

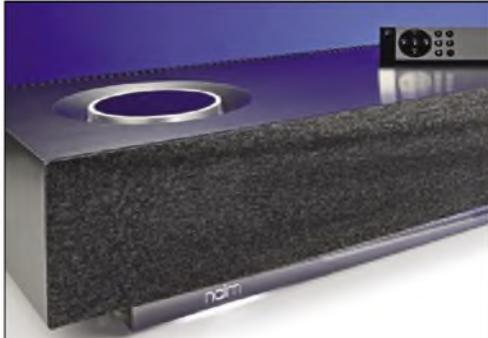
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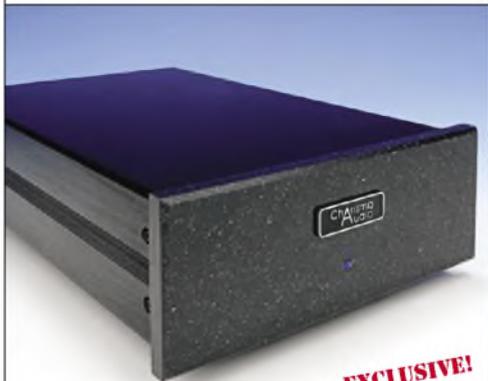
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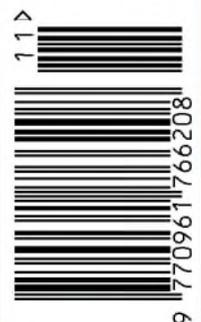
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David Tutt.



How do you decide what to choose? This month we bring you an almost bewildering option – the fantastically modern B&W Formation Duo loudspeakers (£3500) on p10 that demand a Roon music server and an iPhone or iPad as a means of control, or the traditional but superb Spendor D7.2 loudspeakers. The Formation Duos may seem expensive but their price includes amplifiers, making them an all-in-one streaming system. Yet you need an iDevice and – say – a £400 lifetime Roon subscription to make it all work.

The Spendors (£4500) meanwhile deliver reference standard sound quality and once purchased may last a lifetime with no more input in terms of cost and the need to physically upgrade. With iDevices in the picture, as with the B&Ws, that will never be the case. I know from long and costly experience on Apple's treadmill of expense and enforced redundancy, talked about by Martin Pipe in his column on p71.

How many computers have we all owned and been forced to junk simply because they were pushed into redundancy by software updates? This problem will always count against the use of computers; it is possible to include interpretation systems like Apple's Rosetta, but it isn't going to happen. I am now wrestling with a new Mac and its T2 security chip that will not allow it to address an array of old Macs I prefer to keep as original record for legal reasons.

No wonder then that computer sales are in steady decline. I love 'em but worry about being tied to 'em for the enjoyment of music. Not everyone thinks likewise (my son!) and there is good argument – that I make in my column on p65 this month, that the new world costs less. Even I don't believe it, but the sums speak a truth greater than simple belief!

The complexity of modern software systems and the confusion they introduce, of which I give a whiff on p34 in my coverage of wi-fi in hi-fi, is a burden I believe most people just do not want to have to suffer. I'm a geek, but when no one understands what is going on, the geekiness has gone too far. I have conversations with engineers buried in all this and their differing views show frightening confusion reigns. A major reason being, I suspect, that code is being modified, introducing copyright issues and the potential for legal action. Everyone keeps quiet as a result – especially on the 'net.

High fidelity is becoming split by the old and the new. We have it all in this issue. I hope you enjoy reading about it.

Noel Keywood
Editor



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To ensure the utmost accuracy in our product reviews, *Hi-Fi World* has extremely comprehensive in-house test facilities, and our test equipment - from big names like Rohde & Schwarz and Hewlett Packard - is amongst the most advanced in the world.

Loudspeakers are measured using a calibrated Bruel & Kjaer microphone feeding a Clio-based computer

analyser, using pulsed and gated sinewaves. In a large room to eliminate the room's influence. Pickup arm vibration is measured with a Bruel & Kjaer accelerometer.

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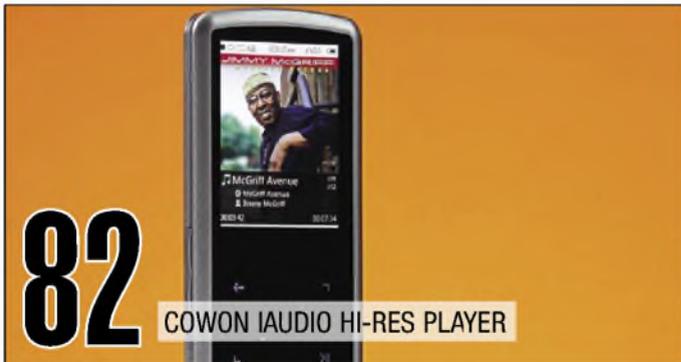
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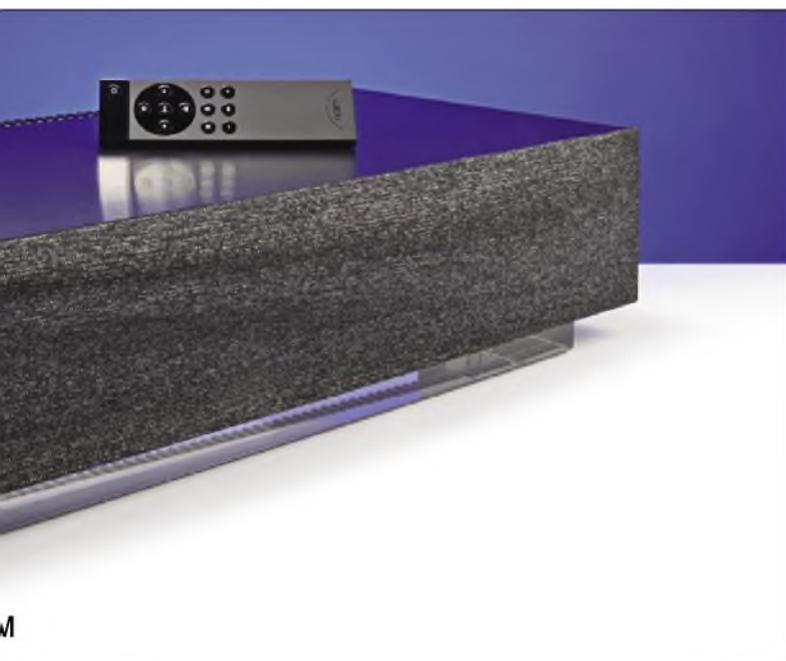
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HIGH-FIDELITY LOUDSPEAKERS | **NEW** CHORA

The brand new Chora speaker range brings Focal technology to music lovers who crave a quality sound, wrapped in a modern design. Comprising three new models - the 806 two-way bookshelf; 816 2.5-way and 826 three-way floorstanding speakers - in your choice of black, light wood or dark wood finishes, the Chora line up offers the looks, features and, above all, performance to set it above rivals. Enjoy a full and generous sound, enabled by Focal's exclusive new Slatefiber cones, the latest example of Focal's 40 years of speaker innovation. Made in France, Chora is at home anywhere.

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READY SET GO!

You can now buy some pretty tasty headphones from the likes of Focal, Sennheiser, Audeze and Fostex – to name but a few. High-end headsets need a high-end headphone amplifier and to this end we now have the £3,999 HP 205D from Icon Audio. As its name suggests, the new amp is based around the venerable 205D directly-heated triode – one per stereo channel, operating in 'single-ended' mode. Designed by Western Electric in the 1920s, this valve is claimed by Icon to "bring you closer to the music". Of relatively-simple design, the distinctive-looking 205D is probably the oldest valve to remain in production.

