a unique set of 20 channels on the 934Mhz band. Radios covering this sold in smaller numbers to true radio enthusiasts. This was mainly due to the cost of the equipment. Many licenced radio amateurs did like the idea of an 'informal' new band.

A Promising Start

This is where I really came into the hobby. I first bought *CB Citizens' Band* magazine

ALL PICTURES: DAVID OGG

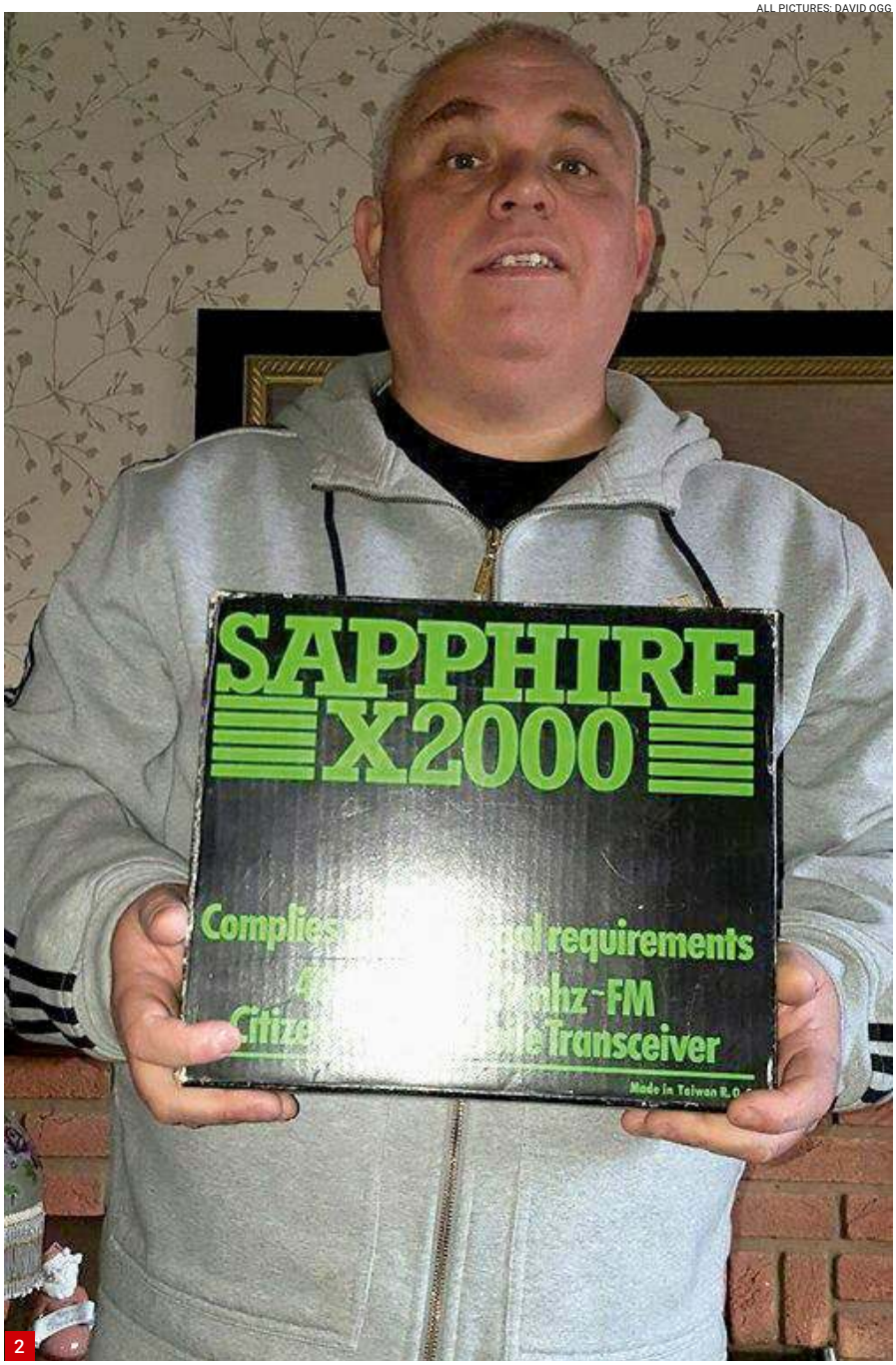

Fig. 1: A Piece of History: *CB Citizens' Band* Magazine. Fig. 2: My First Radio: A Sapphire X2000 Transceiver.

(Fig. 1) from WH Smith's newsagents on Scunthorpe High Street in 1980. https://archive.org/details/cbmagazine

My first transceiver (Fig. 2) was a Sapphire X2000 radio bought as an early Christmas present from Halfords motor accessories, on the very same High Street, for the launch on Monday, November 2nd, 1981. I remember looking at all the new FM rigs in a glass cabinet, along with all the current Radiomobile, Harry Moss and Goodman's products on display.

The cabinets we drooled over were full of Amstrad CB900 and 901 (Fig. 3), Binatone 5 Stars and Breaker phones, at costs up to £130 back in 1981.

My Dad, also known at the time by his CB Handle of 'Red Rum' (which always made me wonder as he wasn't really a massive horse racing fan) managed to find £69.95 for the cheapest radio in Halfords.

Therefore – along with a compulsory DV27 aerial fitted to a gutter mount on his 1971 Harvest Gold Austin 1100 – we were on the air prior to Christmas in 1981.

The following year, all that my fellow pupils at Winterton Comprehensive School spoke about, was their new radios and the friends we all made on 'The Rig'.

Social Media of the Time

CB Radio was the very first Social Media for all of us. At just 13 years old, back then, I used to earn money where I could; not coming from a wealthy family it was jobs such as potato-picking and bush-beating for the local Winteringham shoot to gain funds to pay for new radio products and QSL cards back in those days.

By the time I left school in 1984, CB Radio had set into a steady hobby and many 'Breakers' had come and gone. Many of us had moved to The 'Dark Side', as many know it: Single Sideband (SSB) transceivers with larger aerials and (in many cases) illegal linear amplifiers to contact stations all over the planet; this was an activity that became known as DX.

Around this time, there was a massive influx of interest in amateur radio, and many serious CB operators sat the *City and Guilds RAE* and became A or B Class operators as well. I went to a local amateur radio club with an interest in taking the RAE.

Thus, at just 16 years old, began a lifelong passion for motorcycles and hanging around local chip shops on sports mopeds.

Seriously Mobile

By 1985, I had passed my Motorbike full test, and, by 1987, I had access to my father's old damask-red Morris Marina. So I fitted an Amstrad CB901 (Fig. 3), complete with a Limpet mag mount, on the boot lid, together with a Modulator aerial.

This meant serious business. I passed my driving test in 1987. So, along with a Hitachi Radio/tape player, Realistic EQ, and the obligatory Goodman's GP100 shelf speakers, I was finally mobile in my 'Roller Skate'.

The year 1987 was also the time when a significant change in UK CB Radio started to take place, I would even call it a turnaround: The CEPT band was introduced in the United Kingdom.

This comprised of, basically the original 40 channels mid-band that the FCC had originally licenced. However, AM was not permitted, just the FM mode.

Mods and Muppets

Many people had the extra channels fitted to their CB27/81 transceivers. Nevertheless, this was technically illegal and by law, back then, you had to buy an

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Fig. 3: The Amstrad CB 901 Transceiver.
Fig. 4: The Author at the ECBF in Brussels.
Fig. 5: My new President McKinley Transceiver.

extra transceiver that held the CEPT stamp, such as the Uniden 400. The sad thing with the new channels just introduced, was that, not long after the RA served notice, no more 934MHz radios were to be manufactured.

This band was to be removed on 1st January 1999, to make way for analogue mobile phone services.

This was a sad day in UK CB Radio history. There are still a number of dedicated enthusiasts who collect equipment and even 'pirate' the frequencies since the phone users have gone digital.

The RA (later: Ofcom) specifications, started in 1981 with two stamps on the front of the radios; one of them was the more common 'CB27/81' and 'CB934/81', attached to show compliance with MPT1320.

When the extra CEPT frequencies were introduced, 'PR27/94' replaced 'CB27/81' for radios on the 'Muppet Band', as it became known. Then, in 1997, we could finally purchase transceivers to what was known as 'MPT1382' standard; these carried the 'PR27/97' mark on the facia.

It seemed quite bizarre that it should take a full decade to gain a truly legal 80-channel transceiver.

On Hold and Reboot

As I got married, in 1991, my interest regarding CB Radio, and in hobby radio in general, was put on hold. At this point, I became more interested in motorcycles, classic cars and obviously Sue, my new wife. Soon my son was born. Then, in the late 1990s, I revisited the hobby, after going to a rally at the Lincolnshire Showground.

I remember pushing my son around in his pushchair, so this would have been in 1995 or 1996 I'd say.

I had not sold any of my old CB radio equipment; at this point, the bug had bitten again: I bought a 5-band President Jackson and got active again, joining the Bulgarian TRC (Thracian Rose Club Bulgaria). These were great times, and I made many new friends, via DX contacts, in the 1990s.

In 2019, I also acquired a President McKinley transceiver (Fig. 5)

I would say Citizen Band radio had come of age in that era and had settled down into a solid hobby for me by then. Remember, 11m DXing is nothing new; back in 1978, one of the Pioneers was *GRI Alfa Tango*, set up in Asti Italy. I have been a member for many years and currently hold the post of Lincolnshire Director of this dedicated group. I can be heard with my call sign of 26AT025.

Active DX Groups and Nets

There are many DX groups in the world, and many have a strong internet presence on fora, and even on Facebook. Some of the most popular are as follows: Transmission 1 (TM), Charlie Tango (CT), Oriental Pirate (OP), Oscar Kilo (OK), Lima Radio (LR), Delta Radio (DR), to mention just a few.

Many of these groups are very active on the many AM FM and SSB nets currently held from various high points within the United Kingdom.

Networks have become one of the most enjoyable pastimes for the modern operator; relevant news is widely published on the internet, via people such as '*Delboy*', a dedicated blogger from the North of England.

This brings my personal history right up to the early 2000s. It was then that I broadened my horizons within the radio hobby. I taught myself the *City and Guilds RAE* and passed the *Amateur Licence*. As a result, I became the holder of the callsign M0OGY.

First Love and Old Mates

Whilst I have always enjoyed amateur radio and have a decent station with two towers, I always missed my first love of CB Radio somewhat.

All my old acquaintances and friends were on CB Radio still; so, back in 2008, I moved into collecting vintage CB transceivers, like a few of us did.

A friend of mine suggested I start a YouTube channel, to show these, as well as some of my amateur radio contacts. This was in 2009, and, at the time, I didn't have a clue how to do this.

I had a basic Sony Handy Cam and more enthusiasm than ability, but I posted a video of my ham radio aerials and then posted some videos on CB Radio.

This really did draw a lot of interest, I had seen that the late great *Cobra Man* had done videos by then, but not too many, so I started CB Radio product reviews.

Whilst this began only as a hobby and fuelled by a desire to help people, the *M0OGY Radio* and *Antenna Reviews* sites were born.

The rest, as they say, is history, and it is something I really enjoy doing.

In addition to this, over the last ten years or so, YouTube has played a big part in helping CB Radio grow.

European Representation

On one occasion, I sat at home one night in 2013 and I read about the European Citizens' Band Federation and the great work they had carried out regarding the hobby since 1976. I was quite concerned why the last UK Delegate was active in the early 1990s.

This was at a time when there was some strong talk of the United Kingdom trying to gain AM and SSB modes of operation on the CEPT mid-band.

With the backing of the club I helped form in 2009, I joined the ECBF in 2014 and went to the four-yearly meetings in Brussels

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as the UK Delegate, to air the views and concerns of UK hobbyists (Fig. 4).

This all happened at what I term the 'Second Coming':

On 27th June 2014, operators gained both AM and SSB modes on the mid-band, as well as FM operation on both this and our UK-only frequencies.

The first contacts at midnight were awesome – so many stations were heard.

Here is a link to my YouTube video I filmed at that moment in history.
https://tinyurl.com/qvcv2qm

Normalisation and the Future

This soon became the norm, and many Net groups were springing up via the internet and Facebook.

During one of the first known nets (the *Mid-Week Net*), I spoke with a station known as '*Ziggy*' Hudson, on numerous occasions. Like a few in our hobby, he sadly passed away at a young age.

I am sure he would have been proud of just how the various nets and groups have carried on.

I will be visiting the Nets in greater detail in upcoming *RadioUser* articles, to show just how much interest there still is in this hobby in the UK.

We also have to acknowledge the retailers such as Knight's Electrocom, Moonraker, Thunderpole, Nevada Radio, LAM, UK4x4, Vortex Antenna Systems, Jabber Products, and the many other companies out there who supply the equipment.

Let's not forget the manufacturers such as President Electronics, Midland, Team, Cobra, Stryker, Sirio Antenne, Sigma Eurocomm, and others, who supply new products throughout the World.

Without a doubt, Citizens' Band Radio is small-scale, compared to what it was in the 1980s.

However, over the coming months, I wish to bring you regular updates regarding the current state of this branch of the radio hobby.

There are always new products, and I will review some of these for this new column from next month onwards.

On that note, I hope you have enjoyed this and see you soon. You can contact me at the e-mail address in the head of this column.

*[N.B.: In line with predominant usage in this part of the hobby, the terms 'radio' and 'transceiver' will be used interchangeably in this and future columns – **Ed**.].*

Further Reading

- CB Radio: **http://ukspec.tripod.com/rf/cb**
- History of CB Radio (UK 4x4 Centre): **https://tinyurl.com/rw3qf96**
- History of CB Radio in the UK (The Breakers Yard): **https://tinyurl.com/ung5ehd**
- History of UK CB Radio (Thunderpole): **https://tinyurl.com/t238ont.**

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Uniden

Handheld

EZI-33XLT (Left) The most popular handie. Frequency range: 78-174/406-512MHz.....**Now £64.99**

UBC-75XLT Nice new design. Frequency range: 25-512MHz..... .....**Now £99.95**

UBC-125XLT Good value. Frequency coverage 25-88/108-174/225-512/806-960MHz..... .....**Now £139.95**

UBCD-3600XLT (Left) 25-1300MHz VHF/UHF Digital scanner..... .....**£425.00**

SDS-100E Flagship digital scanner 25-1300MHz with key features such as Close Call RF Capture, Trunking and Conventional, Location Based Scanning, Quick Key System Access, Built in Record & Playback, PC Programmable using free Sentinel Software, Weather Resistant IPX4, High Capacity Li-ion Battery, 8 GB microSD Card **£589.95**

Base

UBC-355 (Left) Bargain desktop. Frequency coverage 25-87/108-174/406-512/806-960MHz..... ..... **Our Price Just £84.95**

UBC-370CLT Base Scanner Designed for home use, with a big speaker for excellent sound. Uniden and made from robust materials. it features watch, alarm clock and FM broadcast radio. Included: 12VDC power supply, telescopic antenna. **£129.95**

BCT-15X Flagship desktop. Frequency coverage 25-512/758-823/894-960/1240-1300MHz .... **Our price £259.00**

Uniden SDS200E Desktop/Mobile Scanner Receiver**£779.99**
The Uniden SDS200 mobile scanner has the same features as the handheld version SDS100, plus some extra enhancements. Uniden's SDS200 incorporates the latest True I/Q receiver technology, which provides the best digital decode performance in the industry

Digital Scanners

The Whistler TRX-1 & TRX-2 are now supplied with over 1600 channels pre-programed for use across the following categories!
AIRBAND • MARINE • DMR446 • PMR446 • DMR REPEATER • FM REPEATER NXDN REPEATER • P25 REPEATER • DMR SIMPLEX • FM SIMPLEX
Moonraker have worked with Whistler to customise a UK band plan for the scanners! This ensures the radios cover UK bands in the correct steps and the correct mode. When a user does a service scan it will search in the correct steps for the selected band ensuring maximum received stations. The radios will receive both amateur and commercial DMR transmissions, as (apart from the frequency) they are fundamentally the same mode. The radio is supplied with software and users can select mode when writing memories or select auto and it will work out the mode itself!

TRX-1 25-1300MHz Digital Handheld Scanner (left) **£419.95** **TRX-2** 25-1300MHz Digital Base Scanner (right) **£479.95**

Analog Range

WS1025 Analog Desktop Scanner
This 200-channel scanner lets you listen to FM radio bands and can be categorised into 10 separate memory banks. Also, it offers the convenience of one-touch searches of marine, air and ham. Frequency coverage 29-512MHz (with gaps - see web for full spec).....**£89.95**

WS1040 25-1300 MHz Digital Trunking & Analog Handheld Scanner
The WS1040 scans most common trunked radio system signalling formats, including Motorola, EDACS, LTR and P25 trunked radio networks. Talk group and individual call monitoring is supported. When monitoring P25 digital systems, the exclusive Automatic Adaptive Digital Tracking instantly adapts the digital decoder to the digital modulation format of the transmitted signal, then analyses the signal over 50 times each second and adapts to any subtle changes caused by multipath or fading.....**£299.95**

WS1010 25-512MHz Analog Handheld Scanner
This 200-channel scanner lets you listen to FM radio bands and can be categorized into 10 separate memory banks. Also, it offers the convenience of one-touch searches of marine, air and ham..... **£79.95**

WS1065 25-1300MHz Analog Base Scanner
The Whistler WS1065 employs cutting edge technology to bring a high level of performance and innovative features. This model clearly raises the bar in the area of advanced trunking scanners. Frequency coverage is extensive, including: 25-54, 108-17, 137-174, 216-512, 764-776, 795-805, 849-869, 896-960 and 1240-1300 MHz.....**£279.95**

AOR

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AR-DV1 100kHz–1300MHz Base Receiver £1199.00

- 100kHz-1300MHz wideband reception.
- Multi-mode a demodulation.
- All mode analog reception.
- Built in SD card reader (audio firmware updates).
- Memory scan.
- NR, notch, digi-data display.
- Clock, calendar (sleep timer, alarm, timer recording, reception logging on SD)

AR-DV10 100kHz–1300MHz Handheld receiver £899.00

- 100kHz-1300MHz analogue & digital modes
- 10 Digital Modes : TETRA,P25(Phase 1+2),DMR,Mototrbo,dPMR, NXDN, D-STAR,Alinco,Yaesu
- Automatic detection of digital modes during scan & search modes.
- IPX5 water resistant
- Micro SD card slot for recording, backup and firmware updates.
- Lithium-ion battery, charger, belt clip
- Memory data management software.

ICOM

ICOM IC-R30 0.1-3304 MHz Professional Communications Receiver
The IC-R30 is Icom's latest wideband handheld receiver. Not only does it receive over a wide (0.1 to 3304.999 MHz) frequency range in AM, FM, WFM, USB, LSB and CW, but it can also de-code digital modes including P25, NXDN, dPMR, D-STAR and Japanese domestic DCR. **£569.95**

IC-R8600 Professional Communications Receiver
The IC-R8600 is a super wideband communication receiver that covers the radio spectrum from 10 kHz to 3 GHz. It also has the capability to decode selected digital communication signals including, D-STAR, NXDN, dPMR and P25. The IC-R8600 incorporates the latest software demodulation technology incorporated on Icom's latest HF Amateur radios, providing superior performance and intuitive operation. With the optional remote control software for a Windows PC, received audio and spectrum scope data can be transferred through an IP network for monitoring from remote locations. **£2499.95**

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

Flightaware Prostick Plus.....**£29.99**
Flightaware Prostick.....**£25.00**
FlightAware ADSB
1090MHz Band-pass SMA Filter.....**£16.99**

SDRplay

RSPDX 1kHz-2GHz HDR SDR Receiver £194.95

The SDRplay RSPdx is a complete redesign of the popular RSP2 and RSP2pro multi-antenna receiver. It's a wideband full featured 14-bit SDR which covers the entire RF spectrum from 1kHz to 2GHz. Combined with the power of readily available SDR receiver software (including 'SDRuno' supplied by SDRplay) you can monitor up to 10MHz spectrum at a time. The RSPdx provides three software selectable antenna inputs, and an external clock input. All it needs is a computer and an antenna to provide excellent communications receiver functionality. A documented API allows developers to create new demodulators or applications around the platform.

Key Specifications Covers all frequencies from 1kHz through VLF, LF, MW, HF, VHF, UHF and L-band to 2GHz, with no gaps • Receive, monitor and record up to 10MHz of spectrum at a time • Performance below 2MHz substantially enhanced – improved dynamic range and selectivity • Software selectable choice of 3 antenna ports • Enhanced ability to cope with extremely strong signals • External clock input for synchronisation purposes, or connection to GPS reference clock for extra frequency accuracy

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achieves excellent HF performance by means of a low-loss preselection filter, high linearity LNA, high linearity tunable RF filter, a polyphase harmonic rejection (HR) mixer that rejects up to the 21st harmonic and multi-stage analog and digital IF filtering. The 6 dB-stepped AGC gain is fully controlled by the software running in the DSP which optimizes the gain distribution in real time for optimal sensitivity and linearity. Harmonic rejection is a key issue in wide band HF receivers because of the large input signal bandwidth of the input signal. The output of the IF-filter is then digitalized by a high dynamic range sigma delta IF ADC for further signal processing in the digital domain.