So why use a valve that's nearly 100 years old? "Many audiophiles have discovered" Icon explained to us, "that a simple well-designed valve amplifier can give greater purity and intimacy than more complex solid-state designs. A small power output valve...has excellent qualities for headphone use, being very linear in operation and of low-impedance". It is reckoned to be a good match for the best headphones, which are "very revealing and can sound clinical and overly-bright with some amplifiers".

Features of the pure Class-A HP 205D include specially-wound output transformers, an outboard power supply with "time honoured valve-rectifier and choke circuit", full-sized components that have been "chosen carefully to avoid negatively-influencing the ultimate sound quality", a driver circuit based around the ECC88 (a post-war medium-gain dual-triode, highly-regarded for its neutrality), "traditional hard-wiring throughout" (no circuit boards), ALPS Blue volume control and – curiously! – the option of a Bluetooth receiver. Sonic presentation, reckons Icon, is characterised by "the highest definition and incredible dynamics but in nice way...more vivid and warmer sounding". The HP 205D can be used as "a stand-alone unit or as part of a hi-fi system".

Contact: *Icon Audio*, + 44 (0)1162 440593, www.iconaudio.com



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HOLY PUNK

Described as the "Holy Grail of Punk", London's Music Mania record fair at Byron Hall, Harrow HA3 5BD boasts some unusual star attractions. Topping the list price-wise is an Abbey Road 2-sided acetate from the Sex Pistols: Anarchy in the UK/No Fun. For this, look into your wallet for £14,500! A withdrawn 7in single of God Save the Queen is going for £13,000. There are more acetates and rarities at collector prices. Music Mania claims to be Britain's biggest Record Fair covering all genres from 1950s-2019. Could be worth a look; pencil in 26-27 October 2019.

SOUND IN MOTION

Last month's announcement that PMC will be distributing Martin Logan in the UK has already borne fruit. We now have details of the new Motion Series speakers, which are claimed to make "Martin Logan performance available, in a cabinet speaker, to a wider audience". The new range, which serves both music and home-cinema reproduction, takes advantage of the American firm's developments in speaker technology. Their 'Folded Motion' tweeter is said to deliver the "accuracy, delicacy, fast transient response and distortion-free output of an electrostatic panel". Making this possible is its lightweight thin-film design, which is crimped into an "accordion-like structure" to yield a surface area "8 to 10 times" that of a typical tweeter. The tweeter works in conjunction with one or more "custom built, stiff and lightweight" aluminium-coned drive-units that are reckoned by PMC to deliver a "broad, realistic midrange, with dynamics that smoothly blended with deep, musical bass". Feeding these high-tech wonders are "proprietary Vojtkotm" crossovers hand-built to "exacting tolerances". The bookshelf speakers (£795 Motion 15i and £1195 Motion 35TXi) are two-way designs, while the three floorstanding models (the £1595 Motion 20i, £1995 Motion 40i and £2995 Motion 60TXi) and both centre-channel speakers (the £695 Motion 30i and £945 Motion 50TXi) are three-way.

Contact: *PMC*, 01767 686300 www.martin-logan.co.uk, www.pmc-speakers.com



CLEAN SWEEP

Sixteen years after PrimaLuna opened for business, the Dutch company has taken the radical step of withdrawing the entire existing product range to make way for "the next phase in PrimaLuna's evolution" – the "EvoLution Series". It's arranged into four ascending tiers – EVO 100 ("entry-level"), EVO 200, EVO 300 and EVO 400.

Each level comprises an integrated amp, a preamp and a power amp, all of which build on the design of the outgoing models with upgrades to key circuit components, improved internal wiring and other enhancements such as re-engineered transformers and greater output power.

Some of the new models benefit from facilities like dedicated headphone amplifiers and – in the case of the EVO 300 and 400 power amps and EVO 400 preamp – balanced XLR connectors.

An unusual feature is the optional phono stage, isolated in its own enclosure and designed to attach beneath the integrated and preamp models.

PrimaLuna's thirteenth component is the unusual EVO 100 Tube 'Digital Analogue Converter' (£2,888), a DAC that features the world's first valve-based clocking circuitry to give digital sources a sonic presentation "that matches the natural fluidity of the best fully-analogue audio systems".



Thanks to PrimaLuna's 'Adaptive AutoBias' circuit, the EL34 pentode output valves fitted as standard to the integrated and power amplifiers can be replaced by alternatives like the KT88 or KT120.

Prices of the amplifiers, available with black or silver front panels, range from £2,198 (the EVO 100 integrated) to £3,300 (a EVO 400 pre-power combo).

Contact: Absolute Sounds (UK distributor), +44 (0)208 971 3909. www.absolutesounds.com

POINTS OF REFERENCE

Described as 'reference class' are the SC-LX904 and SC-LX704 AV receivers from Pioneer, including the latest version of the Japanese company's 'Direct Energy HD Amplifier' technology. A proprietary take on efficient Class-D amplifiers, it's here used to provide enormous amounts of multi-channel power. The £2499 LX904 has 11 channels rated at 215W; its LX704 smaller brother (£1699), meanwhile, boasts 9 channels at 215W.

Both units feature two ESS9026 384kHz/32-bit DACs and are claimed to "offer consumers a new level of sight, sound and scale" thanks to their integration of IMAX Enhanced technology.

Other features include support for Dolby Atmos and DTS:X, dialogue-enhancement, a 'Pro' version of Pioneer's well-known MCACC (Multi-Channel Acoustic Calibration system) room-tuning technology, 7 HDMI inputs plus 3 outputs, and support for formats like Ultra

HD and HDR10/HLG, networked conveniences like Chromecast and Bluetooth, Alexa support, Wi-Fi, Bluetooth, internet radio, an 'Audio Exclusive Mode' that switches off the HDMI video signal, a network-disabling 'AV Direct Mode', user 'presets', DSD compatibility and the ability to work with locally-networked music sources as well as services like Spotify and Deezer.

If you're still working with discs you might also be interested in Pioneer's new PD-50AE SACD player, incorporating ideas that have trickled-down from the flagship PD-70AE. The £1799 PD-50AE features an ESS DAC and fully-discrete analogue/digital power-supply circuitry to "bring out the very best from your favourite SACD, CD and MQA-CD albums". The PD-50E also boasts a DAC mode (with optical and coaxial digital inputs), 3-position digital filter, audiophile construction techniques, a "Quiet Vibration Control Drive Mechanism" and USB-playback support.

Contact: Pioneer, +44 (0)2039 368086. www.pioneer-audiovisual.eu



BEST BUDS?

Klipsch's latest contribution to 'on-the-move' listening is the T5 series of earphone designs. Currently four-strong, the range is claimed to cover all in-the-ear bases. First is the T5 True Wireless, a model offering up to 32 hours of Bluetooth apt-X/HD playback making it a "traveller's dream". The patented oval ear-tips of the T5 True Wireless are said to improve noise isolation, bass response and comfort – while four integrated mics make for intelligible hands-free phone calls. Its 'Zippo-style' carry case also acts as a wireless charging unit. Look out for the review in next month's issue.

More active sorts might prefer the £110 T5 Sport, the "super-secure" fit of which makes it ideal for "cardio-workouts" they say. The Bluetooth-equipped T5 Sport's dynamic driver combines high output and full bass extension, while battery life is specified as "up to" 10 hours.

Next is the wireless T5 Neckband – a "compelling mix of form and function" with leather neckband that sits "directly on your neck, or tucks under your collar".



Last but not least is the more conventional (non-Bluetooth) T5 MWired (£70), which is said to "a secure-fitting, wired design". Aimed at those who don't require added features, the T5 MWired features a "superb-sounding dynamic moving-coil micro speaker driver" with Klipsch's "patented, great-fitting oval ear tips".

Contact: *Henley Audio (UK distributor)*, +44 (0)1235 511166. www.henleyaudio.co.uk



FYNE TIME

Proudly-Scottish speaker-manufacturer Fyne Audio was formed a couple of years ago by six audio-industry professionals boasting "over 30 years experience", some with Tannoy. Its mission is "to deliver ground breaking loudspeakers, designed and manufactured in Scotland".

The £3,500 F502SP floor-stander is Fyne's first "Special Production designated loudspeaker design". This 'SP' version of the award-winning F502 boasts "some of the very best components and engineering from across Fyne Audio ranges" and is personally-tuned by Dr Paul Mills, Fyne's technical director. Its rigid 200mm fibre-coned 'IsoFlare' bass/mid driver and 25mm magnesium-diaphragm compression tweeter, with its "unique HF waveguide", are derived from the F702 and fed by an "exclusive crossover".

Also derived from the higher-end speaker are "driver, crossover and bass-tuning expertise". The 'BassTrax' porting system of the standard F502's cabinet has been improved, while the plinth – precisely-engineered to complement the F502SP's cabinet – features a bass-diffuser developed for Fyne's premium FI series. Fyne claims that the F502SP is capable of an "incredibly even, full-range frequency response with true point-source isotropic radiation for outstanding musical imaging". Standard finishes are piano gloss black or white; an additional £500 gets you walnut.

Contact: *Fyne Audio*, +44 (0)141 428 4008. www.fyneaudio.com



DEJA VU?

To many of us, it seems as if the Walkman personal cassette player was launched only yesterday. Incredibly though, Sony's iconic device first appeared four decades ago. Forty years on, and the Walkman brand is still very much alive – although the underlying technology has changed beyond recognition. Sony has paid homage to the original TPS-L2 model, launched on 1st July 1979, with a '40th anniversary edition' called the NW-A100TPS Walkman.

Sporting a 40th anniversary logo on its rear panel, the unit is supplied with a specially-designed soft case and packaging that pays homage to the TPS-L2. Instead of playing cassettes though, the £400 NW-A100TPS relies on 16GB of internal memory as the storage medium. Features of the Android-powered device include compatibility with a wide variety of codecs (including MP3, AAC, AIFF, DSD up to 4x and lossless PCM-derived formats like FLAC, APE and WAV up to 192kHz/24-bit), 35mW S-Master Class-D headphone amplifiers, a microSD slot for more music capacity, various sound modes (including a vinyl simulator and noise cancellation), Bluetooth, up to 12 hours of battery life and a user interface that recalls the era of cassettes. A version without the 40th Anniversary livery, the NW-A105, is available for £320.

Contact: *Sony*, +44 (0)203 564 4264. www.sony.co.uk





Air Power

B&W's Formation Duo loudspeakers are wi-fi wonders with a powerful sound, says Noel Keywood.

Why not have a loudspeaker – or two of them – with no wires? Just send in music through the air via a wi-fi link. This is what B&W's Formation Duo loudspeakers reviewed here offer. Top B&W quality from a pair of standmount, mains powered active loudspeakers; OK, there are mains cables but little else is needed. Play music wirelessly from the internet or a Roon home server. Price £3499.99, stands a £699.00 optional extra.

Control is from an iPhone or iPad by a free app; there is no remote control. This is a complex system based on music transmission over wi-fi and getting our old-world analogue turntable plugged in was extra cost, as I'll come to explain. There are things to talk about!

But on to the loudspeakers themselves, since they are the largest determinant of sound quality. The Formation Duos are a high quality two-way design with 165mm (6.5in) Continuum cone bass/midrange unit from B&W's 800 Series Diamond loudspeakers. That's the lower unit fronted by a perforated protective alloy grille.

Above it sits a 25mm (1in) Carbon Dome tweeter that I locked onto pretty fast as having a nicely clean sound – not zingy like metal or diamond coated tweeters. The tweeter assembly floats on a suspension system to lessen influence from activity from below, to give sharper treble imaging. Because below, the Formation Duo packs two 125 Watt Class D amplifiers in each cabinet, one for bass/midrange and one for tweeter, making for a powerful package; in effect you get a 125 Watt stereo amplifier in each loudspeaker.

The cabinet is a sealed box with no port, digital signal processing (DSP) compensating for sealed box ('Infinite baffle') behaviour, also providing bass and treble tone controls, plus volume adjustment,

controlled by the app. Incoming digital is converted to analogue to feed the amps. via a 32bit/192kHz DAC, but the units stream audio between themselves at 24bit/96kHz.

The cabinet houses not just these amplifiers and DSP, but no less than 'seven separate radios' for connection into wi-fi and to other units such as a subwoofer. Reason being the stereo pair must communicate with no time delay (latency) between each other for steady stereo imaging, time delay being quoted as 1µs (one millionth of a second). Both surround-sound and multi-room use are available.

To minimise attenuation of the transmitters the cabinet is made from Formi 12mm-23mm thick. This is a polypropylene / wood fibre mix that is enormously strong and rigid, but has good damping properties. Separate internal chambers house the electronics. The cabinets feel rock solid when rapped with the knuckles, measuring 395mm (15.6in) high, 197mm (7.8in) wide and 305mm (12in) deep. Weight is 10.6kgs (23.4lbs).

Mains power required is 100V-240V 50/60Hz so there are internal switch-mode power supply units that allow operation in any territory. Power consumption in Sleep mode is 'below 6Watts'. Cabinet colours are white or black.

At rear each cabinet has a recess with sockets for a power cable with two-pin 'calculator' mains plug, plus an RJ45 ethernet socket. Although the 'speakers talk to each other, there are no analogue or S/PDIF digital inputs here – more on this soon!

Although music is delivered in via wi-fi from the wi-fi section of a domestic router, alternatively they can be connected up via ethernet, each loudspeaker needing its own ethernet cable back to the router. This means extra cables – but wired connection is more assured. However, I am told that although the loudspeakers inter-communicate, if connected by ethernet then both must be connected, for software

update from the 'net.

The stands are tailored to fit, a hollow central column accepting cables that exit below to keep the whole looking tidy. On the stands height measured 96cms, variant according to the spikes, or spherical feet to avoid floor damage.

I always use wired ethernet for review purposes, from our Melco N10 server, but wired is a secondary alternative here. The Formation Duos need a modern fast router with powerful multi-aerial wi-fi transmitter, something B&W supplied for review purposes, set to 5GHz to separate it from a swarm of 2.4GHzs in our office building. Wi-fi data rates are compromised by distance from the router and obstructions in-between. I mention all this because wi-fi can be temperamental, the Formation Duos



Beneath each loudspeaker lies a calculator style mains power input and an RJ45 ethernet socket for optional wired use.

needing a robust modern system, especially in a big home where the wi-fi transmitter/receiver section of the router may be far from the system.

Also demanding is the fact that the 'speakers will only play from a Roon domestic server; they will not play from a local network (NAS) drive, nor from a UPnP server.



On/off and set-up buttons on the front of each loudspeaker, for former flashing during set-up but falling dark with all working.

This is extra cost, a (single-user) Roon subscription being \$119 per annum, or \$499 for lifetime. The loudspeakers are Roon certified endpoints.