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AIRSPY R2
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Airspy R2 is an advanced open-source software defined radio receiver with adequate dynamic range, capable of sampling 10MHz of spectrum anywhere between 24MHz and 1.8GHz – and even beyond with extensions. It is the only high performance wide band receiver solution in the market that's yet affordable.

AIRSPY Spyverter R2 .....**£59.99**
SpyVerter R2 is a high performance HF front-end designed to extend the coverage of the Airspy receiver series to the HF down to virtually DC. It is based on an original switched double balanced mixer that moves the entire HF Spectrum to the VHF band between 120 MHz and 180 MHz

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SCANKING HF DISCONE 0.05-2000MHz.....**£69.95**
Great base antenna for all HF/VHF and UHF! Ideal for listeners wanting shortwave but do not have the space for a long wire. Centre radiator includes helical trapped wire encapsulated in fibreglass to receive all HF bands
Frequency: 0.05-2000 MHz • Gain: Upto 1.5dBi over standard discone on VHF/UHF • Length: 185cm • Mast: Upto 50mm • Radials: 8 X 90cm 8 X 30cm • Connection: SO239

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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
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SKYSCAN MOBILE 25-2000MHz.....**£24.95**
The 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.
Type: Four tuned elements • Frequency RX: 25-2000 MHz • Base: 90mm magnetic mount with rubber base protection • Length: 650mm • Cable: 4 metres RG58 • Connection: BNC male

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Past, Present and Future

Monitoring Signals from Space

In the first instalment of our new Signals from Space column, **Tim Kirby** explains how his interest in space communications started and offers tips on listening for satellites with radio equipment you may already have.

Tim Kirby
longworthtim@gmail.com

A very warm welcome to *Signals from Space* – your new bi-monthly column on receiving a wealth of transmissions not originating on Earth. I am very pleased to have the opportunity to write this column, which will alternate with my *Scanning Scene* section. I hope that I can share some of my enthusiasm for this subject with you.

My plan is that there will be plenty of things to try for yourself, with some equipment you may well already have, or using devices that can be assembled for the purpose of the experiments.

Some Background

Before we dive in and get started, I thought I would share how I got started with listening to signals from Space: As I mentioned, when I started writing *Scanning Scene* here in *RadioUser*, my first scanning receiver was a Realistic PRO-2003. Quite basic by today's standards, but not a bad scanner for its time.

I connected it to a discone antenna in the loft of my parents' house and used that for listening to aircraft, marine traffic on the local Gloucester-to-Sharpness Canal and the local radio amateurs on 2m and 70cm.

But I had one of those books at the time, which contained lists of fascinating frequencies relating to spacecraft and other objects (Fig. 1). Moreover, one of my frequency books suggested that if you listened around 150MHz, you would hear the Morse beacons from the early Russian KOSMOS [Кóсмос] satellites.

I thought it unlikely that I'd hear anything, but I left the scanner sat on that frequency; sure enough, before too long, a signal came up. Being a scanner that could only demodulate FM, all I could hear was the 'pulsing' of the signal. I could also detect that it changed frequency. After a few minutes, the frequency was silent once more. I'd heard my first satellite, with a very simple aerial and receiver.

Onwards and Upwards

When I got my radio amateur's licence, I started to enjoy satellite operation too, with the encouragement of a friend who lived close by in Cheltenham. This was John Hawes, whose callsign is G8CQX.

At the time, the majority of satellite operation on the amateur bands was 'Mode A'. This means an uplink in the 145MHz band, and a downlink in the 29MHz band.

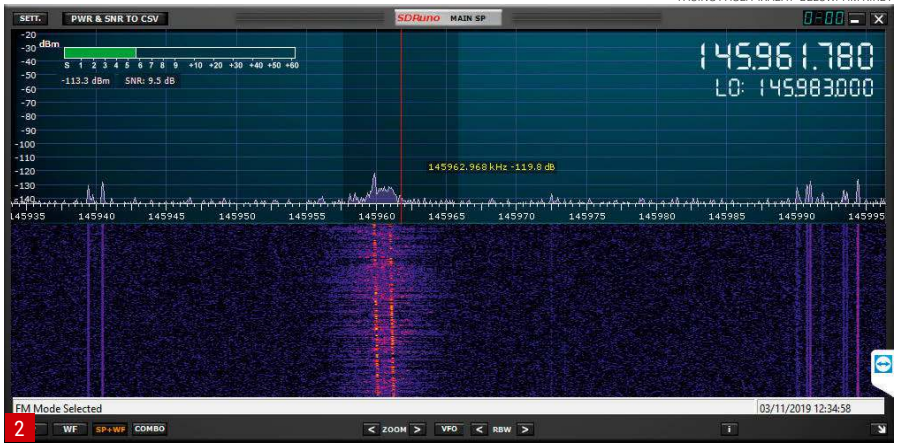
To start with, both of us enjoyed SSB operation and made lots of interesting contacts, including to the USA and Africa, which was quite unusual for VHF-only radio amateurs in those days.

As we passed our Morse tests, we were able to use Morse code for contacts on the satellites, but there were also 'Robot' satellites, which, if you called them in the correct way using Morse, they would reply to you – and then some months later, you would receive a QSL card confirming 'contact' from 'PO Box 88' in Moscow!

1

FACING PAGE: PIXABAY BELOW: TIM KIRBY

Fig. 1: The Russian Soyuz (Союз) spacecraft, with Europe and Africa in the background.
Fig. 2: A pass of the AO-91 satellite monitored using the *SDRUno* software. Note the gentle 'lean' to the left of the signal trace. This shows the satellite's frequency 'dropping', as a result of the Doppler Shift phenomenon.
Fig. 3: *Space Radio Handbook*: Still out there...



Our satellite stations were quite simple. For the uplink, we both used small Yagi aerials – neither of us had elevation control, so it was hopeless when the satellite was overhead, as the beam's vertical pattern was not designed for satellite operation.

For the 10m receive downlink, we used dipoles in the loft, with a homebrew preamp of John's design to boost the signals. For 29MHz receive, I first used my Sony ICF2001 receiver, and later my Icom IC-740 transceiver; John initially used a homebrew receiver, followed by his Yaesu FT-77 transceiver.

Oscar Launch

Although very simple, this was all huge fun! Shortly after all this, the Oscar 10 elliptical orbit satellite was launched, which gave a global reach. To my shame, I had by this time been distracted by 'conventional' HF operation and did not spend that much time on Oscar 10. I made a few contacts, as I now had 70cm capability, which was needed for the uplink.

In retrospect, I wished I'd spent more time on it. By the time I wanted to go back to the satellite, it had fallen silent.

I have, however, come back to satellite operation on the amateur bands in recent years, and perhaps we'll talk about that another time, but really, I wanted to share the 'simple beginnings' and perhaps demonstrate that things can be done with the gear you may very well already have in your shack.

More inspiration

As well as my early experiments, I found much inspiration from the *Space Radio Handbook*. by the late John Branegan GM4IHJ. which was published in 1991 by the Radio Society of Great Britain (RSGB).

www.rsgb.org

The title is out of print now, but I have added some reading suggestions at the end of the column.

Some of the information contained in John's book is now very outdated. A number of the satellites described are no longer in orbit, and you can see (if you are old enough to remember these things) that the diagrams were prepared on a *Sinclair ZX Spectrum* computer.

However, the book is full of an inspiring, enthusiastic approach to the subject. In addition to this, the concepts described, such as the orbital mechanics of satellites, Doppler Shift of satellite signals, and how HF/VHF/UHF signals propagate through the atmosphere, have not changed!

Meteor scatter – something we'll come back to in this column, amongst other things – is well described, although some of the transmitters suggested for monitoring in the mode are no longer available.

*[see also the article about Meteor-Monitoring elsewhere in this issue – **Ed.**].*

Maybe you have a copy on your bookshelf; if so, grab it and have a look through it – it's full of inspiration. If you don't have a copy – the good news is that there are some second-hand copies out there, at low cost.

Satellite Listening and the Doppler Effect

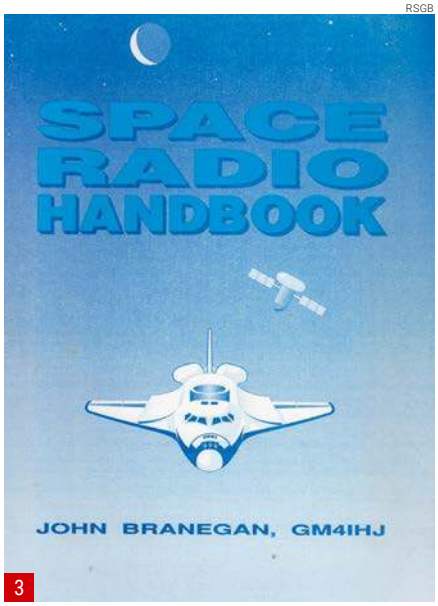
I wonder how many of you have wondered about trying to receive an FM satellite but have never tried it?

If you have an aerial like a discone or a 2m/70cm vertical, that will work well.

I'm going to suggest using a software defined radio (SDR) receiver here, just because you can observe the Doppler Shift and the signal strength much more easily.

Wikipedia describes the Doppler effect/Shift as follows, *'The Doppler Effect (or the Doppler Shift) is the change in frequency of a wave in relation to an observer who is moving relative to the wave source. It is named after the Austrian physicist Christian Doppler, who described the phenomenon in 1842. The reason for the Doppler Effect is that, when the source of the waves is moving towards the observer, each successive wave crest is emitted from a position closer to the observer than the crest of the previous wave. Therefore, each wave takes slightly less time to reach the observer than the previous wave.*

RSGB



"Hence, the time between the arrivals of successive wave crests at the observer is reduced, causing an increase in the frequency. While they are travelling, the distance between successive wavefronts is reduced, so the waves 'bunch together'. Conversely, if the source of waves is moving away from the observer, each wave is emitted from a position farther from the observer than the previous wave, so the arrival time between successive waves is increased, reducing the frequency. The distance between successive wavefronts is then increased, so the waves 'spread out'"

John Branegan's book (cf. below, and Fig. 3) contains a very handy illustration of this effect (1991: p. 13; Figs. 1.19a-d).

But of course, you don't need an SDR receiver to receive a satellite – a handheld scanner or transceiver will work just fine for the satellites with a big signal.

I'm going to suggest using the amateur radio satellites AO-91 or AO-92 for this experiment (Fig. 2).

The reason for that is that they have good

Fig. 4: A shot of a rocket launch from Florida.

strong signals and should be fairly easy to hear. You can refine your techniques and gain confidence here, before moving onto more challenging targets.

AO-91 and AO-92

The AO-91 satellite has its downlink in the 2m band, on 145.960MHz, and AO-92 is on 145.880MHz (Fig. 2).

Both of them are very strong and will be a good target for your experiment. The next challenge is to find out when the satellites will be passing over your location. Because they are in a low earth orbit, you'll find passes last for around 10 minutes at a time from horizon to horizon.

There are plenty of ways to find out when the satellites will be within the range of your location. I use an application on my smartphone. I'm an iPhone user and a nice free app is *SATSAT* or a paid app *GoSatWatch*.

For Android, try *AMSAT-Droid*. Or, go to the *Heavens-Above* website:

https://heavens-above.com

On the site, you can set your location and you'll be able to see details of the satellites that are within range.

Passes and Elevation

Assuming you're using something like a discone or a VHF/UHF vertical, have a look for passes with a maximum elevation between 5 and 30 degrees or so. Although signals can be very strong from an overhead pass – because your vertical is not designed to send and receive signals from directly overhead – the signal can get quite weak in the middle of the pass.

Therefore, the relatively low elevation passes are a good place to start with. I used my new SDRPLay RSPdx receiver (see *News Extra* in this issue), but you can use whatever SDR you have, including one of the RTL-SDR dongles. Run up the software and place the receiver on the appropriate downlink frequency (145.960 or 145.880 MHz, depending on which satellite you are targeting). Zoom the software in, so that you can see relatively minor changes in frequency quite easily.

In my case, an 18-degree maximum elevation pass of AO-91 was due (Fig. 2).

Consequently, I placed my receiver on 145.960MHz and started to listen.

As luck would have it, just below, I saw a pulsing signal on 145.937MHz, or thereabouts, and I realised it was the data signal from the AO-73, which was just completing a pass. By the time I had finished watching that, there was a trace of a signal on 145.960MHz, getting rapidly stronger as the satellite came up over the horizon. Initially, I could just see traces on the display, but as the satellite got a little bit higher, the signal became stronger. By clicking in the centre of the signal, with the receiver in FM mode, I started to hear stations calling through the satellite (Fig. 2).

You can fiddle with the filtering, of course, to optimise the quality of the audio.

Orbital Parameters

Keep an eye on the left-hand side of the signal trace and watch what it is doing. You should see that it is gradually inching to the left (showing that the frequency is falling). Of course, this is the very illustration of Doppler Shift in action (exactly the same as when you listen to the pitch of a fire engine siren dropping as it comes towards you).

Depending on the orbital parameters of the pass that you are listening to, you may note that the rate of frequency changes more quickly in the *middle* of the pass than the beginning and end of it. This becomes even more obvious when we move from listening at VHF to satellites in the higher UHF range of frequencies.

You will almost certainly notice a variation of the signal strength of the satellite as it moves through the pass.

This is due to a combination of factors, but you may even sometimes see a strange effect when the satellite is strongest when it is close to the horizon – and therefore furthest away from you. You'll see this, in particular, if the aerial that you are using has a minimal vertical beamwidth: As soon as the satellite moves above the lobe of the antenna, the signal strength will fall.

If you are using a vertical as we discussed, you'll probably notice various peaks and troughs of the signal strength as the satellite moves through the radiation pattern of your aerial.

If you repeat the experiment over a number of different passes, you will start to get a better idea of how your antenna works when the satellite is close to the horizon – when it is high in the sky and so on.

If you want to make contacts through the satellite, a vertical is not the ideal receiving antenna, although it will certainly work – after a fashion.

Summary and Preview

Perhaps you too will get hooked on listening to see what stations you hear on the satellite. AO-91 is in a slightly higher orbit than AO-92, and it has a wider range. On westerly passes of the satellite, you may well hear stations from the USA coming through the transponder.

I hope you have found this interesting and, perhaps, if you thought that listening to signals from space was hard, that you can, in fact, do this with simple equipment. I hope also that you have enjoyed seeing and hearing Doppler Shift in action, as well as getting an idea of the radiation pattern of your aerial.

Over the coming months, I will come back to plenty more satellite operation; decoding telemetry, listening to non-amateur satellites, and much more.

It would be very good to hear how you get on listening to the satellites and what your experiences are.

Please get in touch and it will be great to include your contributions to the column.

Fig. 3 shows the cover of the book by John Branegan GM4IHJ, the older RSGB title previously mentioned.

In addition, the website of the Group for Earth Observation (GEO, see below) is an excellent starting point for all those interested in satellite images. See you back in space in two months' time.

Websites

AMSAT (G): **https://tinyurl.com/vlzphas**
AMSAT (UK): **https://amsat-uk.org**
AMSAT (US): **https://www.amsat.org**
ARISS: **https://www.ariss.org**
CUBESAT: **http://www.cubesat.org**
General Resources (via GEO):
Group for Earth Observation (GEO):
https://tinyurl.com/yx8yxcq6
Heavens Above: **https://heavens-above.com**
History of Amateur Radio Satellites (SpaceToday): **http://www.spacetoday.org/Satellites/Hamsats/HamsatsBasics.html**
IARU Frequency Coordination:
https://tinyurl.com/u64gatn .

Further Reading

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- Barron, A. ZL3DW (2018) *AMSATS and HAMSATS* (RSGB)
- Fielding, J. (2nd ed., 2010) *Amateur Radio Astronomy* (RSGB) **https://tinyurl.com/uyago32**
- Lashley, J. (2010) *The Radio Sky and How to Observe It* (Springer)
- *Monitoring Monthly*: This older magazine used to carry a series on space radio signals.
- Poggi, P. (2015) HAMSAT: *Amateur Radio Satellites Explained* (RSGB)
- Sichla, F. (2018) *Kosmische Kommunikation* (beam Verlag, Marburg).

CHRISSY BRAND

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California Dreaming

Chrissy Brand picks out some fascinating Californian radio stations that caught her attention. Clint Gouveia reports from Texas and looks at some remarkable transatlantic medium wave catches.

Chrissy Brand
chrissyLB@hotmail.co.uk

There is an American flavour in this month's column, including some US medium wave stations that DXers can hear in the UK and Europe. When in Southern California in October, I noted that the radio scene is quite healthy there, with a good variety of musical genres represented. Complementing this, there is the ever-reliable news, and feature programmes of local and national public radio.

That there is a variety of musical genres available is certainly true of FM and SiriusXM. In contrast, medium wave seems to be dominated by sports networks, although there are plenty of talk and music stations from across the USA, Canada and Mexico that can also be heard within North America. Some of these are often heard in Europe too, particularly during the long winter nights; see this month's logs.

Sounds Of America

In the coastal town of Ventura's vintage vinyl store, I picked up a flyer for KTYD 99.9, a radio station that is based in Santa Barbara. KTYD broadcasts a programme called the *Grateful Grooves Radio Show*, which includes a feature called *The Cannabis Chronicles* (cannabis use was legalised in California in 2018). The Saturday night (2200 local time) programme showcases the legacy of *The Grateful Dead*. Classic rock music is the mainstay of the station, although KTYD uses the term 'quality rock' to describe it.

I was sorely tempted to purchase some classic, or vintage, radios. In an antique shop in downtown Ventura, I saw a Zenith H 500 on sale for $159, a Zenith Transoceanic A600 for $195 (Fig. 1) and a Magnavox, priced at $145, from 1957, which was one of the first multi-band transistor radios. Disappointingly, because I was backpacking and travelling by Amtrak train, I had no room to carry heavy old radios.

In most cafés and restaurants that I frequent, in whatever country, there is a

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Fig. 1: A Zenith Transoceanic A600 for sale in the coastal town in Ventura. Fig. 2: Defunct KFWB towers on the Pacific Theatre in Hollywood.

playlist of music rather than a radio station being aired. This has pros and cons. It is always good to hear a radio station live and to see others enjoying it. However, some DJs and too many adverts can be monotonous. Also, it is hard for a coffee house owner to find one station that meets all the musical tastes of customers. However, a playlist does let you discover new music. It is telling that people's playlists are far more diverse than the vast majority of music radio stations. With the *Shazam* music recognition app, I am always adding to my own canon of musicians and bands that I hear on my travels.

I did hear radio dominating in many California cafés I visited, although it was far from a scientific survey that I undertook. At two Perry's beach cafes in Santa Monica and Venice beach, radio is king. The Siriusly Sinatra channel on SiriusXM poured out songs by Frank Sinatra but also cover versions and related Sinatra sounds and pop standards.

The no-adverts morning show on The Pulse informed me that, "*The Pulse plays the 2000s and today.*" The title track of veteran pop and rock group The Goo Goo Doll's 2019 *Miracle Pill* album was one song I recognised.

The station is not to be confused with a programme that airs on Californian and other US stations and is called *The Pulse of the Planet*. It is, *"a weekday two-minute sound portrait of Planet Earth, tracking the rhythms of nature, culture and science worldwide, blending interviews with extraordinary natural sound."*

www.pulseplanet.com

The Sirius XM Watercolours station provided a soundtrack to my breakfast at a harbour in Oceanside. It specialises in smooth and contemporary jazz music but differed from the usual suspects heard on Jazz FM or Smooth in the UK. Artistes new to me, and whom I enjoyed included Dave Koz, Kem, Richard Smith, Jazz Holdouts and Warren Hill.

Traditional FM still gets played in public though, with Kiss 105.3 being a popular station in LA. The best of the rest for me included KPPS American Public media on 89.5MHz and 885 FM. The latter was heard in Ventura and other parts of Southern California and is an independent station that I now listen to at home online. It is a service of Saddleback College and California State University, Northridge.

885 FM fits in the triple-A format (Adult Album Alternative) and I was pleased to hear one of my favourite Californian bands, Best Coast. There was also a feature about the Desert Daze music festival, where The Flaming Lips were headlining. It was reassuring to hear music radio stations and music festivals still connecting and supporting live and studio music and that the world is not all about individuals' playlists and streaming. As the station says, *"Support non-corporate radio now!"* The station website also provides a Latin Alternative and Jazz stream.

www.885fm.org

I was disappointed not to find a radio station run by the Californian Native American Chumash people. However, Chumash news stories do get some coverage, for instance on KCBX FM, Central Coast Public Radio.

https://tinyurl.com/sorwb4o

Towers and Earthquakes

In Los Angeles, I was impressed by much of the older architecture. There are two buildings, in particular, both with (now defunct) medium wave hammock antenna towers on the roof. One was downtown and the other one in Hollywood.