They will play from music stored on a 'phone however, via wi-fi or Bluetooth, wi-fi offering slightly better quality because it lacks compression. Otherwise, you'd probably want to go with Spotify, Tidal or Qobuz to feed music into the Formation Duos. I can't use unverified music files from distant servers for review purposes so played music from a MacBook Pro, connected via ethernet and running Roon, to deliver high quality review tracks, as well as hi-res files (24/48) on my iPhone sent by an Onkyo music player.

But what about vinyl? Er – yes! With no analogue inputs anywhere the good old LP would seem to be forgotten – locked out by digital diddling. To get analogue into the scheme of things means another box containing an analogue-to-digital convertor and sending it out wirelessly – meaning via wi-fi – into the system. Enter Formation Audio, a separate unit price £599. It has two analogue audio inputs via RCA phono sockets (no balanced XLRs), an optical S/PDIF digital input (no electrical), two analogue audio outputs and an electrical S/PDIF output. It connects into the system via wi-fi of course, but there is also an RJ45 ethernet socket so it can be wired into the network to avoid using wi-fi.

Like the 'speakers, the Formation Audio unit is mains powered, similarly

working from 100V-240V 50/60Hz with a Sleep power consumption of 6 Watts. Measuring 215mm (8.5in) wide, 263mm (10.4in) deep but just 44mm (1.7in) high it has a large-ish footprint and needs a deep 10in shelf or could sit on a rack with other products like a turntable. There is no in-built phono stage. Weight is 1kg (2.2lbs).

SOUND QUALITY

B&W loudspeakers always do a great job with classic Rock and I guessed correctly that Fleetwood Mac's Dreams (24/96) playing out of Roon on my MacBook Pro would come across well – and it did. DSP bass correction and some bass lift (see Measured Performance) give the Formation Duos strenuous bass heft, made apparent by John McVie's bass line and Mick Fleetwood's drum kit. Cymbal crashes were obvious



With mains cable hidden within the stand the Formation Duos appear wire free, but there is a wire on the floor, to the back of the stand.



The cabinet bolts to the stand with four hex-head screws, to make for a rigid structure. The aperture accepts cables.

and there was a bit of 'loudness effect' in the sound balance, adding to the propulsive nature of this track. Stevie Nicks vocals were clear, well outlined and quite forward: I caught very strong vocal insight – she almost shouted at me! Think big and bold



A 1in (25mm) carbon dome tweeter sits in its own housing that floats above the cabinet on a suspension system.

with these 'speakers, very much idiom for B&W, which is why they are so popular.

Similarly, The Doors Light My Fire (DSD 64) thundered along with that relentless pace the track is known for, whirling Hammond organ and Jim Morrison's forceful vocals being thrown out at me. Impressive with a capital 'I'.

With classical the piano of Benjamin Grosvenor playing Chopin Nocturnes (24/48) was large and firm, clearly outlined. The performance was less soft and romantic than I hear it through

simpler, conventional systems, the Formation Duos brought a sense of brisk and rigid control.

With the Minnesota Orchestra playing Korsakov's The Snow Maiden: Dance of the Tumblers (24/96), instruments on the sound stage were sharply defined and the whole was delivered with visceral power. The sound stage was held around the loudspeakers with good if not extensive depth.

All these observations are with bass and treble set flat, and with no 'Filter' selected in Roon. A parametric equaliser is available in Roon so there is plenty of scope to alter the sound balance.

There were some operational peculiarities. The phone app initiates the system and can control volume but has no library track list with Roon. I had to select tracks from the Roon app. There will be an update to give the app control I am told. The app's Pause and Play functions were slow to respond and if Pause was held for more than 5 seconds the app asked me to re-start play at Roon; I could not re-start Play from B&W's app. This will likely also change when their app is updated to have more control.

Using the Onkyo music player on my iPhone, both CD and hi-res (24/48) gave a warmer and easier sound, possibly because it is not a Roon source. I also experienced some funnies. Fleetwood Mac's Dreams came over as bass heavy; the bass line was clear and controlled but too obvious. EQ in the Onkyo player was off, but turning it on and selecting Flat cured this, bringing back the sound balance I know from using this track repeatedly in reviews. At this point I noticed the Onkyo player had flagged 'slave' and was controlling the sound, but the Formation Duos were set flat without EQ, so where this selective bass lift came from I do not know. All the same, once cured, delivery of CD and hi-res files from my iPhone was superb, the Onkyo music player offering better user feedback control and preferable sound quality than Roon in this situation, I felt.

The Formation Audio external analogue/digital hub was connected to the Charisma Audio Musiko phono stage I review in this issue, fed by our Timestep Evo modified Technics SL-1210 Mk2 turntable with SME309 arm and Ortofon Cadenza Bronze moving coil cartridge. Our direct-to-disc LP – Big Band Spectacular

– of the Syd Lawrence orchestra, was thrown into the room with projective power, drums lighting up the stage in front of me. Running through our modern review LPs I got their power and the dynamics, if with less of the smooth flow and subtle low detail vinyl can provide.

Overall, the Formation Duos were spectacularly clear, controlled and dynamically powerful. Their internal DSP brings sense of grip and timing to the sound. They're not soft or romantic – there are no valve amps inside! But B&W's chosen sound balance can be altered by the tone controls, or Roon's parametric equaliser.

CONCLUSION

The Formation Duos are a totally engineered hi-fi solution where active loudspeakers play music from commercial music servers like Tidal via a wi-fi link in the home, or music files from a Roon home server, a mobile phone or tablet. Their grip, power and projection was a cut above most else; hi-fi wrought large.



The base accepts spikes or hemispherical feet to prevent floor damage. These provide clearance for the cables too.

App wise, not the easiest to use and sound wise distinctly modern, but dramatic. Here's wi-fi hi-fi in modern form, from compact loudspeakers that offer a big, big sound.

MEASURED PERFORMANCE

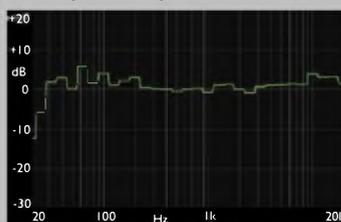
Frequency response of the Formation Duo was smooth but with some emphasis of both low and high frequencies. The carbon dome tweeter comes in above 3kHz to extend output smoothly to 20kHz, albeit with +3dB lift above 9kHz – enough to add subjective brightness to high treble. Lack of classic crossover midrange dip at 3kHz will give the strong projection of detail.

Below 200Hz the response also lifts by around +3dB to add a sense of body and warmth to the sound – quite

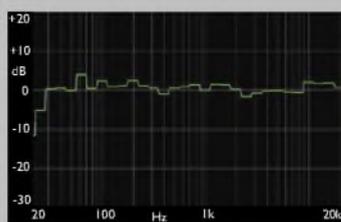
FREQUENCY RESPONSE

Green - driver output

Red - port output



BASS & TREBLE -3dB



common and necessary to avoid a 'thin' sound. Output extends down to a low 30Hz before falling away quickly to reduce cone excursion caused by subsonics. All the same, the bass/midrange unit extends very low to produce deep bass at high level – +2dB up at 30Hz. This is likely the result of engineered-in equalisation from DSP, since a 165mm drive unit in a small cabinet within an unpowered loudspeaker rarely goes so low. Spectrum analysis of CD shows most recordings cut off below 30Hz so this accords with typical CD output.

Smoothness of response across midrange and treble suggests good suppression of local resonances in cones and cabinet and low colouration as a result.

The response balance did not change with volume; there is no built-in loudness control. However, moving both bass and treble tone controls to -3dB gave a perfectly flat (30Hz to 20kHz) reference response, something B&W could well mark on the uncalibrated control scale.

The Formation Duo measured well. It has some emphasis of low and high frequencies to add presence, plus deep bass to add weight to the sound, but response can be adjusted in the app and in Roon. **NK**

B&W FORMATION DUO £3499.99

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OUTSTANDING - amongst the best

VERDICT

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FOR

- powerful sound
- compact and unintrusive
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AGAINST

- lack subtlety
- app only control
- Roon & analogue extra cost

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Here's your chance to win the superb World Designs WDPRE3CF preamplifier – as a kit or built – we reviewed in the August 2019 issue. Read the review excerpt below and answer the questions.

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audiophile Vishay / Soniqs capacitors, price £430 as a kit.

Pre3CF has no gain, being a zero-gain buffer preamplifier. It acts as a high quality source selector and volume control, able to drive a long line to a power amplifier. There are five line level inputs, through sturdy gold plated phono sockets. Selection is made by the rotary control at right that actuates gold-plated sealed small-signal relays to avoid the use of a simple mechanical switch that will oxidise and degrade sound quality as it does so. It's a high quality solution that ensures long life, such relays being rated at millions of operations.

At left is the volume control, a high quality, audiophile-standard Alps Blue potentiometer. With big body, long track and smooth bearings this little unit has an unchallenged reputation – and long life.

Measurement showed a gain of x0.9, meaning Pre3CF will accept digital sources, most of which give 2V maximum output, sending it to power amplifiers that commonly need 1V maximum input. The only time this will be inadequate is with low output external sources like some phono stages*.

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QUESTIONS

[1] Power supply is -

- [a] Hinkley Point
- [b] London Array
- [c] PSU3
- [d] Solar panel

[2] Input is selected by -

- [a] jack plugs
- [b] smoke signals
- [c] semaphore
- [d] sealed relays

[3] Relays ensure -

- [a] long life
- [b] night life
- [c] no life
- [d] short life

[4] The potentiometer is -

- [a] Morganite Grey
- [b] Alps Blue
- [c] Panasonic Purple
- [d] Sony Silver

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**AUGUST 2019 WINNER: WORLD DESIGN PRE4 KIT
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Magic Mu-So

Naim's new Mu-So 2 sets a standard for one-box systems, says Jon Myles.

It's hard to believe – but it was five years ago Naim unveiled its Mu-So one-box speaker system. At the time it was a unique offering of wireless network multi-room streaming, physical connectivity, amplification and speakers. At the time it almost created a new category of hi-fi.

Since then many manufacturers

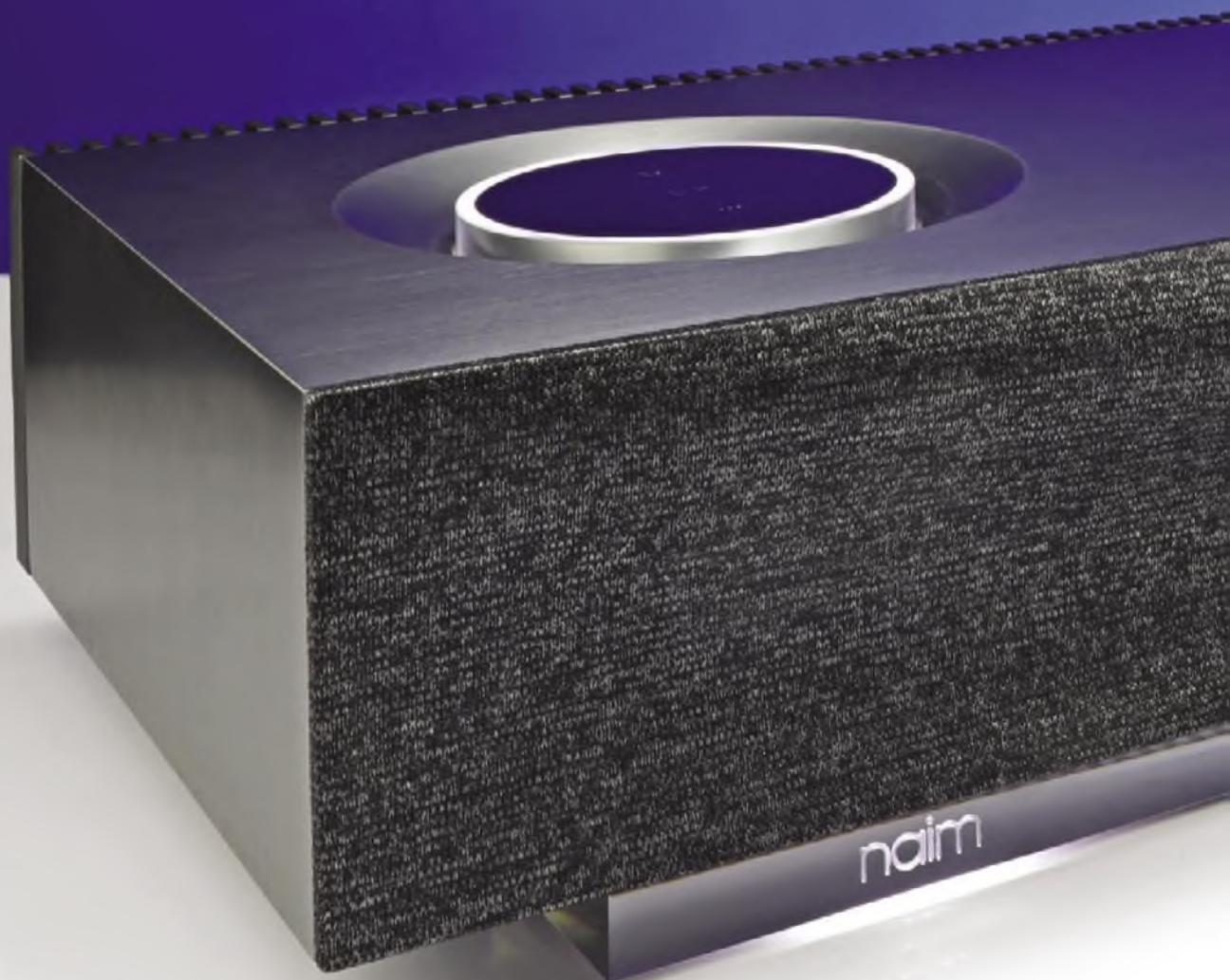
have followed Naim but few have managed to match Mu-So's ability in terms of sound quality.

Now we have the Mu-So 2 – which promises a significant upgrade on the original unit although the price has also increased from £995 to £1299.

Side by side old and new look very similar. The same shaped cloth fascia at the front, familiar heat sinks

at the rear and the rather brilliant rotary control at the top of the box – that allows you to select inputs, volume and access streaming services such as Tidal, Spotify and Apple Music.

Look a little bit closer, though, and things have changed. The heatsinks on the rear are much closer together while the cloth grille on the front has a different texture



– that Naim says enhances sound quality. Under the surface Naim have really upped the ante on the original Mu-So. Sitting beneath the grille are six drivers, redesigned in collaboration with Naim's French sister company Focal. They consist of two silk-dome tweeters, two doped-paper mid-range drivers (with tuned mass damper technology derived from Focal's high-end offerings) and two bass drivers. In addition low-end reinforcement comes from a bass reflex port that vents at the bottom of the cabinet. Each driver is powered by 75 watts of Class D amplification which means there's 450 Watts of power on offer.

The amplification module also includes the digital-to-analogue conversion circuitry in an arrangement Naim refers to as "direct digital amplification".