The latter has the historic callsign of KFWB. Although today it is a regional Mexican format station on 980kHz, the station started under the auspices of Warner Brothers. The towers are on top of what was the Warner Brothers Theatre when it opened in 1928. It is now known as the Hollywood Pacific Theatre (Fig. 2).

Over to the south of the city, the KRKD towers on top of the Spring Arcade in downtown LA were due to be demolished in 2014. They once supported an AM hammock antenna for 1150kHz. They were no longer in broadcast use after the station's owners went bankrupt in the 2000s. The callsign was retired in 2011 but, thankfully, the decision to remove KA's twin towers was reversed, and they were preserved, at a cost of circa $80,000, Although not used for transmitting, they remain a beautiful and iconic piece of US radio heritage (Fig. 3).

When KMIC in Inglewood, California moved to the Spring Arcade building in 1932, the station callsign was changed to KRKD. The initials were allocated to convey the sound of 'arcade', as a nod to the Spring Arcade building that they are located on.

In 2014, the *LA Downtown Times* reported that, *"Bringing the towers up to modern standards required several steps, among*

Short Wave Logs

UTC	kHz	Station and Location	Language	SINPO	Initials
0011	11780	Rádio Nacional da Amazônia, Brasilia, Brazil	Portuguese	33333	CG
0140	2500	WWV, Fort Collins, Colorado, USA	English	43333	CG
0207	4055	Radio Verdad, Chiquimula, Guatemala	Spanish	33343	CG
0220	6185	XEPPM Radio Educación, Mexico City	Spanish	44444	CG
0228	3215	WWCR, Nashville, Tennessee, USA	English	54545	CG
0257	5000	WWV, Fort Collins, Colorado, USA	English	55555	CG
0306	5925	Voice of America, Selebi-Phikwe, Botswana	English	43434	CG
0315	6070	CFRX, Toronto, Canada	English	33343	CG
0320	5960	Radio Kuwait, Sulaibiyah, Kuwait	Arabic	32333	CG
0333	4885	Rádio Clube do Pará, Belem, Brazil	Portuguese	53444	CG
0333	4875.2	Rádio Difusora de Roraima, Boa Vista, Brazil	Portuguese	32323	CG
0336	13840	Radio New Zealand International, Rangitaiki	English	32443	CG
0357	5915	ZNBC Radio 1, Lusaka, Zambia	Bemba	3333	CG
0430	3413	Shannon VOLMET, Republic of Ireland	English	24333	CG
0511	3330	CHU, Ottawa, Canada	French/English	33333	CG
0635	5000	WWVH, Kokole Point, Hawaii, USA	English	24442	CG
1338	9435	Voice of Korea, Kujang, DPRK	English	32333	CG
2015	9705	Vatican Radio	English	43333	NT
2030	6170	Radio Romania International	English	45444	NT
2130	9730	Voice of Vietnam	English	54444	NT
2200	11940	Radio Exterior de España	English	33333	NT
2308	6155	Voice of the Islamic Republic of Iran	Arabic	25544	GS
2310	5965	China National Radio 1	Chinese	35544	GS

Medium Wave Logs

kHz	UTC	Station and location	Language	SINPO	Initials
558	0700	Panjab Radio	English	33222	SC
648	0303	Radio Caroline	English	43333	SC
666	0609	BBC Radio York	English	33222	SC
666	0401	SER, Barcelona	Spanish	33333	SC
783	0400	COPE, Barcelona	Spanish	33222	SC
1017	0404	Radio Nacional de España	Spanish	32222	SC
1026	0650	Downtown Radio, Belfast	English	43333	SC
1026	2000	BBC Radio Jersey	English	22222	SC
1035	0007	Lyca Dilse Radio, London	English	44444	SC
1116	2001	BBC Radio Guernsey	English	32222	SC
1161	0206	Tay 2, Dundee	English	33333	SC
1188	1758	Magyar Radio 4, Hungary	Hungarian	44333	SC
1314	0300	Radio Nacional de España	Spanish	22222	SC
1539	0400	SER	Spanish	33333	SC
570	0305	CFCB, Corner Brook, NL, USA	English	32222	SC
590	0121	VOCM, St John's, NL, Canada	English	33333	SC
710	0506	WOR, New York, NY, USA	English	22222	SC
710	0403	CKVO, Clarenville, NL, Canada	English	32222	SC
740	0325	CHUM, Marystown, NL, Canada	English	33333	SC
740	0416	CFZM, Toronto, ON, Canada	English	33222	SC
750	0320	CGBY, Bonavista Bay, NL, Canada	English	32222	SC
760	0417	WJR, Detroit, MI, USA	English	33333	SC
1010	0130	CFRB, Toronto, Canada	English	33333	SC
1010	0457	WINS, New York, NY, USA	English	43333	SC
1130	0300	WBBR, New York, NY, USA	English	32322	SC
1140	0427	CBI, Sydney, NS, Canada	English	22222	SC
1500	0459	WFED, Washington, DC, USA	English	32222	SC

LOG CONTRIBUTORS: CG = Clint Gouveia, Houston, Texas. SDRplay RSPduo, Tecsun PL-880, Bonito MegaLoop FX and MegActive MA305. GS = Graham Smith, Bury St. Edmunds, Suffolk. Sony ICF-SW600 and a telescopic antenna. NT = Nicky Tesla, Sheffield. XHDATA-D808. SC = Scott Caldwell, Warrington, Cheshire. Sony ICF 2001D, Lowe HF225 and a Wellbrook loop.

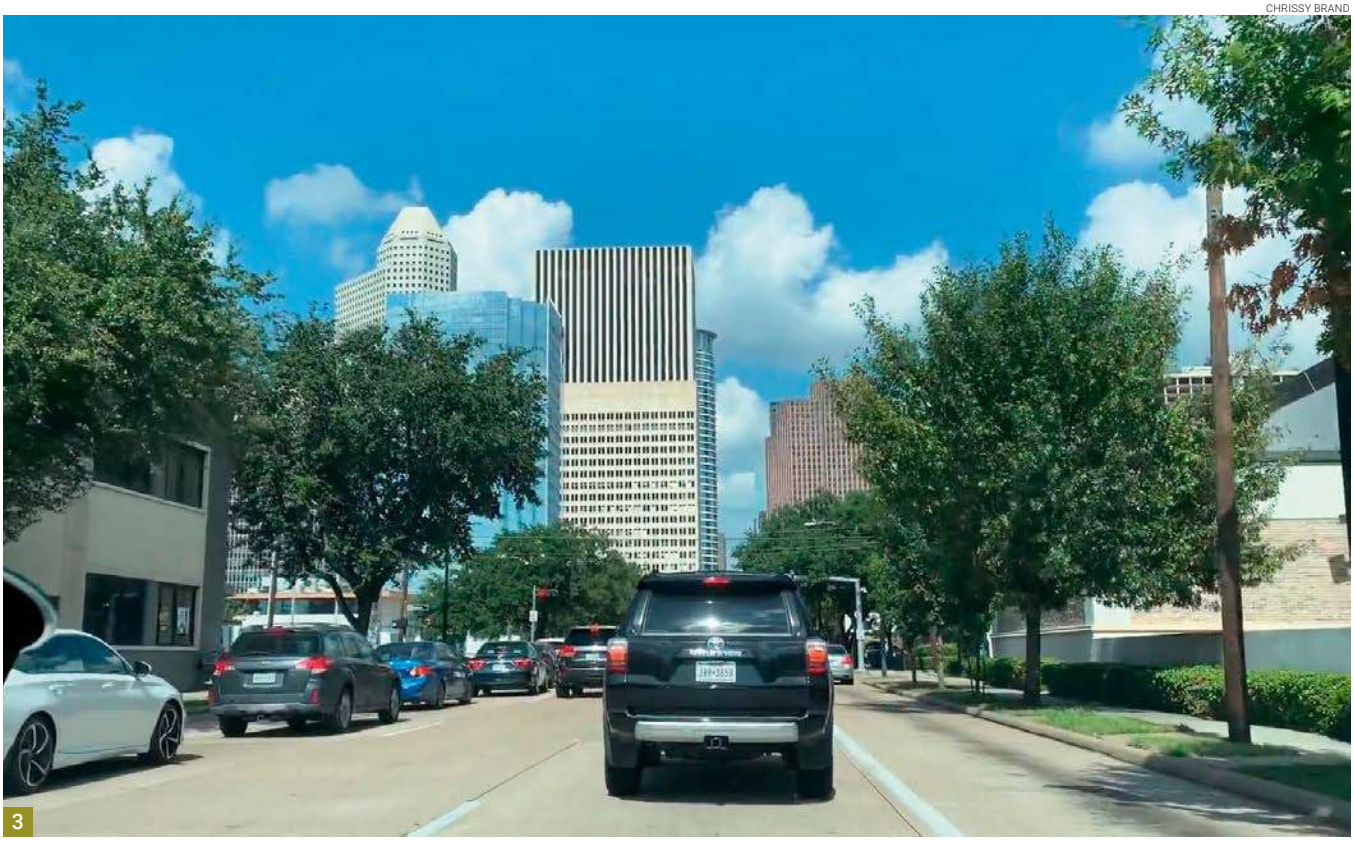
them satisfying FCC and FAA regulations by painting them orange and white and adding illuminated beacons. The lighting circuits for the beacons have to run to the emergency generator in the building's basement because if the building loses power, the beacons still must work".

Adrian Scott Fine, the director of advocacy for the Los Angeles Conservancy believes the radio towers contribute to the historic fabric of Downtown and Broadway. *"Radio towers like the KRKD tower are significant because they were once common, but are becoming increasingly rare."*

I think it is fair to say that a medium or technology can be said to be embedded into the national psyche once it has achieved an Orson Welles *War of the Worlds* type moment. Many people believed that the October 1938 radio drama broadcast on CBS' Mercury Theatre on the Air was a news story, not drama.

In Los Angeles, at the *Werk It! A Women's Podcast Festival*, I heard Kristen Muller of Southern California Public Radio recall

CHRISSY BRAND



3

CLINT GOUVEIA

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Fig. 4: Downtown Houston in Texas. Fig. 3: One of the two KRKD towers on top of the Spring Arcade in LA.

that the KPCC 89.3 radio programme and podcast *The Big One: Your Survival Guide* achieved this, to a lesser degree, in 2019. A listener who was driving pulled over, believing that an earthquake had struck. There may be others who were similarly affected. I can understand why. The programme is preparing people for the almost inevitable catastrophic earthquake that will hit the state at some point this century. Interestingly, the top three essential items to store away in case of an earthquake are water, first aid kit and a hand-crank radio.

"When The Big One hits it'll take under two minutes for more than 10 million Southern Californians to lose internet, power, and a sense of security. Host Jacob Margolis and Producer Misha Euceph take you on a journey to understand what the catastrophic earthquake will mean for Los Angeles, the USA, and the world. This is what you need to know to survive."

https://the-big-one.scpr.org

It is the most gripping and informative radio or podcast series that I heard in 2019. The second most gripping one was BBC Radio 4's *Tunnel 29*. This was part of the station's *Intrigue* series about the Berlin Wall, made to commemorate the thirtieth anniversary of its demise.

https://tinyurl.com/svp3a3z

Heard in Houston

In October 2019, Clint Gouveia was in Houston, Texas (Fig. 4). He wrote, *"As usual, I had the SDRplay RSPduo with me, but this time I took two antennas: the Bonito MegaLoop FX and MegActive MA305.*

"I did this because I wanted to experiment with their new 'diversity-feature'. This system allows the user to use two antennas simultaneously – when placed close together the software subtracts the noise from one to the other to improve the overall signal-to-noise, and when placed far apart the signals are effectively added together to also improve signal-to-noise.

"Unfortunately I didn't really have enough room on my hotel balcony for much experimentation, although I did see an improvement using the diversity-feature. I also took my Tecsun PL-880 portable with me. Probably the highlight of the trip was catching Zambia NBC Radio 1 with a clear ID, all the way from Lusaka. I certainly wasn't expecting that. I also copied Radio New Zealand International, which was nice as they are quite difficult to hear in Europe these days. Various other Central and South American stations on short wave were also copied."

Readers' Tips

Scott Caldwell reported fairly good conditions for transatlantic medium wave DXing. He wrote, *"However, some signals are still subjected to long periods of fading in and out, sometimes making it time-consuming when attempting to obtain an identification. This has been significantly*

Fig. 5: Clint's SDRuno + Lenovo set up.
Fig. 6: Radio Televizioni Shqiptar, home to Radio Tirana for many decades.

CLINT GOUVEIA

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GRAHAM SMITH

6

assisted with the SDR, as I can simply play back the recording near the top of the hour for clear identifications."

Music radio is still alive on medium wave in Canada, where CFZM in Toronto gave an identification on 740kHz of 'Timeless hits on Zoomer Radio'. A typical Saturday morning in Canada (late afternoon and evening in Europe) includes a good range of programmes, as well as some quite thought-provoking phone-ins (when compared to the UK versions).

These include *From A Women's Perspective, The Garden Show, Dave's Corner Garage* and *The Tonic*. You can listen and also watch a studio feed online.

www.zoomerradio.ca

Just along the band on 750kHz, CGBY in Bonavista Bay aired a CBC feature on racism and politics. Scott logged Newstalk 1010 CTRB in Toronto, which is part of the iHeart Radio group. I listened online, concerned by a weather forecast of gusts of wind reaching 130km per hour. World news and sports are covered quite well too, and a feature on a popular play, about the friendship between Edith Piaf and Marlene Dietrich, was riveting. South over the border, Scott pulled in a decent signal from WJR in Detroit Michigan on 760kHz.

When DXing on medium wave, don't forget to tune into the Extended Band. Better known as the X-Band, this is an additional stretch of frequencies running from 1610 to 1700kHz

A full list of current stations in the Americas using the X-Band was compiled by Tony Rogers of the British DX Club (BDXC) and published in November's issue of *Communication*.

http://bdxc.org.uk

Tony wrote, "*This is a list of stations in the Americas believed to be using the extended AM band between 1610-1700 kHz. Transmitter powers for US stations are generally around 10 kW, with many of the stations listed required to reduce power at night, often to around 1kW. Because this part of the AM band is relatively clear in Europe, apart from occasional pirates, it is possible to hear some of these stations overnight here in the British Isles when conditions are suitable.*"

Among the many stations located here are Radio Inka in Peru on 1610kHz, Radio UABC in Argentina on 1630kHz and WVON, The Talk of Chicago, on 1690kHz.

Graham Smith was in Albania earlier in 2019 and took a photo of Radio Televizioni Shqiptar, where Radio Tirana broadcasts from (Fig. 6). Radio Tirana can be heard, via the Shortwave Service, on Mondays to Saturdays on 3985kHz in French at 1700 and in German at 1930 UTC. It is in English on 6005kHz on Mondays to Saturdays at 1430 UTC.

The AER (Spanish Association of Radio Listeners) has published the B19 schedule for Radio Exterior de España on its website. The station can be heard in Spanish and English on short wave. Graham also found a collection of DX programmes listed in Spanish.

https://aer.org.es/archivos/15445
http://programasdx.com

Hilversum Heritage

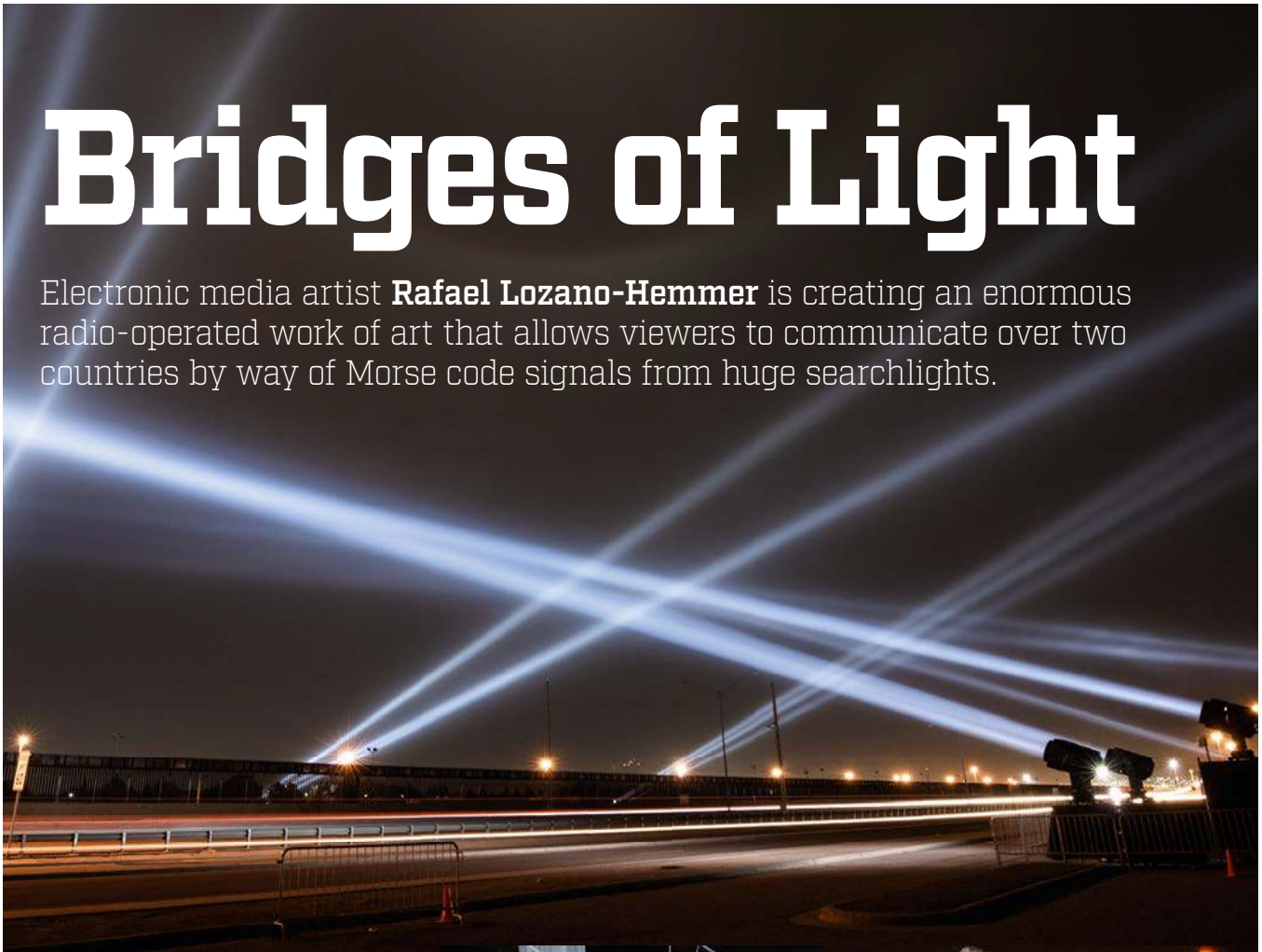
At an event held in Hilversum on November 6th, Karin van den Boogaert and Jonathan Marks spoke about the positive impact of international radio. They did this by referencing their much-lamented former employer, Radio Netherlands. The duo recalled some of the important work that several language departments achieved before broadcast activities ceased in 2012. Hopefully, video footage from the event will be made available online.

This was one of a number of events at the Hilversum Museum, including *Media Women: Pioneers in the World of Image and Sound* (which runs until the end of 2019). They were part of a celebration of 100 years of radio, celebrated in the Netherlands in November and summed up in the curators' statement that, *"Radio is alive and well. That is the message that 'Sound and Vision' is conveying … With a large radio collection, 'Sound and Vision' shows and hears the relevance of the medium over the years during various festivities."*

https://beeldengeluid.nl/
https://tinyurl.com/u5rd8nc

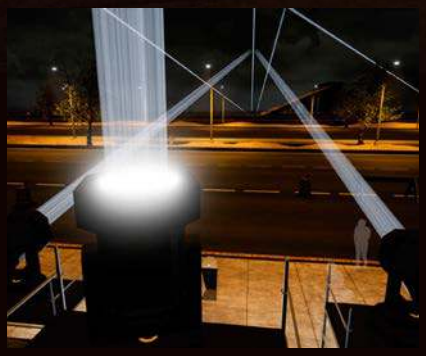
Bridges of Light

Electronic media artist **Rafael Lozano-Hemmer** is creating an enormous radio-operated work of art that allows viewers to communicate over two countries by way of Morse code signals from huge searchlights.



Imagine huge searchlights which can be seen over a ten-mile (15km) radius, talking to one another across two countries. This is exactly what electronic media artist Rafael Lozano-Hemmer is creating this November between Ciudad Juárez in Mexico and El Paso in Texas. Called Border Tuner, the project will see enormous bridges of light connecting the US-Mexico border for the first time. When lights from the stations (three on each side) are directed at each other and they manage to make a connection, a massive bridge of light is formed. This activates microphones and speakers allowing participants to communicate with one another across the border. The "light bridge" flickers like Morse code as the participants listen and speak to one another. If they don't like what they are hearing they can retune to a different light beam. This is not the first time Rafael Lozano-Hemmer has used searchlights in his art but he's never done anything on this scale or with this complexity before.