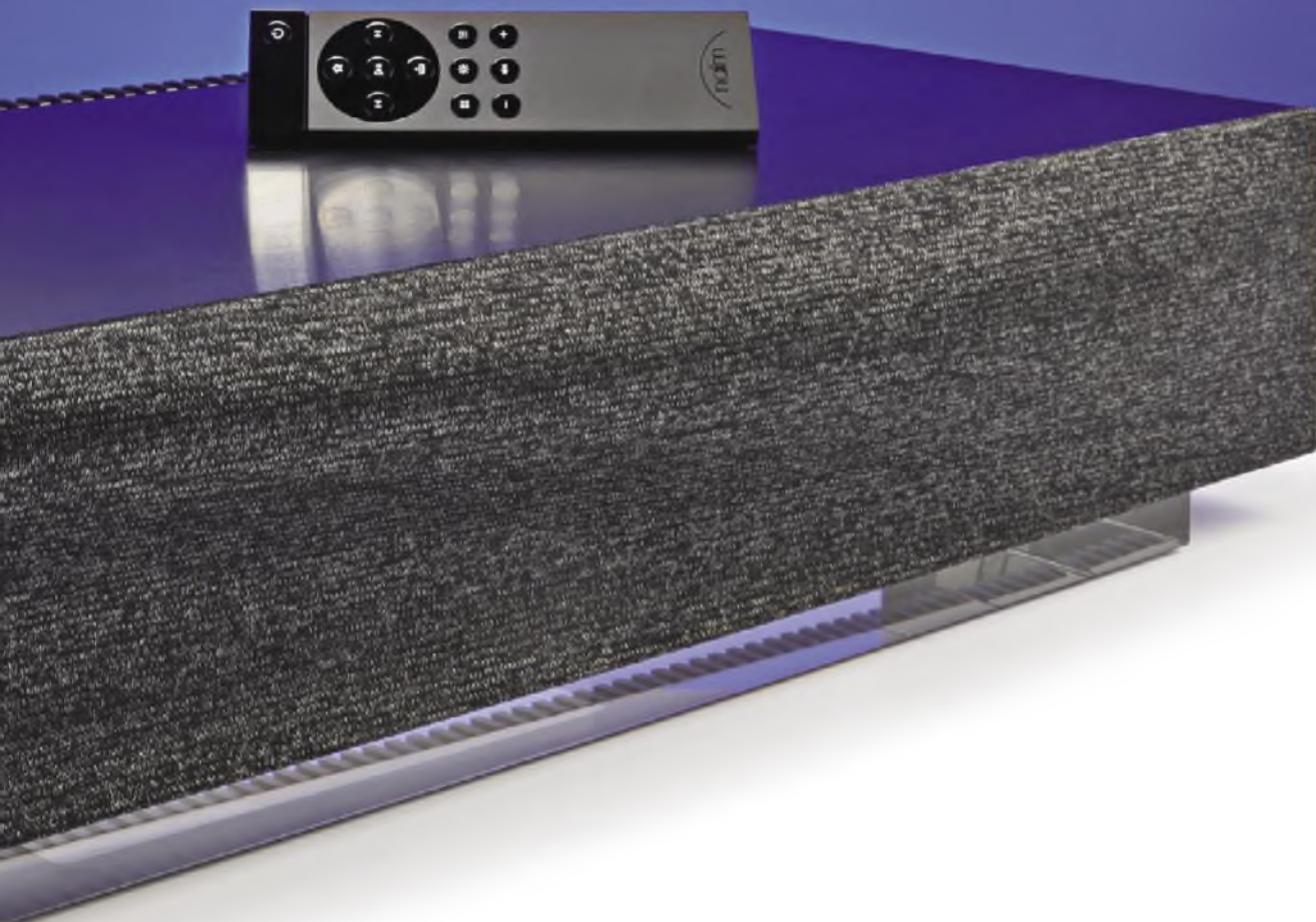
"as one-box systems go the Mu-So 2 is hard to beat. It combines superb construction with an easy control system and a sound that belies its dimensions."

The native DAC resolution is 24bit/88.2kHz although the Mu-so 2 is capable of downscaling files of up to 24bit/384kHz via UPnP or wired/wireless network connection and 24bit/96kHz via its digital optical input.

Naim recommends a wired connection for high-resolution material – but, to be honest, I've never had any problem using a wireless connection.

The cabinet has also been re-engineered to deliver an additional 13% internal volume, while the internal bracing and baffle moulding have been redesigned to aid rigidity and control internal vibrations.

The Mu-So 2 comes with a supplied remote control but it's best accessed via Naim's own app (Android and iOS) which gives a variety of features including album artwork, playlists and internet radio.





As with the original Mu-So, offline streaming is catered for with Bluetooth while USB, optical and 3.5mm inputs offer the ability to connect another source such as a CD transport, CD player or television. With the latter, Naim have also added a HDMI ARC socket so users can connect the Mu-So 2 to a television or AV receiver to pass-through high-quality Blu-ray formats.

All in all it's a fully featured device that can be connected to almost any hi-fi source or act as a standalone device. But how does it sound?

SOUND QUALITY

Achieving true stereo sound through a one-box system is never easy – but the Mu-So 2 gets as close as any other device I've heard.

The new drivers are impressively

balanced and integrated. They work well together with a good bass response, smooth mid-range and a treble that brings out detail without being harsh.

Depending on where Mu-So 2 is positioned it's possible to tailor the sound from three settings – Near Wall, Near Corner or when out in the open No Compensation.

I started out with the latter the using the Mu-So on a hi-fi rack in the middle of Hi-Fi World's listening room.

Playing Nick Cave and The Bad Seeds' 'The Mercy Seat' the sonic swirl of the guitars took on thrilling atmosphere. Everything was in place – from the bass, drums and Cave's growling vocals to the pace of the track.

The Mu-So also manages to throw out a wide image, the sound extending beyond the sides of the cabinet to fill the room. This was playing the track via UPnP streaming from a Melco N10 NAS (network attached server).

Listening to the same track via Spotify saw a slight diminution in scale with the soundstage closing in and the guitar parts becoming a little more clogged. That said, though, there was still thrilling excitement to the overall presentation.

Moving on to St Etienne's gentle 'Milk Bottle Symphony' the Mu-So 2 tackled this with impressive delicacy. The clash of the glass bottles at the start comes over well. The only criticism here is that the tweeters sounded a little soft – I would have liked to have heard a little more bite.

That said, when the whole track kicks in it's not devoid of pace or detail. Sarah Cracknell's



A USB input on the right side enables users to load their own tracks.

voice was very well rendered, her vocals standing out clearly against the backing track. They were also superbly projected into the room. No, not quite as 3D as a true stereo system but not that far off for a one-box system.

And the one thing the Mu-So 2



The large, illuminated control wheel makes access to most functions quick and easy. It has a smooth action.



Simple and clear legends on the top control wheel make it a go-to for operating the Mu-So, but there's an app and a remote control unit as well.



The Mu-So's new drivers have been developed in partnership with sister brand Focal. There are two silk dome tweeters, two mid-range drivers and a pair of bass drivers. It's a significant upgrade to the original Mu-So. The supplied remote can be used to access all functions – but Naim's app gives more options.



does have – in typical Naim fashion – is real punch and power. It's very pacy, imbuing tracks such as New Order's 'Age Of Consent' solid drive, Peter Hook's bass sounding deep but neither sluggish nor overly dominant.

Moving the unit close to a rear wall and dialling in the requisite setting proved interesting. With No Compensation as the default there was a slight boominess at the lower registers – but with the Near Wall option everything fell into place again. It's a clever use of DSP processing that actually works and allows the

Mu-So 2 to be used in a variety of locations depending on your requirements.

In fact, however and wherever I placed the Mu-So 2 I was always impressed at just how good it sounded.

Having reviewed and been impressed by the original Mu-So I was expecting the upgrade to be an incremental increase in quality. But actually it is much more than that. In terms of sound quality it is a big step forward on the original. The new drive units, improved DSP

and redesigned cabinet have all paid dividends.

CONCLUSION

As one-box systems go the Mu-So 2 is hard to beat. It combines superb construction with an easy control system and a sound that belies its dimensions. No, it won't beat a full-size hi-fi set-up but it gets pretty close.

And if you are looking for a compact system that can belt out a tune but also do delicacy as well then the new Mu-So 2 really has no rivals..



Underneath lies the power input, wired internet connection, analogue input via 3.5mm stereo jack and optical S/PDIF digital input.

MEASURED PERFORMANCE

Naim's Mu-So 2 internal loudspeakers comprise an elliptical bass unit, a small conical midrange unit and silk dome tweeter, making it a three-way loudspeaker – ambitious for such a small cabinet – and there are two of them facing forward. The bass units are reflex loaded via a hidden port that works through a hand lift at left on the cabinet.

Frequency response was in keeping with high fidelity loudspeakers, our third-octave, pink noise analysis shows. Output was reasonably smooth and completely flat to 20kHz with grille on, as shown, or a small amount of plateau treble lift (+2dB) grille off.

Bass extends low, the port taking over below 60Hz to add deep bass at 30Hz (red trace).

The room position Wall response (near wall placement) reduced bass output by a small amount, a few dB, but Corner compensation (shown) was more severe, to dampen room boom.

Selecting Loudness made no difference at any level, either acoustic or related to the volume control settings, on our review sample. This will presumably be corrected with final

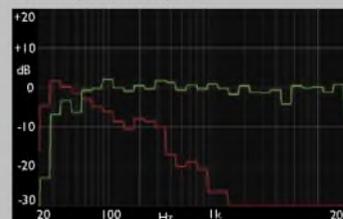
product.

For a small one-box solution the Mu-So 2 offers full hi-fi performance. It's loudspeakers deliver a smooth, wide-band response free from artificial enhancement and usefully adjustable for room position. Impressive for such a small unit. **NK**

FREQUENCY RESPONSE

Green - driver output

Red - port output



FREQUENCY RES. CORNER



NAIM MU-SO 2 £1299



OUTSTANDING - amongst the best.

VERDICT

Possibly the best one-box system available today. Not cheap but undoubtedly worth the money with its sound quality, ease of use and connectivity options.

FOR

- balanced sound
- build quality
- ease of use

AGAINST

- not cheap

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Answers by: NK - Noel Keywood; JM - Jon Myles; PR - Paul Rigby; MP - Martin Pipe.

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A PAIR KEF Q150 LOUDSPEAKERS are on their way to JOHN SPEIGHT, Letter of the Month winner in our October 2019 issue.

Letter of the Month

MORE ON RUMOURS

I read with interest your opinion piece about Fleetwood Mac's Rumours (August 2019 Vol. 29 No. 7). A slow response from me, I know...

In reference to the re-mastered vinyl edition you mention, I thought that it might be useful to highlight to readers that there are currently at least four official modern vinyl pressings of this popular album currently available in shops worldwide since 2011 (one version of which I presume to be your disliked copy) Each of which has a unique mastering.

US market 45rpm – mastered by Kevin Gray and Steve Hoffman. Cut all analogue from master and production tapes. Gold Dust Woman starts with a band count in, instead of the usual fade in. Initial pressing run by Pallas Group in Diepholz, Germany

US market 33 1/3rpm. Same general mastering presentation by Kevin Gray and Steve Hoffman as per the US 45rpm, only this time cut at 33 1/3rpm. Initial pressing run by Pallas Group in Diepholz, Germany

European market 45rpm. No transparency provided over source, but the markings scribed in the runout grooves identify that it was mastered (and initially pressed) at Optimal



The US market 45rpm LP of Fleetwood Mac's Rumours is pressed in Germany by Pallas, says Richard Peddie. Mastered by Steve Hoffman and Kevin Gray, this is the one to go for.

Pallas say "Our custom PVC formulation produces consistently high pressing quality with the lowest surface noise in the industry. Our PVC complies with 2015 European environmental standards and does not contain toxic materials such as Lead, Cadmium or Toluene. Our vinyl is both audiophile and eco-grade".



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Media in Rbel, Germany, assumed in this instance by Heino Leja. There is no band count in at the start of Gold Dust Woman.

European market 33 1/3. Probably the same general mastering presentation as per the European 45rpm, only this time cut at 33 1/3rpm. I do not own this one, so cannot confirm.

For some inexplicable reason (contractual perhaps) there was needless duplication between markets with all versions pressed in Germany.

So why am I boring you with this? This practice is nothing new and has been going on since the beginning of LPs. Though a separate matter to what your article was focussing on, as you and your readers will know, in hi-fi a common mantra is the need of a good source – rubbish in, rubbish out.

My experience is that many can think that ends at cartridge, or CD player etc., or type of source – CD, vinyl, digital file – giving little thought to the mastering and pressing quality of the music carrier itself. A well recorded, but poorly mastered piece is going to sound poor through either an average, or exceptional system. Whereas, if well mastered, it is going to sound good through an average system, or exceptional through an exceptional system.

Rumours highlights just how many different masterings and pressings there can be unknowingly out there, with different sources, mastering equipment, mastering engineers and pressing plants. Just because a new reissue is available worldwide, it doesn't mean that what you pick up at the shops is going to be the same quality as what others are buying elsewhere.

In this 2011 'Rumours' case, in one market a team has been commissioned to review available tapes to find the very best sources and cut all analogue. In the other market, who knows – but quite possibly whatever available digital files were simply sent to the pressing plant. Owning three of the above copies, the US market records gain from those efforts, as they excel in a greater realism – in both tonality and in the room presence.

Transparency of mastering engineer, source and cutting chain is a rarity. The average shopper, it seems, either just doesn't care, or know better, sadly. It seems that the mainstream industry has little motivation to cater for audiophiles if they sell the same number of units, regardless of the care and experience added to the product.

It would be very welcome to



In the run-out groove area of an LP you can find identification notes, often scratched into the acetate by hand. Our Rumours LP show it is a 2011 issue pressed by Optimal Media of Germany.

see sustained deeper exploration by Hi-Fi World of the behind-the-scenes work done to deliver the music carrier product to us. More frequent articles like the recent discussion of Mobile Fidelity (May 2019 Vol. 29 No. 3). There are a number of well-regarded mastering engineers and audiophile record labels etc. working today and monthly interviews and articles highlighting the extra thought / experience / effort they put in could, in some way, help contribute to a more informed customer base.

It is disappointing to walk into most UK record shops selling new product and modern reissues knowing that, in many cases, the version available on the shelf is not the best sounding version currently available worldwide. If more people are aware and seek better releases then perhaps it will encourage the industry to move in a positive direction.