Born in Mexico City in 1967, he first produced a remote-controlled searchlight project in 1999 for the Zócalo Square in Mexico City. Since then he has created installations in dozens of cities around the world where the public controls the searchlights using the internet, mobile phones, megaphones or heart rate sensors. The website below links to a BBC WS programme on this story.



His new work will be installed at the US-Mexico Border for 17 nights in November of 2019. At the start of the project each night, prior to opening the microphones to the general public, a variety of special guests on both sides will take control of the system. One evening it might be poets, another jazz musicians, beatboxers, seniors, first nations speakers, maker/hackers, choirs, historians, feminists, sports fans, and so on; during these opening remarks the piece will be set to a special mode where all the lights intersect and all six stations can hear each other. When no one is participating, the searchlights for each station form an inverted tetrahedron, —a flower formation—, and modulate their intensity reacting to pre-recorded content. This content is curated in conjunction with communities on both sides of the border and is meant to animate the piece permanently with diverse voices that represent the region. Border Tuner is not only designed to create new interconnections between the communities on both sides of the border but to make visible the relationships that are already in place: magnifying existing connections, conversations and culture that are already shared. The piece is intended as a visible switchboard of communication where people can self-represent. The piece seeks to provide a platform for a wide range of local voices and an opportunity to draw international attention to the complicity and interdependence between the sister cities that create the largest bi-national metropolitan area in the western hemisphere

https://tinyurl.com/yx5jdd3x

UK TV: A History in Recent Anniversaries

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Garry Smith
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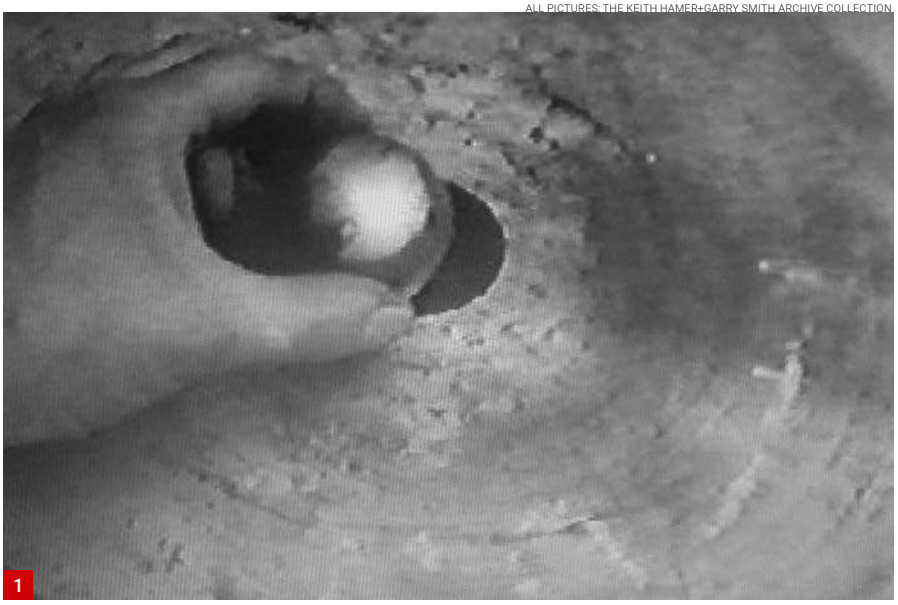
In the first 2020 segment of their new, bi-monthly column, **Keith Hamer and Garry Smith** celebrate a plethora of noteworthy broadcasting anniversaries and offer a brief roundup of recent DXTV highlights.

ALL PICTURES: THE KEITH HAMER+GARRY SMITH ARCHIVE COLLECTION



1

BBC Television came to the Midlands 70 years ago, on Saturday, December 17th, 1949. On that very important date in the history of British television, the BBC flicked the switch on its new transmitter at Sutton Coldfield and began to beam TV signals into homes across the West and East Midlands. The base of the 750-foot transmitting mast was locked into position using a 2-inch steel ball (Fig. 1).

It's difficult to imagine now, in these days of cable and satellite TV, soap stars and spare televisions in kitchens and bedrooms, but there was a time before the box when families didn't reach for the remote control for entertainment. All changed at 8 pm that December evening when viewers with sets tuned in to watch the opening ceremony.

Following hard on the heels of all the speeches, was their first glimpse of the future – a variety review called *Stars in Your Eyes*. The next programme was an ice-hockey match/ featuring Nottingham Panthers and Earl's Court Rangers. Then it was a Newsreel bulletin, and that was about it for the night!

BBC-1 & ITV: 50 Years in Colour

On November 15th, 1969, colour was introduced to the BBC-1 and ITV services, which were broadcast on 625 lines UHF, providing programmes to almost 50% of the population. New transmitting equipment had to be installed to provide duplication at each site.

Set-makers rushed into production of the new single-standard chassis designs, which simplified receivers and improved efficiency, performance and reliability. Few were brand-new designs, and most of them simply had the system switch and the redundant 405-line circuitry removed.

Of course, single-standard receivers could only be used in areas where all three services were transmitted at UHF. Dual-standard sets still continued in production as some transmitters (for example Belmont and Caradon Hill) only broadcast BBC-2 (in colour) on UHF. BBC-1 and ITV services were only available in these areas on the VHF 405-line system even in early 1971, according to the official EBU listings.

The BBC videotaped the entire Opening Day of Colour to record, for posterity, the historic event in all its glory. Unfortunately, in an effort to save money, the BBC's attempts to capture the excitement of the first official day in Colour were not exactly a huge success: All the recordings were made in glorious … black-and-white! An off-screen photograph, taken by the authors using the original BBC monochrome recordings, is shown here (Fig. 2).

The introduction of colour on BBC-1 coincided with the start of a new season of programmes. These ranged from the *Harry Worth Show*, a new twice-weekly serial called *The Doctors*, and a programme named *Take Three Girls*.

2

Sixty Years of Anglia Television

When Anglia Television began transmitting from the Mendlesham site on October 27th, 1959, channel B11 (204.75MHz vision and 201.25MHz sound) was used with horizontal polarisation and 200kW ERP (Effective Radiated Power). The mast height was 305m (1,000ft), with a site elevation of 60m; the

Fig.1: A 2-inch ball bearing is placed into position in the early summer of 1949 to lock the base of the Sutton Coldfield transmitter. Fig. 2: The colourful BBC-1 'Globe' Symbol debuted on November 15th, 1969, recorded for posterity by the BBC - in glorious monochrome! Fig. 3: Anglia Television used this famous sterling-silver knight and horse as their logo; it juddered around on its rotating plinth and was used in various forms until the late Eighties. Fig. 4: The original Ulster Television 'oscilloscope' logo, radiated on October 31st, 1959. Fig. 5: Russia R1 (Россия-1 network), received by the authors on September 6th 2019.

transmitting aerial was set at 285m.

The Mendlesham location was chosen in order to reduce possible interference in the Chillerton Down service area, which also used channel B11, albeit with vertical polarisation. The 200kW output beamed to the north and north-west of the transmitter with a lower ERP was directed towards the Chillerton Down area to avoid a potential clash.

For many years, the station used a sterling-silver knight riding a horse as their logo (Fig. 3). In later years, they both rode off into the sunset to be replaced with more mundane graphics.

Sixty Years of Ulster Television

The ninth region to be introduced to the ITV network was Northern Ireland, which began broadcasting on October 31st, 1959 (Fig. 4).

Ulster Television Limited was formed in November 1958, and ABC Television was originally to have been the main programme supplier. The Ulster Television studios were located at Havelock House in Ormeau Road, Belfast. The building was a former warehouse.

Initially, the station aimed to provide 20 minutes of locally-sourced programme material per day, and the company made arrangements with ABC Television to sell advertising space.

The site chosen for the new transmitter was Black Mountain, a few kilometres west of Belfast. Due to the close proximity to the nearby airport, the height of the mast was restricted to 229m (750ft). The site elevation was 296m, with a transmitting aerial height of 210m.

DX Corner

July 2019 was a busy month for long-distance TV and FM reception, despite several Russian analogue TV stations closing the previous month. On the 6th, Tim Bucknall (Congleton) received at least four video carriers on channel R1 (49.75MHz), three on

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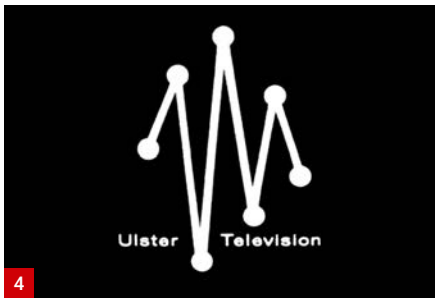

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R2 (59.25MHz) plus at least eight Russian OIRT FM stations. The 27th was excellent, too, and on R3 (77.25MHz), the Russian stations '1TV' (Novosokolniki), '5Kanal' (St-Petersburg) and 'NTV' (Cherepovets) at 2,530km, were identified. Tony Mann in Perth (Australia) reported some exceptional 6-m, multi-hop, Sporadic-E propagation (via FT8 mode on 50.313MHz) between Europe and Australia on July 19th (Ukraine) and 24th (Germany, France, Switzerland, Slovenia and Hungary). Via the Florina (Greece) remote tuner, Tony confirms that there are two-channel E2 (48.25MHz) analogue transmitters operating in Afghanistan and four E3 (55.25MHz) outlets, albeit low-power, in India. Towards the end of July, Niels van der Linden (Épinal, France) received Russian 'Rossija K' (culture) and 'RTR Planeta', both on R2 from unidentified transmitters. 'Rossija K' on R3 (77.25MHz) was identified as Smolensk. Weak E3 video remains a mystery as all European TV transmitters using this channel have closed, as far as we know. Throughout August, Sporadic-E reception proved impressive for both Gösta van der Linden (Rotterdam) and Niels with R1 and R2 video received most days. Activity on R3 (77.25MHz), R4 (85.25MHz) and even R5 (93.25MHz) seemed quite common.

On August 1st, the Ukraine '1+1' network was received on R1 in colour by Niels with the 'TCH' evening news, commencing at 1930 local time. The only analogue '1+1' Ukraine R1 transmitter remaining on-air is Kramatorsk with 90kW ERP. Moldova (M1) R1 and R2 also emerged the same day. On August 20th, Tom Crane (Hawkwell) identified Moldova (M1) on R2 while the 24th produced sustained reception of the Russian 'Россия-1' network (R1). On the 28th, at 1751UTC, Simon Hockenhull (Bristol) identified 'Россия-1' with mostly studio scenes, possibly a news programme, fading in-and-out for over an hour. R2 became active shortly afterwards, but only at scanner level. Amazingly, Sporadic-E continued throughout September. An opening on the 5th at 1210UTC produced unidentified pictures on R1 (zero-offset) with a light rectangular logo in the top-right of the screen. This was tentatively logged as a Russian network. The reception lasted for almost an hour on the 6th with pictures first materialising at 0945 (Fig. 5) with the 'Россия-1' logo (with an additional line below) present in the top-right of the picture. Russian TV reception occurred on at least nine days during the month. On the 7th between 0904 and 0910UTC, Tim Bucknall detected double-hop OIRT FM reception from Buzuluk near the Kazakh border on 66.62MHz. Tim comments that it has been a good year for this part of Band I if nothing else!

During the bleak winter months, listen out for meteor-shower DX at the lower end of the FM band. It can be quite productive with daily results, particularly on 87.6MHz. This month's 'DX Corner' was supplied by 'DX-R Rotterdam' (Gösta and Niels van der Linden, Netherlands and France, respectively) and *TeleRadio News* (*HS Publications*, United Kingdom).

https://tinyurl.com/sww3epg
https://tinyurl.com/yarukfsh

Stay Tuned!

Please send archive photographs, information, news or suggestions for future topics.

DAB News, DRM on Short Wave, and an α-Infuser

Kevin Ryan
kevin@kpr-web.co.uk

Kevin Ryan has some important updates on DAB in the UK, reports on the BBC losing listeners and considers the future prospects for the three main international digital radio standards, DAB, DRM and HDRadio.

The Global Radio group launched a nationwide 24-hour rolling news service at the end of October. LBC news on the D1 national multiplex, surprisingly in DAB+ stereo, is an expanded version of LBC London News that broadcast 13 hours per day to the capital relaying LBC at other times.

LBC London News is still broadcasting on the London 2 multiplex and on the Radioplayer app (Fig. 1) and opts out from the main feed for local traffic and weather bulletins.

LBC News is also on the Global Radio player and the dedicated LBC app. The rolling news service is in 20-minute slots and has no opinion or debate. Weather and traffic information is on a 10-minute cycle and adverts are creeping in slowly.

Operators break the news cycle for special events, such as the report on the Grenfell Tower disaster.

LBC News Schedule

A look at their online schedule shows that from Monday to Friday, during the core hours of 6 am to 4 pm, the output is anchored by well-known LBC London News presenters Lisa Aziz, Martin Stanford, Jim Diamond and Ian Payne. This is just the same as at the previous London-only station.

Outside these hours and at weekends, the schedule only says that the programming is the latest from LBC's reporters across the UK and around the world. I listen frequently during the late evening and early morning, and there are several named hosts providing the continuity with live traffic information and weather.

https://www.lbcnews.co.uk

News Radio UK

I mentioned News Radio UK in the past; it is the only other comparable service in the UK that operates a 10-minute repeating format. They broadcast on small-scale DAB in Glasgow and Portsmouth, and their website lists the various players and apps they use. I couldn't find an app on the Google Play store, but it is available for Apple devices (Fig. 2) and on the Radioplayer app.

http://www.newsradiouk.com

Multiplex Capacity

To make room for LBC News Radio on the D1 multiplex, Radio X changed to DAB+ stereo from mono DAB. The mux is almost full again, and it might be possible to squeeze in one more DAB+ mono station. SDL is in a similar position because Love Sport Radio should be a national DAB station by now, to compete with talkSPORT, and SDL will need to make changes to create the bandwidth.

More DAB UK

Ofcom approved three Christmas-themed stations that you should still catch in late December/early January. They are Pulse Xmas on the Bradford/Huddersfield multiplex, Signal Xmas on Stoke and Wave Xmas in Swansea.

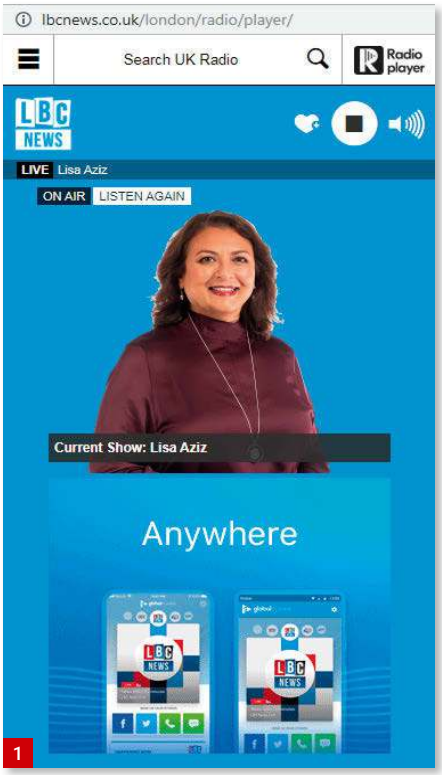
Radio Maria England, a private initiative within the Catholic Church, is now on the Cambridge multiplex in DAB mono and in DAB+ on the London 2 multiplex. Radio Maria is a large volunteer organization broadcasting in 65 languages over 77 stations. They broadcast nationwide in Ireland on the DTT system and have other stations across Europe and Africa.

Dubai Now in Arabic has permission to broadcast on the London 3 multiplex. Ofcom gave the station permission to operate on the Cambridge multiplex in October but it has not started broadcasting yet.

BBC Losing Listeners

The Q3 figures from RAJAR showed a drop in listeners across most BBC digital stations, including a 20% drop for the World Service. Surprisingly, BBC Radio 5 Sports Extra bounced back strongly, after a long period of decline, but things depend on the timing of major sporting events. Even BBC Radio 4 Extra and BBC 6 Music declined in listenership.

I am not surprised by this because I got fed up with the BBC editorial agenda, and



I moved on to other stations over the past few months, as I seek a news format that I like. I never listen to my previous first choice, the Today programme on BBC Radio 4, anymore and only occasionally to Radio 5 live for football commentary.

I was a big fan of *Up All Night*, especially with Rhod Sharpe. The BBC World Service remains the best source for international news, and I wouldn't be without that service.

I moved to LBC to *Nick Ferrari's Breakfast* but then to Julia Hartley-Brewer on talkRADIO, where there are no adverts or phone-ins because it is sponsored by

ALL PICTURES: KEVIN RYAN

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the Times newspaper. There is plenty of choice in nearly all formats now, and DAB makes it much easier to find and experience new stations.

The Channel Islands

Ofcom awarded the local DAB licence to Bailiwick Broadcasting (Fig. 3), on the strength of their coverage of the three main islands and the breadth of services awarded. Bailiwick proposes launching in October 2020, with 22 services (five yet to be confirmed). There are also BBC Radio Jersey and BBC Radio Guernsey FM services, as well as digital simulcasts of their respective AM services. I am not really sure what those simulcasts will be, other than possibly sport and coverage of the local parliament. Given the number of services, I think all stations will be using DAB+.
https://bailiwickbroadcasting.com

The B19 Short Wave Broadcasting Season

The B19 season for short wave broadcasters started at the end of October 2019. It will run until the end of March 2020. DRM, Digital Radio Mondiale, is the only digital format for the short wave bands.

There are no major changes to report. Radio Romania International (RRI) started its DRM services a week into the new season. I began to wonder if they had become a casualty of a budget cut. Later a message appeared on Twitter, explaining that this was due to a transmitter failure at Țigănești (Fig.4).

I logged its German service on 6175 kHz at 0700 UTC on a 100kW transmitter from Săftica, which is usually included with nearby Țigănești in the HFCC schedules. Normally, RRI uses Galbani for the morning service to Western Europe in English, French and German, while Săftica covers Italy, the Balkans and Eastern Europe.

Radio Kuwait's DRM output is chaotic, and the only regular broadcasts are the 0500-0800 UTC English service on 11970kHz to India and the 15110kHz service in Arabic to Europe. I haven't heard the evening English broadcast to Europe on 15540kHz for many months. With the low sunspot numbers, Radio Kuwait should be using a frequency in the 31-meter band.

All India Radio did not move to the higher frequency registered with the HFCC, preferring instead to stay on 7550kHz. This seems a sensible move, given the Maximum Useable Frequency (MUF) to the UK at this time of year is below 9MHz.

KTWR continued test transmissions, only to drop them after about a week because they needed the DRM transmitter to cover a breakdown in another transmitter. The Agana site has a couple of Thomson 250kW transmitters, previously used by Radio Australia and Christian Voice and nearly 40 years old. KTWR resumed their DRM tests to China, Japan and India (Fig. 5) on the 6th of November.

WINB changed frequencies for the winter season; the best one to catch them on is 13690kHz from 1000-1700 UTC. There are no changes to the BBC World Service transmissions in English to Europe (0600-0700UTC on 3955kHz) and to Asia (0800-0900 UTC on 15620kHz). China National Radio registered the same frequencies used in the A19 season, maintaining their level of coverage.

Russia's GFC frequency agency registered DRM tests from Komsomolsk-Amur on 6025kHz from 0600-1000 and 2000-2200 UTC, 11860kHz from 2200-0100 UTC and 15325kHz from 0100-0600 UTC. The 6025 kHz frequency is a poor choice because China uses 6030kHz for most of the day.

The station popped up on (unregistered) 9580kHz at 0455 kHz with the usual station label made up of several dots. The engineers used the correct DRM settings for a polar region; this is 'Mode C'.

Fig. 1: The LBC London News service is on Radioplayer but not on Global Radio's own apps. Fig. 2: News Radio UK is available for iOS, and probably on Android very soon. Fig. 3: Bailiwick Broadcasting is the new local DAB service for the Channel Islands, with a choice of nearly two dozen stations. Fig. 4: The Țigănești transmitter site is one of three operated by RRI. All three broadcast programmes are in DRM mode.

The mode has a reduced number of data carriers. It fact, it looks like a textbook-configuration of 10kHz bandwidth, with 16-QAM coding for the main data channel, and a bit rate of 9.18 kb/s.

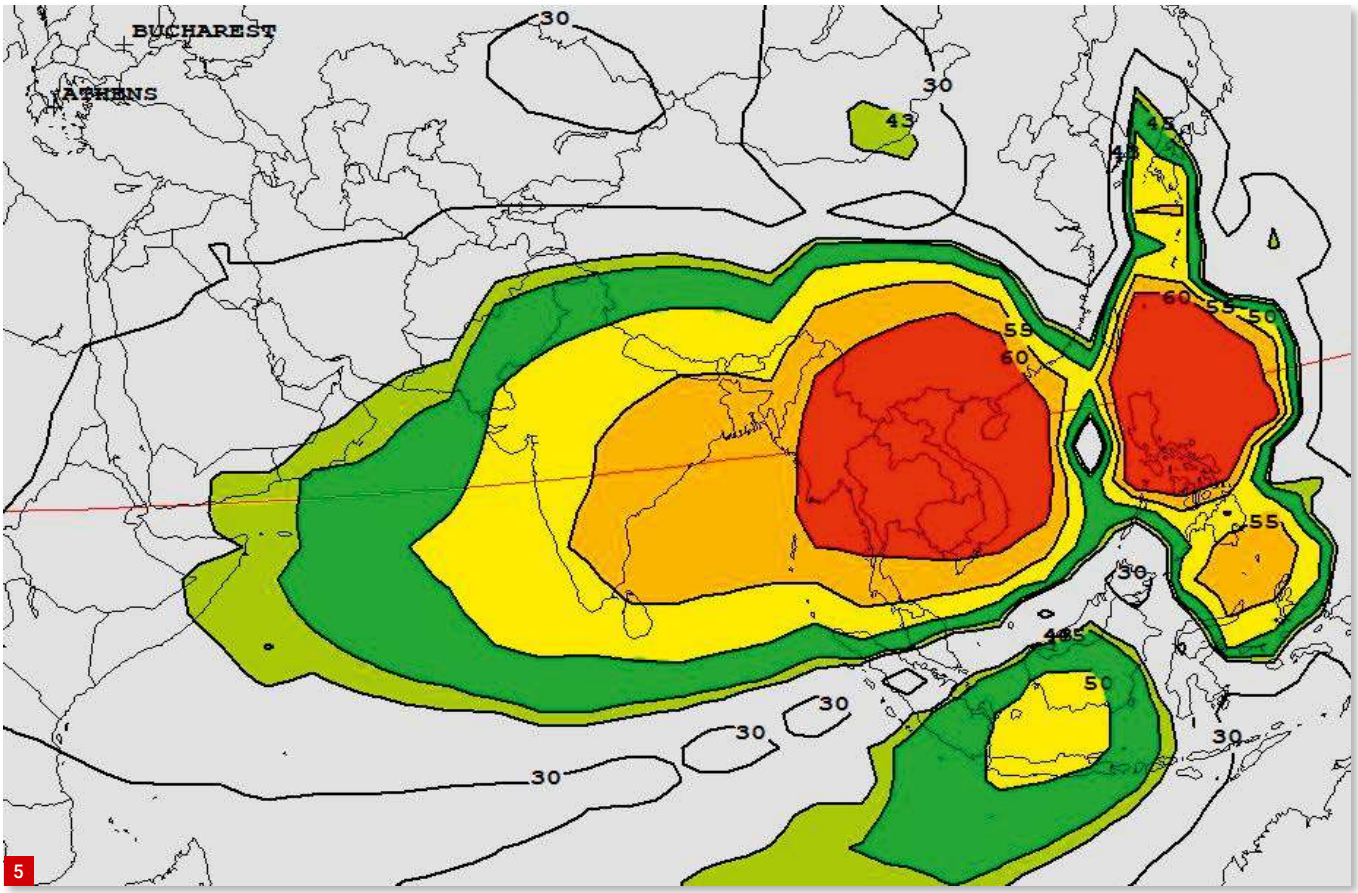
An up-to-date schedule of DRM transmissions is available on my website.
https://tinyurl.com/wgn43pf

The second leg of the sailing event *Mini Transat* started on time, at the beginning of November. TDF registered another DRM service on 17800kHz but the transmissions I monitored all used the AM mode.

This seems to be a bit of a waste because the station also had an AM transmission on 17825kHz.

DRM+ Tests

In October 2019, the public broadcaster in Pakistan, PBC, successfully demonstrated the first-ever DRM+ transmission of three audio services to a Gospell receiver. The country joins Russia, Indonesia and South Africa; all of them have been recently testing DRM in the FM band: The test setup, located at the National Broadcasting



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House PBC headquarters in Islamabad, used a low power of 75W on 101.6MHz. The DRM signal penetrated a distance of nearly 10km into the city.
http://www.radio.gov.pk

I cannot find any information on the DRM+ test in St. Petersburg Russia on the western FM band. Russia has previously tried DRM+ on the old OIRT band in 2015.

RAJAR Q3 2020

The digital listening share of all radio listening increased to 56.8%, up from 52.4% in Q3 2018. DAB is up nearly 2% at just under 40%, DTV down to 4.2% having peaked last quarter, and apps/online listening is at a new high of 13%. RAJAR provides a lot of analysis; the move to digital is unstoppable, especially because the choice of stations is at an all-time high.

The most popular digital-only station is KISSTORY, increasing by 18.4% to reach a new record of 2.554 million listeners; it is followed by BBC 6 Music, the leading BBC digital-only station, reaching 2.414 million listeners. BBC Radio 5 Live sports recovered lost ground to become the third most popular digital-only station.

Commercial stations showing strong growth include Absolute 80s, Heart 80s, Mellow Magic, Virgin Radio, and talkRADIO, which now boasts more than 400,000 listeners.

From my limited experience of looking through the RAJAR quarterly figures, I tend to take them as a good guide to how popular stations are. Comparing changes year-on-year, rather than against the previous quarter, provides a better picture overall.

Last but not least, most new cars now come with DAB as standard. Listening online and via apps in cars is also becoming increasingly popular. RAJAR estimates that 2 million listeners use this method.
https://www.rajar.co.uk

Rolling Digital Switchover?

The broadcaster talkSPORT has asked Ofcom for permission to reduce the transmission coverage of its AM national commercial radio licence, from 95.4% of the population to 93%. The regulator has provisionally agreed to the changes.

Ofcom had previously allowed Absolute Radio to significantly reduce its coverage area in 2018.

In this context, talkSPORT claimed that there has been a decline in analogue listening at a rate faster than it had predicted and that the listening at the sites it wants to close was no longer commercially viable.

The station calculated (using RAJAR data) that there was a drop in AM listening of 18% since 2013, with a corresponding increase in listening via its digital platforms.

The figures show that about 96,000 households would lose broadcast access to talkSPORT. Four of its transmitters are located in the South West, one in Northern Ireland, and two in North West Scotland.
https://tinyurl.com/yyjskon2

New Concept SDR

RF2Digital, a DRM consortium member launched an SDR solution "α-Infuser™" for all global digital radio standards designed for in-car systems. The α-Infuser™ can support all existing digital radio standards, such as DRM (for both AM and VHF bands), DAB /DAB+/DMB, CDR, ISDB-TSB, HD radio, and RDS as well.

CDR is China's equivalent of DAB, and ISDB-TSB is from Japan.

This device seems to have a similar concept as the ill-fated Titus II Android-based SDR.

As a true SDR solution, α-Infuser™ requires minimal external hardware or

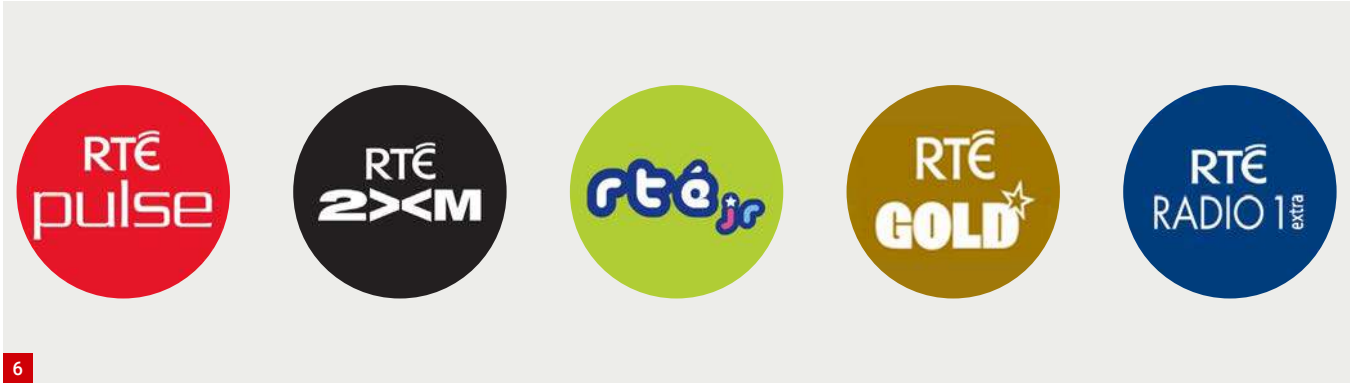

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Fig. 5: The KTWR service to India offers possibilities for long-distance reception. Fig. 6: RTÉ plans to close these digital stations, and its DAB network may well follow suit; the country is well served by FM.

other decoders. For example, even if there is only an RF tuner, the SDR could provide digital radio solutions without any hardware decoder.

Basically, this device is a software development environment aimed at reducing overall development time and needs another company to use it for a physical receiver.

https://tinyurl.com/y54qlt5r

RTÉ Drops Digital

RTÉ, the national broadcaster in Ireland decided to drop its extra digital stations broadcast on DAB in the main cities, and nationwide on the Saorview DTT system. RTÉ needs to save a lot of money and eventually decided to discontinue chop these services, rather than one of the four primary services that use FM.

The relevant press release also stated that RTÉ planned to close the digital network. That could mean just the six digital stations (2XM, Gold, Pulse, Junior, Chill and 1 Extra) (Fig. 6) or the DAB network too. It appears that RTÉ would love to abandon the latter.

Nobody seems sure at the moment whether the Government will inject money into the station.

Radio Nova, a small commercial station serving the greater Dublin area, wants to take over the DAB frequencies. Of course, that decision rests with the Broadcasting Authority of Ireland (BAI), the equivalent of Ofcom, and the consensus is that it won't happen. It might curtail the activities of the pirate operators.

https://www.bai.ie/en

Is this a backward step or just a pragmatic one?

The latest BAI JNLR listening figures do not mention any listening via DAB only analogue, via station apps and the Irish Radioplayer.

https://tinyurl.com/vfw8o9v

Digital Radio Report

Radio World International published their annual review of digital radio in October 2019. In summary, the report claimed that all three major platforms report growth in listeners and coverage.

The evolution for Radio envisaged by a senior executive in Xperi, who purchased the designers of the technology iBiquity, is that radio must go digital and add content. This is written from an American perspective where many station owners still stick with their analogue technology.

DAB – The Future

If things are measured by how quickly countries are adopting DAB+, then this technology definitely has a rosy future, especially in Europe, where several countries started or expanded DAB+ services. There is no going back here, and I doubt 5G mobile technologies will do much to halt the expansion or made DAB obsolete.

At the recent WorldDAB General Assembly in Brussels, the group concluded that the impact of 5G on the radio would not be as severe as previously thought. The idea that 5G could complement DAB+ as part of a **hybrid radio** system was seen as positive, whereas using 5G as the backbone for nationwide, free distribution of radio was all but ruled out.

https://tinyurl.com/wbyesq6

DAB+ has made inroads into Tunisia and Algeria in North Africa, Vietnam, and Thailand in South-East Asia. It is starting to get a lot of interest in the Middle East too. In total, 27 countries now operate regular services; another 27 are still at the trial phase.

DAB in Spain

Is there an operational DAB network in Spain? I came across a list of transmitters on the RTVE website, Spain's national broadcaster. From 2011, there were transmitters at Malaga, Barcelona, Tarragona and Madrid. The main channels used are 11B and 9D.

I would love to hear from any readers who might have monitored these broadcasts.

DRM – The Future

I think DRM is a superb technology; it has been adopted in India on a massive scale on medium wave and in China on short wave. There are almost 2 million cars in India with DRM radios, and there is an expectation that China will soon manufacture DRM-capable radios. Things depend on the wait for receivers; there is a desperately need, it seems, for more countries to use the technology.

HDRadio – The Future

HDRadio is in a strong position on the North American continent. Xperi, the owner of the technology, wants to expand fully across Canada and Mexico, instead of being limited to the regions that border the USA. I can't see any other technology taking over, even if some broadcasters wanted to experiment with DRM+. Latest figures estimate that there are some 66 million HD radios in use in the US – nearly as many as DAB radios across the world.

An HD Radio trial in India should be operational by now; I doubt it will replace DRM as the chosen standard.

Summary

I welcome the launch of a 24-hour rolling news service with national coverage. The three digital radio systems are trying to widen their footprints. I think DAB is winning at the moment, and it has the advantage of not having to co-exist with the analogue systems it is aiming to replace.

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Programmes, Podcasts, and a Preview of 2020

Chrissy Brand rounds up her thoughts and reports issues from a range of conferences she has attended. She also shows how previously-axed radio programmes can live on in the podcast era.

Chrissy Brand
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I am sure we have all mourned the loss of a much-loved radio programme in our time or, all too often, the loss of entire radio stations. However, with today's technology and potential for sizeable audiences, there is room and resource for former programmes to make a comeback. A radio programme might not be able to remain on the air after a programme controller has axed it, but, of course, it can always simply transfer online.

This has been the case for all of this century but the main difference now is, I feel, that many mass audiences – or even the cult-sized ones – have more simple-to-use and portable technology in their pockets. This enables people to listen when they choose, because podcast software, or just an internet browser, is enough to do so. If presenters own the rights to a show or format, there are, presumably, few copyright issues or IPR to worry about. Sometimes, the radio station may even give its blessing and wish to be associated with the relaunch for marketing purposes.

A good example of this comes from the USA, where a digital media company called Radio Influence has regenerated the *MJ Morning Show Podcast*. The *MJ Morning Show* started in Tampa, Florida on station WFLZ and was successful for the best part of two decades until it went off the air in 2012.

Radio Influence's other programmes and podcasts cover news, politics, health, entertainment, and sport.

The BBC and other broadcasters have also made use of the increased potential air time, or rather on-demand time, that podcasting and online television viewing have freed up. For instance, Fi Glover and Jane Garvey present *Fortunately ... with Fi and Jane*. The programme consists of interviews with guests from radio, television and podcasting and a look behind the scenes.

It might not have fitted into the BBC Radio 4 schedules and the varying length would also cause problems. Sometimes it lasts around thirty minutes, but it can be nearer fifty. This flexibility with programme length is a strength of on-demand listening. Rather than being 'shoehorned' into a

ALL PICTURES BY CHRISSY BRAND

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Fig. 1: New York City is multicultural, in the streets and in the media. Fig. 2: WNYC Studios founded, and are running, the *Werk IT* festival. Fig. 3: A stage of powerful podcast influencers.

stricter broadcasting schedule, quality does not have to be compromised. Programmes are neither padded out with waffle nor do interesting topics get cut off in their prime.

There are many other illustrations of how this has become an emerging and exciting opportunity for stations, and for popular presenters to further their careers. New audiences can be found, increased in number, entertained and educated through added programme content.

The cost can be an issue too. Although a podcast can be cheap to produce, it does take time, and it would depend on individuals' contracts as to whether they get paid extra (which they should be).

Multiculturalism

I read that iHeartMedia in New York City (Fig. 1) has appointed Yesenia Bello as Senior Vice President of Multicultural Sales. She has previously worked on multicultural strategy at Google and YouTube. Evidently, iHeart reaches more Hispanic and African-American audiences than any other company.

I wonder how many other radio and media operations have a multicultural sales department? Hopefully, this is becoming a positive growth area.

The *Asian Media Awards* took place on October 24th. From a radio point of view, I was pleased to see Midlands station Sabras Radio win the regional award, while the *UK National Station Award* went to Sunrise Radio. Both stations are worth listening to, particularly if you are not British Asian, to gain a wider perspective.

Commercial radio adverts are often less guilty than other parts of the media in how they target diverse audiences.

Although, to be honest, I tend to switch off from mainstream radio advertising, mentally and, sometimes, physically.

Targeted advertising works much better, for instance, I always read all of the ad sections in *RadioUser*, because I know they are of interest to me. This model of targeted advertising is where I, and many others, can see a real revenue increase in 2020, particularly in the podcast sector in 2020.

Software is available which can retro-fit and slot-in adverts in podcasts, even ones that were made several years back that might still get the occasional listener (especially when it is a drama series with dozens of episodes, where most new listeners start at the beginning).

With other software gathering personal profiles, then the appropriate advertisements and products can be aimed at the individual listener. Companies such as Podbean help with this dynamic ad insertion services.

I am quite looking forward to seeing what products are aimed my way. I am sure my social media presence and other information gathered from my online presence and purchasing habits will garner plenty for me. An independent, middle-aged woman, who likes travel, technology, environment and culture. I wonder what this slightly 'big-brother-model' of information-gathering, to sell products through radio streaming and podcast ads, will have discovered about you. What will you be sold in 2020?

Werk It Some More

The fifth WNYC Studios' *Werk It, A Women's Podcast Festival* in Los Angeles in October (see also last month's *RadioUser*) was the biggest one yet (Fig. 2). It shows how fast the podcast movement is growing, Stateside as well as elsewhere, because 79% of the 650 attendees were newcomers to the festival.

There was a live evening podcast taping at the festival, I like that the Americans still use the old technology word 'taping', in lieu of recording. *Hear to Slay* was hosted by Roxane Gay and Tressie McMillan Cottom, with guests Tichina Arnold, Ashley Nicole Black and Danielle Perez. It is billed, according to the tote bags given out, as *'the black feminist podcast of your dreams.'*

This is a weekly podcast, on Luminary Premium, that is only available through a £6.99 monthly subscription, which gives access over forty innovative and exciting US podcasts. At first, I was taken aback that a paid subscription method could work for podcasts. After all, there are thousands of freely available podcasts and live programmes. But, on reflection, a subscription model has worked well for music streaming with Spotify, Apple Music and others (although the debates about the artists not getting paid much per listen is a valid concern).

Television and video subscription services to Amazon, Netflix and others, are also well established and considered an essential, rather than a luxury, in many households. Perhaps – if there is enough high-quality, and varied-programme, content – there is a future for podcast subscriptions too.

Paid subscriptions currently account for just 10 to 15% of the market.

Future Now

The *Future Now Summit* at *Werk It* featured some of the USA's most powerful women in the podcasting sector (Fig. 3). Liz Gateley (Head of Creative Content, Spotify Studios), spoke of the company's investment in a lot in podcasts for the 'Millennials' (those born between 1981 and 1996) and 'Generation-Z', or 'Gen-Z '(those born from the mid-1990s to the mid- 2000s, and pronounced 'Jensy' in American English).

Liz emphasised how finding innovation in a crowded field is important, citing one good example: This was *The Hottest Take*, which was launched this autumn exclusively on Spotify. *"Bill Simmons and his friends from The Ringer podcast network will debate, defend, and parse a controversial opinion on a pressing topic of the day. In a series of short episodes, the takes will cover timely matters from the worlds of sports, movies, TV, food, music, and the internet. Is* Home Alone *actually a Christmas movie? Are sweet potatoes maybe ... terrible? Hear us out."* A daily horoscope-podcast launched this year was another, perhaps surprising, success. Liz also spoke of the number one podcast in Mexico being two women talking about the relevance of cultural aspects in their life.

Fig. 4: Rooftop networking in Los Angeles.

She mentioned the *Spotify Sound Up Bootcamp*, which saw 18,000 women apply. This was whittled down and resulted in three finalists each being awarded $10,000 to make a podcast series. Spotify is now taking this model of unearthing new talent to Australia and Germany's LGBTQ+ communities.

Humour and Hope

Tanya Somander (Chief Content Officer, Crooked Media) explained they are a political media company, led by content. This relies on unearthing compelling stories people have not heard. They cover political issues with a sense of humour and an air of hope. Crowded Media's biggest podcast to date is the twice-weekly *Pod Save America* which takes a progressive view on political topics. A Cherokee Nation podcast called *This Land*, hosted by Rebecca Nagle is another example.

Tanya strongly emphasised how, *"It is very important to have diversity all the way from the top to the bottom."* She explained that Crooked Media bought into this. It was founded, according to Tanya, *"by three white guys who said that 'we have to make this what we aren't'"*.

A different approach was illustrated by Christa Scharfenberg (CEO, The Center for Investigative Reporting) with their *Public Radio* programme, and a podcast called *Reveal*. Half of the content consists of stories from their partnerships around the world. The show gives space to non-typical, lesser-heard and new voices.

The Los Angeles Times was represented by Deputy Managing Editor Julia Turner. Newspapers venturing into podcasting is now commonplace. *The Los Angeles Times* is no exception, leading it to build relationships between the paper and the local community. Julia believes that podcasting has brought the talents of the newsroom to life, to help bring a better understanding of the world.

She also said that podcasting – as a 'grassroots', 'ground-up' medium means the range of diversity is better represented than in other talent pools. The pitfalls ahead are in the shape of venture capitalists hovering and consolidating the industry, *"Wider representative voices must not be lost to the men in suits."*

Toddler Stage

Amanda Lund (Co-Founder, Earios) launched her women-only podcast company in July 2019. It currently consists of ten shows made by women but aimed at everyone. Amanda has worked in the podcasting industry for a decade and was part of the team behind earthquake programme *The Big One* (see this month's *International Radio Scene*).


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Kerri Hoffman (CEO, Public Radio International/PRX) concluded that, *"podcasting is still in the toddler stage, even though there has been increased awareness of it over the past five years."*

My own observations from networking in LA (Fig. 4) are that many independent podcasters successfully record and produce their own shows, from under the stairs, in a closet or a quiet corner of their home. The next step from that is getting a producer and sound designer on board, to create subtle layers, soundtracks and atmosphere to the programme. Building an audience is tough but can be done.

That is the wonder of where we are at, with people having a chance to express their views on professional platforms on topics they are passionate about, as we enter 2020.

Radio Events

January 19th to 27th
European Motor Show, Brussels, Belgium
January 23rd to 25th
European Radio and Digital Audio Show 2020. Paris, France
February 12th to 15th
Podcast Movements Evolutions, Los Angeles, USA.

Doing the Splits

Keith Rawlings investigates the ins and outs, and the performance values of, commercially-available aerial multi couplers (antenna splitters).

Keith Rawlings
Keith.g4miu@gmail.com

Welcome to this month's Aerials Now! A subject that comes up quite often in your letters and e-mails is how one or more receivers can be fed from a single aerial. In this context, I have seen comments such as "I use a T-adaptor to run two receivers, and this works fine".

However, does this really work?

Ignoring any issues of *reactance* for the moment, if you were to simply connect two receivers in this way, they would be seen as if they were in parallel to each other. This is like connecting two resistors in parallel, so the impedance is halved, and you have losses due to the mismatch.

Also, this 'simplistic' but widespread method offers no isolation between receivers. Therefore, there is a good chance that some interaction may occur between them.

One form of this interaction could be oscillator leakage. To take an example, one of my scanners had an IF Stage (Intermediate Frequency) at 43MHz. When connected to a second scanner on the same aerial with a simple T connection. the second scanner would stop scanning when it reached 43MHz, as it was receiving leakage from the IF stage of the first one.

This was just a simple demonstration; no doubt, had I tried more, there would have been other multiples of frequencies over the bands that would cause an issue.

With little or no isolation, receivers may end up finding signals that are not 'real' but internally-generated.

Commercial Splitters

So, what is the answer? The first and simplest idea that comes to mind is to use a commercial splitter. A lot of listeners like to use passive splitters. These are intended for the Sat TV market and are sold very cheaply. In these devices, the signal is not amplified to recover losses.

Therefore, being passive, they will have some loss; in addition to this, they will be nominally of a 75Ω impedance. They can

Fig.1: A Four-Port Splitter with F-style connectors.

be found with a number output 'ports', depending on the model (Fig. 1).

Another type of splitter, again for the TV market, are those that have an amplifier built-in; they are active devices, to make up for any losses in the splitter. Once again, these will be for 75Ω impedance, and a prospective purchaser will have to make sure that the unit has an adequate bandwidth for their needs.

This does present a caveat: If the amplifier bandwidth is wide, then it may be more susceptible to interference problems. Literally, like a barn door, they will let everything in.

Those amplifiers that are band-specific, and which are designed to work only on terrestrial TV frequencies, may not meet the wider band needs of the user.

The next option, and by far the best, is to use a multi-coupler designed specifically for the job. These devices will divide and distribute the signal equally to each port, as well as providing adequate isolation between each port. Most of them will also make up for any losses incurred in the dividing process, by having an amplifier; therefore, they are termed 'active'.

Those intended to be thus 'active', should have good strong signal handling properties.

However, they may come at a price. As is often the case in life, 'you get what you pay for'. In the UK, Cross Country Wireless (CCW) has a selection of broadband multi-couplers on offer.

https://tinyurl.com/rv7lxfh

Furthermore, Stridsberg, in the USA, has long been known for their multi-couplers and can be found here:

https://tinyurl.com/uuhxxpg

Taking the passive splitter for now, as mentioned, there are a lot of cheap Sat TV splitters out there.

So, how do they perform, and are they a suitable substitute for a multi-coupler for use around the shack?

Passive Splitters

The first thing to note is that splitting the input will always incur a certain amount of loss.

For example, a two-way splitter would *technically* add around 3dB of loss per port. Therefore, in real terms, this is around half of the signal (but typically only one half of an S Point) being lost in the device.

I say *technically* 3dB, because a poor design may incur much higher losses. A four-way splitter will, naturally, present a greater loss (6dB). Using an 8-port splitter, the losses start to become significant, and – if you don't have eight receivers – you will be losing a lot of signal quite unnecessarily.

For their intended use (in TV systems) this loss is not a problem, as signal levels are typically quite high. Another point is that if you have spare ports that are not being used it is good practice to terminate these ports into a non-inductive resistor, as close to the nominal impedance of the device as possible.

Performance

To assess the performance of these cheap splitters, I obtained a four-output and eight-output device of the type seen in Fig. 1. Both were swept with a vector network analyser (VNA) to obtain figures for insertion loss and port isolation over the range of 1MHZ to 1GHz. This frequency span is out of the intended design range of these splitters, and this should give the reader some idea of what to expect in SWL use.

To connect to the VNA, I made use of female-BNC-to-male-F adaptors (Fig. 6), which I fitted to the splitter and short 50Ω leads

connected to the output and input ports of the VNA. I made no attempt to counter for the 75Ω mismatch. My reasoning for this was that this setup will likely replicate, to some extent, the situation of one of these splitters being used in a listeners shack.

While testing the splitters I came up with a considerable amount of data. This was because there were many combinations to check. For example, the insertion loss for each port was checked, resulting in four figures for the four-port splitter, and eight for the eight-port one.

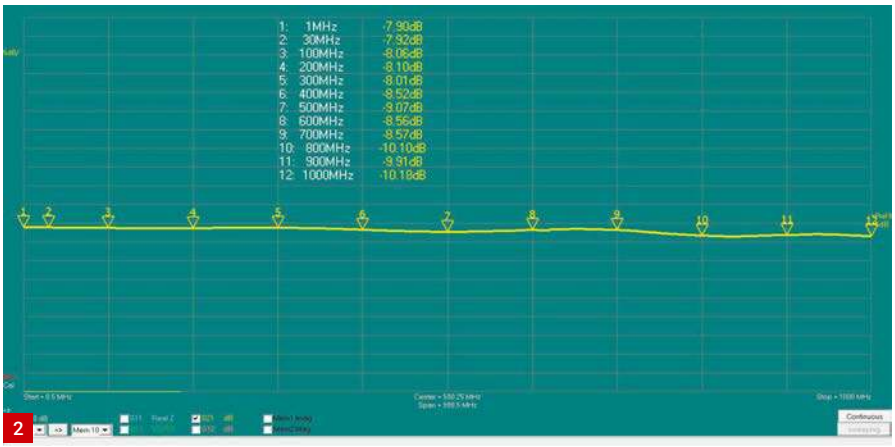
Then there was the isolation between ports of both splitters such as 1-2, 1-3,1-4, then 2-1, 2-3, 2-4, and so on. Therefore, the data that follows represents just a small sample of all the measurements taken.

In the accompanying images (Figs. 2 to 5), I have set markers at various points of interest to note frequency and data information. Information obtained at the marker points can be seen on the display; marker number and frequency appear in *white* and dB level in *yellow*.

In Fig. 4, impedance is in *violet*, and SWR appears in *pale yellow*.

The actual positions of the traces on the display are not really relevant but do give an indication of the overall readings across the measurement range.

Also, I arbitrarily named the ports 1-2-3, and so on, as they are not marked as such on the device.



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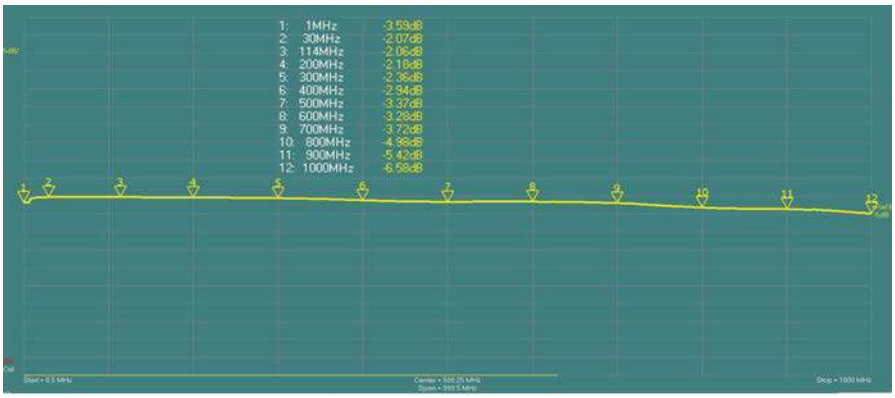

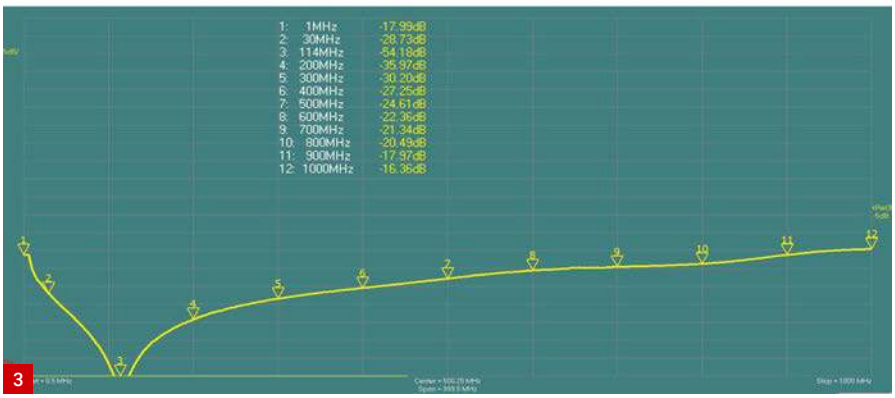

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Measurements

For reasons of space, I will limit my main report to the four-port device. First, the representative insertion loss of -8dB to -10dB over the range may be seen in Fig. 2.

I found a slight variation between each port but the figures were similar.

Next, I measured the isolation between the ports and here is where I found the greatest variation. There is not enough room to print all of the details, due to the different combinations.

However, as an example, look at Fig. 3: At the top of the graphic, the isolation between ports 2 to 3 can be seen; below this, ports 2 to 4. There is a considerable difference. The performance between 2 and 3 is poor, whereas the one between 2 and 4 is OK.

The ports were then measured for matching, and they again demonstrated variation.

Fig. 4 shows a typical measurement taken at one of the output ports (which the receiver would be looking at). At 1MHz input, impedance is 26Ω. This figure rises to 73.7Ω at 1000MHz; the measured SWR is also presented. Other ports were similar to this, and the results were reasonable.

I also measured the aerial input port and found an impedance read from 12.75Ω at 1 MHz, rising to 40.6Ω at 1000 MHz, with an SWR varying from 3.2 to 4.4:1.

All readings were taken with the unused ports terminated into 50Ω. If some, or all, of these loads, were removed, I noted that subsequent measurements were noticeably different.

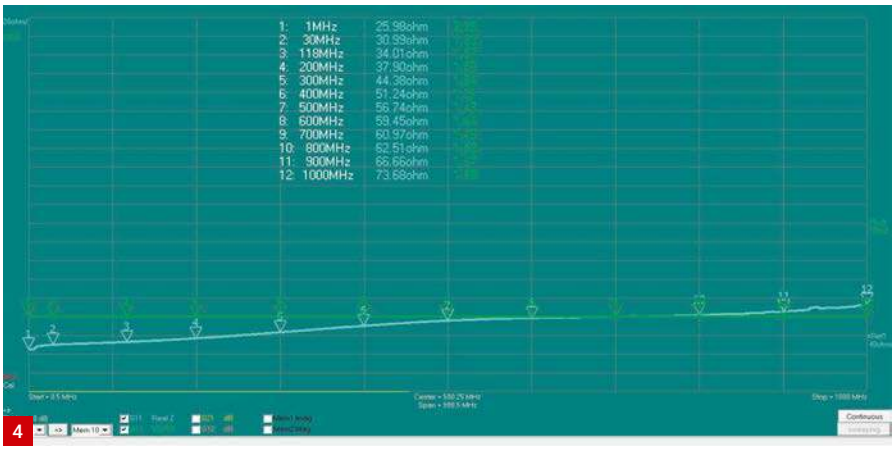
On the Air

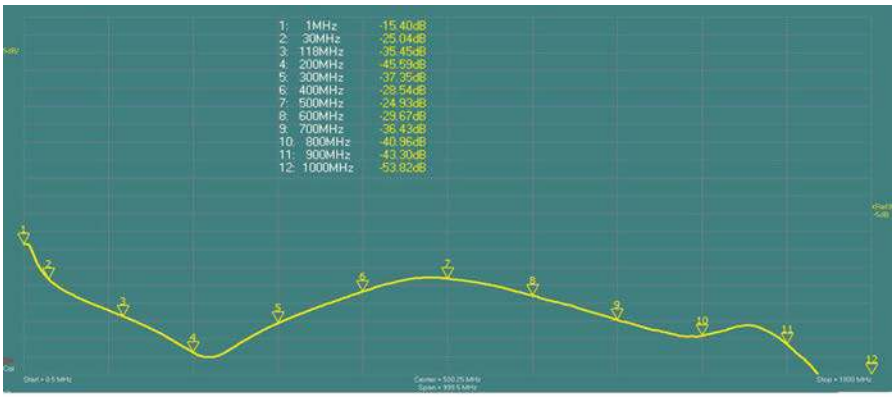
I then undertook some on-the-air testing, and this is where the losses became noticeable. Obviously. on stronger signals, a few dB loss is not very noticeable; however, on those that were weaker, the introduction of the splitter made a noticeable difference. In fact, on VHF, the losses appeared to be higher than those measured on the VNA.

For example, I measured a -10db loss of signal strength on the steady signal of Stansted ATIS on my WiNRADIO G313i. This figure was confirmed by the substitution of an accurate step attenuator. The VNA measurement at this frequency was approximately -8dB.

I also noted that I could see a high level of noise below about 1MHz. Disconnecting each receiver, in turn, made me think that this noise was PC-related and transferred to each receiver through the splitter.

The performance of the 8-way splitter more or less mirrored that of the 4-way





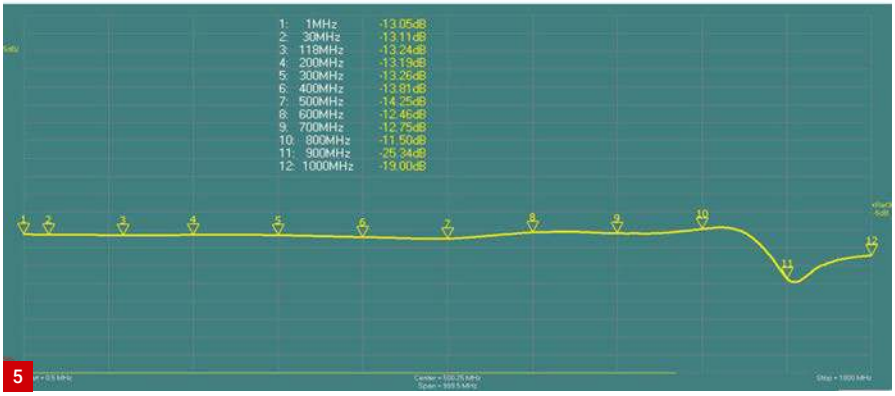


Fig. 2: A VNA sweep, demonstrating insertion loss of a four-Port splitter. Fig. 3: Typical four-port isolation. Fig. 4: Some typical impedance and VSWR measurements of an output port. Fig. 5: Top: Isolation measurement; bottom: insertion loss of an eight-port splitter. Fig. 6: A four-way splitter in use with BNC-to-F adaptors.

model, but with much higher insertion loss. The graphic in Fig. 5 demonstrates typical isolation at the top and the insertion loss at the bottom. It too presented varying readings from port to port. I did not check to verify the 'power-pass' claim printed on either of the devices.

Some Conclusions

To sum up, the best way to run multiple communications receivers from a single aerial is to use a suitable good quality multi-coupler. This should provide adequate isolation between ports, present a fair match to receiver and aerial at the same time, and, ideally, make up for insertion loss with an amplifier that has good signal-handling properties. As stated earlier, this may come at a price.

As a cheap alternative, the type of splitters I tested seemed to offer reasonable value. At the time of writing, I found a two-way version for £1.08, a four-way model for £1.62, and an eight-way splitter for £3.90.

Therefore, adding one to your receiving station won't break the bank, although you may want to factor in the cost of adaptors for your favourite connectors, which again shouldn't break the bank.

Against this, you have to consider the issue of signal loss. To give some idea of what this means, I ran some figures on my calculator:

For a four-port splitter (Figs. 1 and 6): 8 dB loss equivalent power-ratio = 6.30957: (Voltage-ratio = 2.51189).This is a loss of just over six times the signal and over 1 S Point each port.

For an eight-port splitter: 13.5 dB loss equivalent Power-ratio = 22.3872: (Voltage-ratio = 4.73151). In this case, there is a loss of over 22 times the signal, or just under four S Points per port.

The isolation between ports is probably fine on the four-port and better on the eight-port splitter, although figures vary over the measured range, and also between ports.

As a gauge, and as something you can easily construct for yourselves, use a two-output resistive Owen Splitter, which claims 19dB of isolation between ports, with an insertion loss of 10dB.

So my conclusion is that a two- or four-way splitter would be fine for receiving on HF, where noise levels are quite high, and a slight reduction in gain is acceptable.

Above HF, I would be concerned about the losses. However, when listening to stronger local signals on a scanner, this shouldn't present too much of a problem.

The losses on an eight-way version are a bit on the high side, and this should be taken into consideration, especially at VHF. I would not use one unless it was absolutely necessary.

As always I will reply via this column so everyone may benefit.

See you next month and *Good Listening*.

DXing on the Move (Part I)

In the first of a new three-part series, **Clint Gouveia** takes to the woods, mountains and fields, to share his hints and tips as regards DXing 'on the move' and recommends radios, aerials and other equipment for the job.

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Having dipped in and out of the hobby for the best part of 20 years, I finally got back into radio and DXing in 2015. The usual stuff had gotten in the way – work, family, kids … basically life! But also the landscape had changed significantly since those days back in the 1980s, which was when I last spent a lot of my time listening out for DX.

First, there was the issue of electrical noise: I still remember switching on my £30 Tecsun PL-360 for the first time in the garden and bemoaning the PLT interference that seemed to swamp the discreet HF bands as designated on that little radio. It seemed that most signals were swamped by QRM, and it was actually worse in the garden, with our neighbours positioned close by.

Secondly, there was less to listen to, on the short wave bands. This wasn't a surprise to me because I had been aware that international broadcasting was in decline, essentially since the end of the Cold War.

Paradoxically, I was very pleased that there was actually still a lot to listen to on the little Tecsun; I just had to get the timing right. The early hours of the morning provided decent indoor listening with a 20-foot long piece of wire; one end attached to the whip and the other slung out of an upstairs window.

At this time of night, neighbours' TVs were off, along with, presumably, a lot of other 21st Century gadgets that tended to spew out electrical noise.

The Oxford Short Wave Log

It was this configuration that led me to upload my first-ever video onto the *Oxford Shortwave Log* YouTube channel – Radio Habana, Cuba on 11760kHz, with my laptop screen displaying the *short-wave.info* website, confirming the catch.
https://tinyurl.com/hwtnoka

At this point, I was 'hooked' on the radio once again, and I decided to get serious. I bought a radio that I had wanted since I was a kid: A Yaesu FRG-8800. This purchase led me to another: A Wellbrook ALA1530 magnetic loop.

As a result, the quality of my DX catches improved enormously, but even with a reasonably well-performing table-top receiver and an H-field antenna, I still hit a wall, in terms of reception quality. I didn't want to be sat in my shack until 4 am to hear stations on the tropical bands, and I wanted to use simpler portable equipment.

The advice from a more seasoned YouTube 'radio-hobbyist' channel-owner was simple: the easiest and cheapest means of maximising signal-to-noise is to *get out of the noise* and on a DXpedition!

This was the catalyst for probably hundreds of my 'mini-DXpeditions' into the Oxfordshire countryside and of course, for many international business trips I've taken over the past 4 years. During the latter and other journeys, I have wanted to see what I might be able to hear and with what kind of equipment.

Article Overview

This three-part article will focus on how to prepare for a DXpedition, and how and what to pack. It is based on the following three 'mobile DXing scenarios':

1. Part One: A Mini-DXpedition by car (or bicycle), and then on foot
2. Part Two: A Mini-DXpedition by car, and based in a car, and

Fig. 1: A collection of portable receivers suitable for outdoor DXing. Fig. 2: The Degen DE1103. Fig. 3: An Eton Satellit, 'Grundig-Edition'. Fig. 4: The Sony ICF-2001D-2010. Fig. 5: The Tecsun PL-880. Fig. 6: An XHDATA D-808.

3. Part Three: An International DXpedition.

Setting Out By Car and On Foot.

For a mini-DXpedition to somewhere nearby, it's still important to think about the environment you're going to spend time in. I nearly always use a nearby wood, approximately 2 miles from my QTH and thus a 5-minute drive by car. But then it's a 10 to 15-minute walk into the wood to a suitable spot, away from dog walkers and other foot traffic.

There are a number of items on my checklist to consider, both radio-related and otherwise.

Before you leave the house or even start packing, you should check the radio schedules, to see whether there is a particular station you want to copy.

You should also check the local time for the grey line to cross a particular part of the world if you are planning to tune around the tropical bands on short wave, for example, or copy North American stations on medium wave.

Finally, check out band conditions on the internet. There is no point prepping for a trip out until the evening if the band or bands of interest are in poor shape and thus unlikely to deliver the propagation you need for DX.

The next thing to consider is what to take – you will need a backpack because this is by far the easiest means of carrying your gear. In terms of how to approach a mini DXpedition, you really should aim for everything to fit into this, so you don't have to carry anything. This makes life a lot easier as you negotiate gates, stiles, and so on. It is obviously a total necessity if you are cycling!

Selecting a Radio

In terms of what radio (or radios) to take, the obvious choice is a portable that will run on internal batteries. I have a number of portables both old and new (Figs. 1 to 6). I have used all of those, and others, in the woods at one time or another.

Table 1 is a list with my brief comments on each radio. The list contains but some suggestions. In principle you can, of course, take any radio on a DXpedition, if you can physically carry it. However, I do know from my personal experience that lugging large, heavy, radios around, together with all the other equipment you will need, can be a pain – quite literally.

ALL PICTURES: CLINT GOUVEIA

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- **SONY ICF-2001D**: This has a superb all-round performance, further enhanced in a noise-free environment, it can handle a large antenna but is quite large and heavy.
- **SONY ICF-SW55**: It has excellent sensitivity/selectivity and can handle a 10 metre-long antenna. Modest in size and weight.
- **SONY ICF-SW07** or **ICF-SW100**: Both of these are very good receivers, super-compact and perfect for an ad-hoc DXpedition. They are eminently suitable for use with modestly-sized antennas of up to 5 metres.
- **PANASONIC RF-B65**: Excellent sensitivity and limited selectivity, except on SSB; the perfect size and weight for a DXpedition.
- **ETON SATELLIT**: This radio offers outstanding sensitivity and selectivity, handles a large antenna and has a great display for use at night.
- **TECSUN PL-880**: An impressive all-round performer; the receiver can handle a large antenna, has a backlit display for use at night and offers very pleasing ergonomics.
- **DEGEN DE1103**: The original PLL version is very sensitive on the whip, but the ergonomics in the dark will drive you mad.
- **XHDATA D-808**: This recent model is also very sensitive on the whip, has excellent selectivity and a backlit display for use in the dark; it is very compact and lightweight.

Table 1: Key Radios for portable operation (Figs. 1-6).

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Also if possible, set the lock on the radio, so it cannot accidentally be switched on. All Tecsun radios, for instance, have this feature, as do the vintage Sony portables I use (Figs. 4 and 5).

Always carry at least one set of spare batteries *per radio* (Fig. 7). There's nothing more frustrating than having set up a listening station in the middle of the countryside to find the batteries are flat.

Portable Aerials

Of course, you can use any radio for DXing on short wave just with the telescopic antenna – something I have done many times. However, this is usually on an ad-hoc basis. If you're actually planning a mini-DXpedition, I would advise you to think about an external antenna to further enhance the sensitivity of your radio.

There are a number of ways to go about this: A length of standard component wire on a reel works very well and can quickly be deployed outdoors. If your portable doesn't have an external antenna socket, you can terminate the end of the wire with a crocodile clip and attach it directly to the whip. Otherwise, a cheap mono 3.5 mm jack plug

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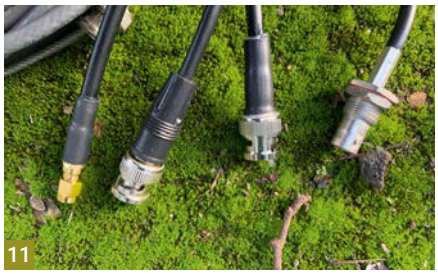
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Fig. 7: Take enough batteries to last you for the duration of your DXpedition. Fig. 8: A Bonito MA305. Fig. 9: The Bonito Boni Whip. Fig. 10: The Bonito Megaloop FX. Fig. 11: Take an assortment of extra cables and connectors. Fig. 12: A headtorch is indispensable.

will allow you to attach the wire directly to the external antenna socket of your radio.

Many times I've set up a 100m long wire by simply unravelling an entire reel of wire, purchased quite cheaply. This arrangement, together with the low-noise environment, will make a huge difference in terms of what stations you are able to hear, and how well you can hear them.

Another excellent option for use out in the woods is the now very popular portable E-field amplified antennas. There are numerous models on the market, and whilst these types of antennas generally do not perform well in urban or suburban environments (due to the amplification of the electrical noise and target signal), they are superbly sensitive when used outdoors away from local QRM.

My suggested models are the following (Figs. 8 to 10):

1. The *Bonito Boni Whip* (Fig. 9): This is a supremely portable aerial. It can be powered for days, via a 'homebrew' 12V battery pack and it is relatively cheap, at around £100. I use mine by placing it up in a tree, a few feet above the ground. It delivers DX at the same level of performance as a Wellbrook ALA1530. I know this for a fact, because I tested both side-by-side out in the woods about three years ago. The frequency range is 20kHz to 300MHz, so the aerial is good for LW, MW, HF and beyond.
2. The *Bonito MA305FT* (Fig. 8): This is even more portable than its stablemate the Boni Whip (above), because it can be powered by a 5V USB power-brick. Its performance is basically identical though. More expensive (at around £180) it is, possibly, worth the additional cost if you value the low-voltage power option. At 9kHz to 300 MHz, its frequency range is slightly wider than that of the Boni Whip.
3. In more recent times, it has become possible to take an H-field magnetic loop antenna on a DXpedition, by virtue of the fact that the loop itself is a flexible cable, and the amplifier can also be operated by either a 12V battery pack or a 5V USB power brick. The antenna I refer to is also a Bonito product – the *MegaLoop FX* (Fig. 10). There are two things to remember, however; firstly the flexible loop requires some form of support; although it's possible to suspend it from a tree or place it on a bush etc., it does take a bit more imagination, and/or some well-placed branches, to get it suitably positioned. It also takes a little more time to set up than either of the E-field options I mentioned previously.

Secondly, the performance of the loop in a QRM-free environment will be equivalent to its E-field counterpart, thus, if you

- Spare cables and connectors (just in case, Fig. 11).
- Warm clothing/jacket because, even in the summer months, the ambient temperature can drop as darkness falls.
- Gloves in the autumn/winter.
- A head torch (Fig. 12).
- A thermos flask with a hot/cold drink, depending on the time of year.
- Snacks, if you plan to be outdoors more than a couple of hours.
- Mobile phone (can also double-up as a torch and, of course, I use mine for recording reception videos). Can provide access to online shortwave radio schedules such as short-wave.info if you have a 3G or 4G signal.

Table 2: More useful DXpedition equipment.

own both antennas, in my experience there is nothing tangible to be gained in taking the loop with you. The MegaLoop FX has a frequency range of 9kHz to 180MHz, so it is, once again, good for LW, through to HF and VHF.

All of the amplified antennas I have covered so far require an interconnecting coaxial cable, terminated with bayonet-type BNC connectors to link the amplifier to the power inserter. Another coaxial cable is necessary to link the power inserter to your radio. One end of this cable requires a bayonet-type BNC plug, the other a (preferably) metal-bodied 3.5mm mono jack plug for connecting to your radio's external antenna socket.

I do find that cables and connectors are easily forgotten; therefore, I usually set up powered antennas for a 'test-run', before immediately packing everything (Fig. 7).

What else might you require for your DXpedition? Table Two is a shortlist.

A Word on SDRs

With the advent of SDR technology – particularly of those devices, from manufacturers such as SDRPlay, which can be powered via 5V USB, a whole new area of portable DXing has opened up. With lightweight laptop computers powered by lithium-ion batteries, it is now possible to take an SDR receiver out into the field and record signals or indeed entire band spectra. While I have used laptop-driven SDRs out in the woods, I tend not to recommend this activity, as I find using a computer on the ground or balanced on my lap an ergonomic nightmare! It's my preference to use SDRs for either local DXpeditions where I'm based in the car or on an international trip where it can be based in a hotel, on a balcony or terrace.

[More on this subject in Clint's next article, DXing from a Car – ***Ed.****].*

Radio News

MILITARY WIRELESS MUSEUM NEWS: Bernard Nock G4BXD, from the MWM, has been in touch to report that the Military Wireless Museum in Kidderminster has been doing very well in 2019. The museum had plenty of visitors, both radio amateurs and those interested in history and technology topics in general. There were various additions and a re-organisation of display items. Some sets were brought out of storage and rotated with sets previously on display. A key development for 2019 was the addition of the microwave bands and satellite operations. While it is true there are not many ex-military radios capable of operating at these high frequencies, the museum owns several items of test equipment which have assisted in getting a signal out on the bands. This included a wartime-made US frequency meter, which works up to 3GHz, so it can be used for 23cm and 13cm testing. Various radar items are being looked at, for use on even higher frequencies (10Ghz and above). Other dishes have also sprung up around the site, all looking to the heavens. Last but not least, plans are afoot to attempt some Earth-Moon-Earth communications (EME) and get the museum's callsign (GB0MWM) heard across the planet. Good luck Bernard, from all of us here at *RadioUser* (Source: Bernard Nock GB4XD)

NIKOLA TESLA: The name Nikola Tesla is associated with electrical marvels, some seemingly still to be developed. His personal notes were referred to, it could be said, as a handbook to the future. But who was he and where did he come from? This free PDF book link below answers all our questions along with his own personal account of his inventions. It's the next best thing to have him sitting next to you in conversation. (Source: Bob Houlston)
tinyurl.com/th4t7vy

OFCOM AGREES ON NEW SHORT-TERM RESTRICTED SERVICE LICENSE POLICY: Ofcom has agreed to change its policy on granting short-term restricted service licences, following a consultation. The changes, which apply immediately, allow the same applicant to be granted more than two SRSLs in a single year, subject to certain conditions. SRSL applications can now also be considered for services that offer similar content to existing commercial and community radio stations in the same area. Ofcom will still have the power to refuse to award more than two SRSLs per year, giving priority to any new applicant. Also, on Monday 25 November 2019, Ofcom will open an application window for any potential applicant for an SRSL hoping to broadcast on any dates between Monday 20 April 2020 and Tuesday 26 May 2020 inclusive – an anticipated period of high-demand.
The application window will remain open until 5 pm on Friday 6 December 2019. Ofcom stated: "Applicants should ensure they are familiar with the application criteria and must use the current version of the application form. SRSL applications submitted using previous versions of the application form will be rejected." Short-term radio licences are granted for analogue services broadcasting to defined locations, or for coverage of particular events such as music or religious festivals, or sporting events.
(SOURCE: *Ofcom, RadioToday*)

RADIO ORGANISATIONS WELCOME SMALL-SCALE DAB ORDER: A number of radio organisations have welcomed the passage into law of the Small-scale Radio Multiplex and Community Digital Radio Order 2019. The legal order, supporting the future establishment and licensing of small-scale DAB multiplexes, was passed by Parliament last week and has now been signed into law by Nigel Adams MP, the Minister of State at the Department for Digital, Culture, Media and Sport. Ofcom will now proceed with publishing their response to their small-scale DAB consultation, which closed in October. It will potentially begin the process of licensing small-scale DAB multiplexes across the UK, which is expected in early 2020. The licensing of small-scale DAB multiplexes will enable many ultra-local commercial and community radio stations to be broadcast on DAB for the first time. Small-scale DAB was launched into 10 trial areas in 2015 in London, Manchester, Birmingham, Glasgow, Portsmouth, Brighton, Cambridge, Norwich, Bristol and Aldershot and there are now 146 ultra-local commercial and community stations being broadcast on DAB.
https://tinyurl.com/y5xevovc

RAOTA (RADIO AMATEUR OLD TIMERS' ASSOCIATION) OTN132: RAOTA is pleased to announce the publication of issue 132 of OTN, the latest issue of its magazine (OTN - Old Timer News). Articles in this issue include A Fresh Insight into Doublets, Matching, Standing Waves and Open Wire Feeders by G3FEW. An L-match for a 20m indoor dipole by G3MCK. Homodyne Reception by VK6CSW, and SDR-KITS Antenna Analyser by G3ZPF. How much receiver performance does a DXer needs? (Part 3) by G3RZP. OTN is the Association's main point of contact with members. Our editor is John G4GCL who is dedicated to producing a magazine to a high standard especially with respect to articles, typography and print quality.
www.RAOTA.org

Meteor Monitoring the Easy Way

Nick Ward provides a brief overview of how he monitors meteors. He explains how he sourced the right equipment, describes how he is using it, and outlines what the meteor enthusiast can expect to hear.

Nick Ward
toadflax7@gmail.com

I have had an 'unattended' listening station since January 2016. It has had many incarnations, each dedicated to exploring a different radio topic. Sometimes it's recorded from a number of different radios; sometimes from scanners and sometimes from short wave receivers.

I am not one for using too much computing with radios, I'm afraid; maybe, I'm much too much of a 'traditionalist'. My station mainly consists of a receiver, a recorder and an antenna (Figs. 1 to 3).

Surprisingly, one of the most difficult items to source for such a station is the recorder. Simple you'll say; get a Dictaphone. Well, yes, and no. Take a look online; can you find a mains-powered recorder? The batteries for most recorders last 24 hours, which is useless for monitoring. I worked it out eventually, but first, there is a marvellous VOX recorder called the Sangean DAR-101 (Fig. 1).

This is a wonderful piece of kit, but its cost is prohibitive (£250). By contrast, you can get a 'dictaphone' for under £20.

I have searched for a cheap mains-powered recorder for months; nothing.

Then I had a 'Eureka' moment: Search for a 'rechargeable dictaphone'. If you can recharge its batteries, then you can run it off the mains.

I made sure the machine also had a microphone and headphone sockets. Then we were away.

Fig. 2 shows my present meteor-monitoring station: My dictaphone, a Uniden Bearcat UBC 75XLT scanner and a desktop discone antenna.

Explaining Meteor Scatter

If you know a little bit about meteor radio, you will wonder at my choice of scanner, especially its lack of SSB, but more will be revealed later.


1


2

What will you hear?

- The total number of strikes
- A click
- A short noise
- A long noise
- Multiple strikes.

Table 1: Some of the sounds you will hear.

Meteor scatter is caused when a particle entering the Earth's atmosphere heats up to a very high temperature. As it 'ablates', or turns to gas, it generates a stream of ions and electrons.

These ionised tails can last for a few seconds, but in general, they last for less than a second. It is these areas of electrons that scatter or reflect a VHF signal.

This process is similar to a radar picking up reflections from a boat or aeroplane.

Monitoring meteors used to require a large directional aerial, and powerful transmitter. Luckily for us, our compatriots in France have a very powerful continuous transmitter aimed gently into the sky. The signal is transmitted on 143.05MHz with 1MW of power. Easily enough for us to join in. However, this frequency is VHF and lies outside the scope of most general communications receivers.

Reading up on meteor scatter, writers suggest using a radio with SSB or CB modes (not on my UBC nor most scanners). Others even scotch the CB mode as well, for having too narrow a bandwidth.

I use the indoor discone aerial in Fig. 3.

Listening in and Analysing

The reason we might need SSB is for the later analysis of the data. Each strike can be spectrally processed, and, presumably, some science can be done with the data.

For our purposes though, my experiments suggest you don't need either.

You can hear meteor 'strikes' on an AM scanner, and this opens up the science to almost everyone.

The 'sounds' are obviously different to those produced by an SSB radio. Instead of 'tones', we get 'phuts' or 'strikes'. The best frequency to monitor is spot on 143.05MHz.

You don't need the small offset that is required by SSB/CW receivers, and only

Fig. 1: Nick's Sangean DAR-101VOX recorder.
Fig. 2: Nick's current meteor monitoring station.
Fig. 3: Nick's discone aerial on a shelf.

advanced receivers have small enough frequency steps anyway. So now we have a complete station; what's next?

What do we actually hear? I've divided the sounds into 5 different categories in Table 1.

As most of the recorded signals are widely spaced in time, we can assume there's only one strike per squelch opening. When you record using voice activation, the recorder continues on for a few seconds after the signals cease. For my little recorder that time interval is 3 seconds.

To get an almost instant count of meteor incidents, we divide the recorded time in seconds by 3. Simple! This is the 'total strikes' referenced in Table 1.

An average 24 hours of monitoring will result in between 1 and 4 minutes of recording. This is equivalent to 20 to 80 strikes. If there are 80 total recordings, then we might have 22 clicks; 10 short noises; 2 long noises, and 5 multiple noises.

I've not yet experienced a large shower, something both to look forward to, and to plan for. The larger meteor showers have names, and are apparent at different times of the year.

https://tinyurl.com/ybhgbv4h
https://tinyurl.com/r623gjd
https://www.imo.net/resources/calendar

I am aiming to start monitoring more seriously in the New Year.

PICTURES: NICK WARD

3

A word of caution: if you choose to purchase the tiny Dictaphone, it is not all that simple to use. The most important thing to remember is that if the recorder has been idle for a while, the first button press turns on the backlight and 'wakes the machine up'. The second press normally acts as it should. It is also incredibly sensitive to 'touch'. Headphones can help.

Finally a rather salutary story: When I first tried to power the UBC and recorder together, I had no luck.

I tried several different USB supplies, but there were problems too. At one point, the pair were buzzing merrily together with no input. The answer? The battery switch in the UBC was set to 'NiMH' rather than 'alkaline'. It could have been a disaster...

[You may also wish to follow Tim Kirby's new column on Signals from Space, *published from this issue onwards – **Ed**.].*

Resources

Branegan, J. GM4IHJ (1991)
Space Radio Handbook (RSGB)
Fielding, J. (2nd ed., 2010)
Amateur Radio Astronomy (RSGB)
Lashley, J. (2010)
The Radio Sky and How to Observe It (Springer)

Websites

British Astronomical Association
https://tinyurl.com/nj6quao
Farnham Astronomical Society
https://www.farnham-as.co.uk
International Meteor Organisation (IMO):
https://www.imo.net
Meteor Scatter (RSGB)
https://tinyurl.com/s7a84ys
Meteor Scatter Communications (Astrosurf):
https://tinyurl.com/j3sn6jj
Meteorwatch **https://www.meteorwatch.org**
UK Meteor Observation Network
https://tinyurl.com/wdjhm78.

Your Station of the Stars

Scott Caldwell charts the rise of Radio Luxembourg against the backdrop of pirate radio and the 1960s revolution in the British broadcasting landscape.

Scott Caldwell
Scottandrew.caldwell@yahoo.co.uk

For many, Radio Luxembourg (now RTL) was characterised by the music of the psychedelic, 'swinging' and volatile 1960s. Its popularity forced a major change in the structure of the BBC's radio department and instigated the launch of Radio 1, Radio 2, Radio 3, and Radio 4 in 1967.

It has been estimated that, in 1960, for example, Radio Luxembourg had an audience of over 50 million, which required an extensive play list of 65,000 records per year. The station received over 20,000 play requests every month, reflecting a growing number of singers, such as Buddy Holly, Helen Shapiro, Elvis Presley, Cliff Richard, Roy Orbison, and The Beatles.

Radio Luxembourg enjoyed a unique collaborative relationship with The Beatles, even after they enjoyed international fame. For instance, in 1968, Paul McCartney provided insight on selected tracks that formed *The White Album*. And in 1969, John Lennon offered a review of tracks used in the album *Abbey Road*.

The changing nature of radio broadcasting was emphasised in 1968, when Radio Luxembourg changed its operating format, from sponsored, pre-recorded, programmes, to an all-live format with frequent commercial breaks. The age of the consumer market was a niche that radio broadcasting could fill with its growing listener base. In many respects, Radio Luxembourg represented an externalised economic activity, producing goods or services in one legal jurisdiction for consumption in another.

The Challenge of the Pirates

Radio Luxembourg faced one of its greatest challenges from the emerging popularity of pirate radio stations, who circumvented English Law by broadcasting from a location 12 miles from the coastline. This benefited the pirate radio stations as they could reach their audiences in daytime.

In March 1968, Radio Luxembourg's transmitter at Marnach was upgraded to 1,200kW output. This made it the strongest private transmitter in operation and improved the reception quality in the UK. In 1963, radio broadcasting still enjoyed a loyal listener base of 7.5 million in the UK. This figure was drastically reduced in the evenings, due to competition from both BBC (Fig. 1) and ITV TV. However, radio was still considered the dominant form of media, because 3 million people still possessed a radio receiver but no television set.

Radio Caroline and *Radio London* defined the era of pirate radio that swept right across the 'Swinging 60s'. This popularity appealed to majority of listeners who regularly tuned in. The pirate stations' market outlook was very different, even though they competed for a similar target audience, in terms of listener demographics.

Radio London actively sought out a measure of respect and prestige, while campaigning for a changed legislative approach to commercial broadcasting. *Radio Caroline* has been seen to have been largely driven by the idealistic counter-culture of the 1960s.

The inspiration for the name Caroline reportedly came from a photograph of a young Caroline Kennedy, which depicted her dancing in the Oval Office. The station first took to the airwaves in March 1964, and its principal founder was Ronan O' Rahilly. By 1964, O' Rahilly was an established name in the music industry, and he promoted such acts as *The Rolling Stones, Them,* and *Georgie Fame & the Blue Flames* to the London market.

The centre of O' Rahilly's business empire was around a Soho nightclub that attracted the affluent members of a Chelsea' social clique, who represented 'new money', accumulated from the arts, industry, entertainment, and professional sports.

The broadcasts of powerful offshore British pirate stations were reported to have caused interference in a number of European countries, most noticeably in Sweden, Belgium, Poland, Yugoslavia, Italy, and Czechoslovakia. There were also sporadic claims from maritime and aviation operators that pirate broadcasts interfered with their communications.

However, these accusations are open to debate, since pirate broadcasters regularly sought out unallocated frequencies; 'clear' channels provided better reception conditions for their listeners, in an already crowded frequency spectrum.

The Marine Broadcasting Offences Act 1967

The Marine Broadcasting Offences Act 1967 obtained Royal Assent on 11th July 1967 and entered into effect on 11th August 1967. It sought to outlaw the illegal broadcasting from offshore pirate radio stations who had already attracted a cult following of listeners.

At the time, a joint survey undertaken by both *Radio Caroline* and *Radio* London indicated that their audience was nearly 8 million regular listeners – a direct challenge to the state broadcasting monopoly that offered non-commercial programming. The BBC naturally countered this claim by downplaying the impact of free radio broadcasting. Their own findings suggested that the total audience of all pirates combined was just about one-quarter of the audience of its own *Light Programme*, and less than half of that of the *Home Service*.

The findings acted as the catalyst for change within the BBC. The corporation had previously been very resistant to change to its own their operating strategy.

The common consensus emerging within the BBC's Gramophone Department at the time was that popular music records were cultural artefacts, suitable for occasional airplay only, not for entire programmes to be devoted to them. However, Radio Luxembourg recognised that British youth had embraced the popular music culture and idolised outfits like *The Beatles*. In ret-

rospect, it seems that the BBC was not prepared for the emergence of Rock n' Roll music, which clearly filled a socio-cultural gap in the marketing of popular music.

Changed Operations

However, the appointment of Hugh Carleton Greene (1960 – 1969) as BBC Director-General played a significant role in changing the operating strategy of the BBC. He declared that under his leadership *"the BBC should be fully alive to the temper of the times"*. This approach was in stark contrast to the policy of former BBC Director-General John Reith (1889-1971) who is viewed by history as being rather dogmatic and autocratic in his management approach. On July 27th, 1967, the BBC Director of Radio, Frank Gillard announced formal plans to discontinue the *Light Programme, Home Service* and the *Third Programme* (Table 1).

The future in Britain would be national 'radio by numbers'.

Contemporary Reactions

Against this background, in April 1968, a confidential report was co-authored by Don Wardell (Head of the English Radio Luxembourg) and Colin Nichol (Deputy Head of English). Its aim was to highlight any potential threat posed by the establishment of *BBC Radio One*. The report found that, *"In the last 2 years, the wind of change has blown through the BBC. Continuity and general presentation have relaxed enormously. I am of the opinion that the threat the BBC Pop Programme on 247 metres (BBC Radio One) may prove to be far more exciting than many people expect. If the Light Programmes current new look, Easy Beat may be taken as a guide, then the BBC obviously has a sufficient talent within its ranks to provide a service to be reckoned with."*

BBC Radio 1

BBC Radio 1 finally took to the airwaves on Saturday 30th September 1967. This new era in national and local radio was heralded by the charismatic voice of Tony Blackburn with the words, *"Good morning everyone welcome to the exciting new sound of Radio 1"*. The first-ever record played was *Flowers in the Rain* by *The Move*.

Table 2 seeks to demonstrate, through a look at some programming detail of 1st January 1967, how the Corporation attempted to survive the challenge posed by free radio at the time.

Table 3 is included here to trace changes in the *styles of presentation* of radio pro-

Name of Station	Format	Operating Frequency	Year Established
Light Programme	Easy Listening, Comedy Shows and Popular Music	MW 247m (1214kHz) LW 1500 (200kHz) VHF 88 – 91MHz	1945
Home Service	Current Affairs: International and National Discussions	MW 330m (909kHz) VHF 93 – 95MHz	1939
Third Programme	Classical Music	MW 464m (647kHz) VHF 91-93MHz	1947

Table 1: BBC Radio Before 1967 – A Frequency List.

Time	BBC Light Programme	Format/ Programme Details
06:55	The First Day of the Week	Christian Words and Music
07:00	Weather: News: Followed by George Blackmore	At the Organ of the State, Kilburn
07:31	Jimmy Hanley	Start the Day Right with Help from the BBC's Scottish Variety Orchestra
08:55	METCAST	
09:00	Children's Favourites	Request Records played by Leslie Crowther
10:00	Mrs Mills Phil Tates Happy Gang	At the Streatham Locarno, London
10:31	Easy Beat	Featuring BBC Top Tunes
11:30	People's Service	New Year – New Life?
12:00	Two-Way Family Favourites	Records for Service Man and Women Stationed Aboard and their Families at Home
14:00	The Clitheroe Kid	Jimmy Clitheroe in Just a Wee Family Party with Peter Sinclair
15:00	Semprini Serenader	With the Serenade Orchestra
16:00	Pick of the Pops	Alan Freeman Plays a New Year's Day Selection of the Most Popular Records of 1966
17:00	Does the Team Think?	Members of the Public & Invited personalities put Questions to Jimmy Edwards, Ted Ray, Tommy Trinder, & Cyril Fletcher
18:00	What do you know?	A Nationwide General Knowledge Contest – Brian of Britain 1967
18:30	Sing Something Simple	The Adam Singers
19:00	Passage of Arms	A Serial for Radio in Eight Parts
19:30	Grand Hotel	Reginald Leopold and the Palm Court Orchestra
19:59	Weather Forecast	
20:00	News	Current Affairs
20:05	Grand Hotel	Continuation of Programme
20:30	Sunday Half Hour	Community Hymn Singing
21:00	The Men from the Ministry	Richard Murdoch and Deryck Cuyler in All at Sea with Clive Dunn
21:30	Listen to this Space	
22:00	Eric Robinson	Records for You
23:31	The Jazz Scene	In the Jazz Club – Introduced by Humphrey Lyttelton
02:00	News Summary	Current Affairs
02:02	Close Down	

Table 2: The Programme Schedule of the BBC's *Light Programme*, on 1st January 1967.

Time	BBC Radio 1	Format/ Programme Details
05:30	News Summary	Current Affairs with Weather Forecast
05:33	Breakfast Special	Same as BBC Radio 2
07:00	Tony Blackburn	With a Daily Disc Delivery
08:32	Junior Choice	Leslie Crowther with Record Requests
09:55	Crack the Clue	Trial Round Radio 1's Exciting New Competition
10:00	Keith Skues	Saturday Club: Top Pop Groups including Dave Dee, Dozy, Beaky, Mich & Tich & the Bee Gees
12:00	Emperor Rosko	With his Midday Sin
13:00	The Jack Jackson Show	A Record Roundabout
13:55	Crack the Clue	Same Broadcast as at 09.55
14:00	Chris Denning	Says this is Where it at
15:00	Pete Murray	With his picks of last week's newly-pressed programmes. Featuring the latest LPs and EPs
16:00	Pete Brady	A swinging selection of studio sounds
17:30	Country Meets Folk	Wally Whyton introduces Folk, Country, and Weston Music
18:32	Scene and Heard	Exclusive Interview with George Harrison
19:30	News	Current Affairs
19:34	Weather Forecast	
19:35	Same as Radio 2	
22:00	Pete Murray	Meets Pete's People
00:00	Newsroom	Current Affairs
00:05	Night Ride	Sean Kelly with Swinging Sounds on and off the record
02:00	News Summary	Current Affairs
02:02	Close Down	

Table 3: Comparison of the Changing Presentation Styles of BBC National Radio in 1967.

gramming by the BBC during this significant period of change.

Conclusion

Radio was a changing form of media in the volatile 1960s. To the younger generation, radio sets were no longer a permanent fixture that took pride of place in the living room. The advent of the transistor radio led to the development of a mobile, adaptable, and dynamic cultural accessory, both socially and in the workplace. This aided the pirates in their pursuit of market dominance in the early 1960s, a fact reflected by their continuous broadcasting of popular music with a mixture of commercial advertisements. To counteract their success traditional broadcasters like the *BBC* and *Radio Luxembourg* were forced to change their format, ultimately benefiting listeners who had originally demanded nothing less than a 'cultural revolution' in radio.

Further Reading

- Bailey, M. (2009) *Narrating Media History* (London: Routledge Taylor & Francis Group)
- Blackburn, T. (2007) *Poptastic* (London: Cassell)
- Chapman, R. (1990) '*The 1960s Pirates: Comparative Analysis of Radio London and Radio Caroline*: Popular Music, 9 (2): 165-178.
- Chapman, R. (1992) *Selling the Sixties – the Pirates and Pop Music Radio* (London: Routledge)
- Morley, N. (2018) *The Radio Luxembourg Story* (Universal History Publishing).

Devon

South Yorkshire

World Radio TV Handbook 2020

The 74th edition of the World Radio TV Handbook is the world's most comprehensive and up-to-date guide to broadcasting on LW, MW, SW and FM, with details on national TV. It is an extensive guide full of information on national and international broadcasts and broadcasters, clandestine and other target broadcasters, MW and SW frequency listings, Terrestrial TV by country as well as a detailed reference section.

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Rallies & Events

Plan your visits with our list of forthcoming events. Warners (RadioUser & Practical Wireless) will be attending events marked with an asterisk (*). Club secretaries/ event organisers: Please send full and accurate details of your events, affiliations and clubs as early as possible, if you would like to be mentioned here: wiessala@hotmail.com

December 29th (Sunday)
YEOVIL ARC CHRISTMAS RALLY : The rally will take place at Davis Hall, West Camel, Yeovil, BA22 7QX. Open 10 am to 2 pm. Entry £3. Wheelchair-friendly. Light refreshments. There are more than 25 tables. Free parking. The event is sponsored by Lindars Radios (https://www.amateurradiosales.co.uk).
01963-440 167
wjh069@gmail.com

February 2nd (Sunday)
SOUTH ESSEX ARS CANVEY RADIO & ELECTRONICS RALLY: The 36th Canvey Radio Rally takes place at the Cornelius Vermuyden School, Dinant Avenue, Canvey Island, Essex SS8 9QS. Talk-in is on 145.550MHz. Free car parking, and easy level ground floor access to two large halls. Doors are open at 10 am, disabled visitors can come in from 9.45 am. Admission cost is £3, children under 10 go free. Tea, coffee and soft drinks will be available, as well as bacon butties. There will be radio, computing and electronics traders
tony@tonystreet.net
07986 070 040
thowchen@hotmail.com
www.southessex-ars.co.uk

February 7th to 9th (Friday to Sunday)
ORLANDO HAMCATION : The Orlando Amateur Radio Club is hosting the 74th Annual Orlando HamCation at the Central Florida Fairgrounds and Expo Park. HamCation is the second-largest ham radio convention in the United States, with the inaugural event dating back to 1946. The 2019 convention saw 23,700 attendees, a record number for the event. This convention is a celebration of ham radio, also known as amateur radio. Amateur radio use in the United States dates back to the early 1900s and continues to be used today for both emergency situations and as a means for daily communication between ham radio operators. HamCation is a great opportunity for both those in the ham radio community and those interested in learning more about ham radio to come together. With almost 90 vendors being hosted this year, there will be something for everyone, no matter the level of interest or involvement. Attendees wanting to further their ham radio skills can also test for their license at the technician, general and amateur extra levels. The HamCation website has undergone several updates for this year, with more easy to use features and ticket purchasing system. Those who want to attend can purchase tickets, SWAP tables, tailgate spaces and make RV reservations online now. The user-friendly site also provides more information on HamCation activities, vendors and hotel.
(+31) 633 016 551
pmeijers@hamcation.com
www.hamcation.com

Getting advice at the 2019 Newark Hamfest.

February 9th (Sunday)
HARWELL RADIO AND ELECTRONICS RALLY: The rally is at the Didcot Leisure Centre, Mereland Road, Didcot, Oxon, OX11 8AY (3 miles from Milton Interchange on the A34). Doors are open 10 am to 3 pm – admittance £3.00 (under 12s free). Free car parking. Disabled parking and facilities. Talk in on 145.550MHz, using G3PIA. Local and national traders, Special Interest Groups and RSGB Bookstand. Homemade refreshments will be available all day.
01235 816379
rally@g3pia.net

February 16th (Sunday)
RADIOACTIVE RALLY: The 2019 RadioActive Rally will take place at Nantwich Civic Hall, Cheshire, CW5 5DG. Free car parking; doors are open at 10:30 am. There will be a bring-and-buy, as well as traders, and an RSGB bookstall.
A single raffle ticket is included with the entrance programme; additional tickets are available, and catering is provided on-site.
07880 732 534

February 23rd (Sunday)
BREDHURST RECEIVING AND TRANSMITTING SOCIETY (BRATS) RADIO RALLY 2020: The BRATS Rainham Radio Rally 2020 is at the Victory Academy, Magpie Hall Road, Chatham, Kent ME4 5JB (Main Hall). There will be well-known traders, a talk-in station on 145.550MHz (Callsign GB4RRR), There will also be an interactive zone especially for kids, a BRATS kitchen, and much more. Open 10 am to 3 pm. Adults £3, children free.
07825 838 877
Rally-coordinator@brats-qth.org
www.brats-qth.org

March 1st (Sunday)
EXETER RADIO & ELECTRONICS RALLY: The rally will take place in the America Hall, De la Rue Way, Pinhoe, Exeter EX4 8PW. Doors open at 10.30 am (10.15 am for disabled visitors). Admission £2 (under 16s free). There will be trade stands, a bring-and-buy (book-in from 10.15 am), and catering will be available.
07714 198 374
g3zvi@yahoo.co.uk

March 15th (Sunday)
WYTHALL RADIO CLUB HAMFEST: The 35th Wythall Radio Club Hamfest is at the Club HQ, Wythall House, Silver Street, Wythall B47 6LZ. Doors open at 9.45 am (9.30 am for disabled visitors). Free on-site parking. Admission £4. Four halls of traders including a bring-and-buy, and a club stand.
A selection of light refreshments will be available all day, and there will be bar facilities within Wythall House from midday.
01386 839 655
wrc4hallsradio@outlook.com
www.wythallradioclub.co.uk

March 29th (Sunday)
DARC HAMZILLA: The Dover Amateur Radio Club Rally will be taking place again, at last year's wonderful venue of Discovery Park, Sandwich Kent CT13 9FF. There will be offers, talks and demonstrations. Admission, (Early Bird 9:30 am) is £5; general & disabled (10:00 am) is £3; under 16s and carers for disa-

Happy faces mean good business.

bled visitors go for free. Hot and cold drinks and food will be on sale. Lots of big-name traders already booked. RSGB-licenced exam venue, exams are available on the day. Find us, buy tickets or book a table here:
https://www.hamzilla.uk
https://darc.online

April 19th (Sunday)
WEST LONDON RADIO & ELECTRONICS SHOW (KEMPTON RALLY): The West London Radio and Electronics Show will take place at Kempton Park Racecourse, Staines Road East, Sunbury on Thames, TW16 5AQ. A talk-in station will be on air. Car parking is free, and doors open at 10 am, with disabled visitors gaining access 10 minutes earlier. There will be trade stands, bring-and-buy and special interest groups and lectures. Catering available on site.
08451 650 351
info@radiofairs.co.uk
www.radiofairs.co.uk

May 8th (Bank Holiday Friday)
DARTMOOR RADIO CLUB RALLY : This event is at The Butchers Hall, Pannier Market, Tavistock PL19 0AL. Doors open at 10 am. Admission is £2.50. Traders and a bring-and-buy will both be present and refreshments will be available.
07854 088 882
2e0rph@gmail.com

June 21st (Sunday)
WEST OF ENGLAND RADIO RALLY: The 17th West of England Rally will take place at the Cheese & Grain venue, Market Yard, Bridge Street, Frome, Somerset BA11 1BE. Doors open from 10 am to 2 pm. Adult admission £3, accompanied children under 14 are free. There will be inside and outside trade stalls and an RSGB bookstall. A café serving hot & cold food will be available.
01225 873 098
rallymanager@westrally.org.uk
www.westrally.org.uk].

July 14th (Sunday)
EAST SUFFOLK WIRELESS REVIVAL (IPSWICH RADIO RALLY): The rally will take place at the Kirton Recreation Ground, Back Road, Kirton IP10 0PW (just off the A14). Doors open at 9.30 am, and the entry fee for visitors is £2. The venue has free car parking. Trade tables are from £10. There will be trade stands, a car boot sale, a bring-and-buy, special interests groups, GB4SWR HF station, and an RSGB bookstall. Catering is available on site.
07710 046 846
www.eswr.org.uk

July 19th (Sunday)
FINNINGLEY AMATEUR RADIO SOCIETY (FARS) 2020 RALLY: The rally is at the Hurst Communications Centre, Belton Road, Sandtoft, Doncaster DN8 5SX. Doors open 9.30:am. Admission is £3. Free off-road parking. Massive indoor/outdoor trader's area. Hot food and drinks all day. Major traders/ club stalls – microwave components to QRP kits. All on one level.
07831 614 640
Kevin.Avery@tunstall.com
07966 479 195
martin.m0hom@gmail.com

July 26th (Sunday)
WILTSHIRE RADIO RALLY AND CAR BOOT SALE: (formerly: Chippenham & District Amateur Radio Club Rally, CADARC). The rally takes place at Kington Langley Village Hall & Fields, Church Road, Kington Langley, Chippenham, Wiltshire SN15 5NJ. Details to follow.
http://G3VRE.org.uk

August 9th (Sunday)
YORK RADIO RALLY: The York Radio Club is relaunching their rally next year. Details are as follows: The York Radio Rally is organised by the York Radio Club. Location: Riley Smith Hall, 28 Westgate, Tadcaster, North Yorkshire. LS24 9AB. Doors open to the public at 10:15 am. Free public car parking nearby.
07803 936 031
07513 752919

August 14th (Friday)
CPSARC 27TH ANNUAL MINI-RALLY NIGHT: This mini-rally of the Cockenzie & Port Seton Amateur Radio Club will take place from 6 to 9 pm at the Community Centre, Main Hall, Port Seton. Bring along your own 'junk' and sell it yourself. Tables available on a first-come-first-served basis.
Entrance fee £2 for everyone.
01875 811 723
07795 100 164
bob.gm4uyz@talktalk.net
www.cpsarc.com

August 30th (Sunday)
TORBAY ANNUAL COMMUNICATIONS FAIR: The 2020 Torbay Fair will be taking place at the Newton Abbot Racecourse, Devon TQ12 3AF. Doors open at 10 am, with disabled visitors gaining access at 9.30 am.
This is an indoor event with plenty of free parking on site. There will be a bring-and-buy and an RSGB bookstall. Catering will be available on-site, as well as our famous MEGA raffle. To book tables:
01803 864 528
01803 557 941
rally team at rally@tars.org.uk

November 1st (Sunday)
HOLSWORTHY RADIO RALLY: The Holsworthy Rally is Holsworthy Leisure Centre, Well Park, Western Road, Holsworthy, Devon EX22 6DH. There will be Traders, a bring-and-buy, and catering. The venue also has disabled access. Doors open at 10 am. Traders & General Enquiries:
holsworthyarc@gmail.com
http://www.m0omc.co.uk

In next month's RadioUser

- Review: SDRPlay RSPdx Software-Defined Receiver.
- Major & Minor: The Latest Moonraker CB Radios Tested.
- Commerce & Diplomacy: Telefunken v. Marconi.
- How to Succeed with Portable DXing (Part Two).

Plus all your favourite regular features and columns
The next issue is on sale on the 30th January 2020

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www.HamRadio.co.uk/icr8600

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www.HamRadio.co.uk/sdrplay

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www.HamRadio.co.uk/RSPDUO

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ANTENNAS AND ACCESSORIES

www.HamRadio.co.uk/bonito

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The Antenna Jet AAS300

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!) **Only £234.95**

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GigActiv 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. **Only £386.95**

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