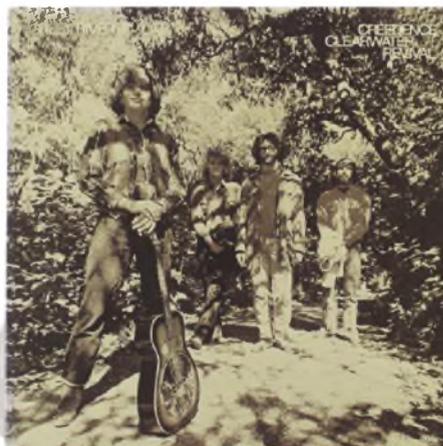
The audiophile market seems too niche and financially unstable currently, combined with little sign of the McJors shifting their views. Support for those companies and individuals that do get it is much needed if we want a healthy future for Hi-Fi.

Readers should also question whether value means finding the cheapest version of a record available, or investing time and money in sourcing good quality product at prices which can sustain a niche market in what is a testing time. When comparing the price of say, concert tickets, or a meal out, investing in the best available records of music I love is a luxury, yes, but I feel a worthwhile price for something that

brings me closer to the recording and should last through my lifetime.

I hope you find your, as yet, allusive perfect copy of Rumours. There's certainly a lot of options out there. For vinyl, if you do not own a current US edition (especially the 45rpm), then I recommend at least giving it a go.

By the way, Steve Hoffman has posted quite a bit of detail online about the master and production tapes he used, including their EQ decisions in the mastering process, which you may find



Don't expect top quality from 1960s' recordings such as Creedence Clearwater's 'Green River' tracks, also mastered by Kevin Gray and Steve Hoffman, here onto a 200gm Quix SVP vinyl running at 45rpm. This is historical record. Atmospheric all the same.

interesting. The excellent Diverse Vinyl regularly have imported US copies in stock, or available for order. Should you at Hi-Fi World Towers want to borrow my copy to compare then you are quite welcome.

Regards,

Richard Peddie

Thank you for that Richard. A wonderfully illuminating letter about the difficult of trying to get a decent sounding LP! As you say it is worth spending time and effort to find a good recording – but provenance is hard to come by with music, whatever format – CD, DVD, LP or download. It's a big subject and a fraught one – with digital especially.

Our version of Rumours is sonically coloured in a way unusual with LP – it sounds shut-in and boxy. It makes loudspeakers sound boxy, when they are not. Even our Martin Logan ESL-X electrostatic panels sound boxy with this LP. It's not a subjective problem I'd associate with the recording or disc cutting process; I've never heard such an effect before.

Information pressed into the blank area of the run-out groove (BB33893-01 A?? MK ==1) identifies this LP as a European 2011 disc pressed by Optimal of Germany, a standard European store disc in other words – the one you haven't (luckily!) got. It was shrink wrapped and cost around £25 as I recall. Looked

good at the time – but was not good enough. No other LP I have bought sounds quite like it; bad ones sound messy, dull or noisy, or flat in tonal contrast likely due to compression. Happily, most of the LPs we buy for review purposes sit at the other end of the scale, being vivid and exciting.

Many of them, such as those from Mobile Fidelity, run at 45rpm and they offer the best results, although as a warning to readers thinking of using this as a yardstick, be aware that super-quality LPs are still limited by the quality of the original recording, so whilst our Creedence Clearwater box set of 45s puts you in a (late) 1960s studio, in a 'being-there' experience, there is still hiss from valve amps and a thermionic tape recorder! Our recent Mobile Fidelity all-analogue box set with LPs running at 45rpm, of Dire Straits Love Over Gold and the great Janis Joplin are also not up to modern cuts, such as the astonishing direct-cut of the Syd Lawrence Orchestra on Big Band Spectacular, from Chasing the Dragon. This recent LP (two of them,



Mobile Fidelity 45rpm LP of Love Over Gold – very good quality but showing its age all the same.

Direct and 30ips tape) is fall-over extraordinary, showcasing what LP can do. With the Mobile Fidelity 45s of historic material you have to accept quality limitations of the time.

Rumours was a lovely album, for its polished performances and easy going nature – ignoring the earthy lyrics that would be banned today (oh the 1970s!). I will definitely order up the US 45rpm edition so we can finally get to hear – hopefully – what was originally recorded in that Sausalito studio. **NK**

TECHNICS CHOICE

I have a Technics SL-1210 Mk2 of unknown vintage. It houses a Pickering XV15 625e which must be around 15



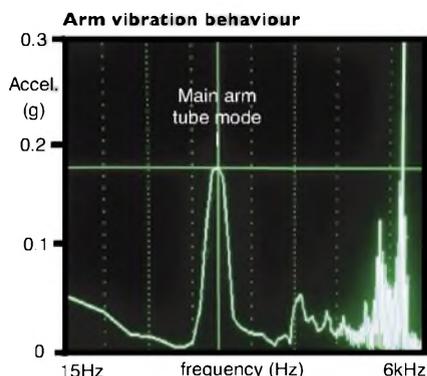
The superb Technics SL-1200GR turntable, made eye catching by stroboscope and cueing lights. It has rock solid speed from a modern Direct Drive motor.

years old with a stylus previously unused but of similar age. The sound is very good and I have no immediate plans to replace anything.

However, you have started me thinking again! Could you please clarify the following. Over the last few years I have learned through this magazine that the SL-1210 Mk2 is an excellent deck with a mid-fi arm that can be replaced to reach hi-fi standards.

What confuses me is your SL-1500 review which states that Technics have paid some attention to the arm and it is now aimed at audiophile rather than CJ. This suggests it should be an improvement. However, you clearly feel it is an entry-level budget arm and, as it is fixed, it makes the package lose a globe.

With the SL-1210, is the deck's strength that its arm can be changed, or is the arm decent enough? With the SL-1500, is the weakness the arm



Technics SL-1500 arm tube rings at 300Hz our measurements showed.

itself, or the fact that the arm cannot be changed? Which arm is better?

With a decent cartridge, does the SL-1500 become a good mid-fi deck? With a thicker mat, would the arm track horizontally and improve the sound?

My preference is for a musical, uplifting (euphonic?) sound of most genres. While I appreciate the fast response of the SL-1210, could it be made more musical, or would I be better off aiming for a speed stable belt drive?

So, if I wanted to upgrade my SL-1210, should I –

- Change the cartridge...to what?
- Save up and change the arm to what?
- Start again with a Rega, Project, or similar?

Amp and speakers: Trio KR9600 receiver and Monitor Audio RX1s. Budget? Unlikely to stretch to more than one of the above.

Many thanks,
Andrew Entwistle



Fit a modern budget cartridge like the new Audio Technica VM95 SH moving magnet cartridge – with brown stylus carrier as shown here – to a used Technics SL-1210 Mk2 turntable, ensuring first the arm moves freely. Otherwise, consider buying a new Technics SL-1200GR: it has all the lights!

Hi Andrew. The SL-1500 turntable package is an introductory unit aimed at the audio market, rather than DJs, lacking a cueing light in particular. We know this from speaking to people at Technics. All their new Direct Drives are purposed for home use, even though they are strong enough to withstand club use.

The SL-1500 cannot be upgraded. It is competent when fitted with a good moving magnet cartridge but no more, the arm being a limiting factor. Similarly, the arm of the SL-1210 Mk2 was adequate for purpose but better was needed to get top sound from quality cartridges.

I recommend you simply change your old Pickering for a modern cartridge like Audio Technica's VM95 SH, price just £180. Cartridges have improved greatly in recent years, with better materials and more sophisticated tip shapes. The VM95 SH is light years ahead of your old Pickering.

As you have an old turntable of unknown history I suggest you carry out a few checks on the arm first. Balance it out, preferably with

cartridge stylus guard on, and see whether it floats freely – horizontally and vertically. If not then it is best changed – and for this speak to Sound Hi-Fi who are experts on Technics turntables and have all the adaptor plates etc. I suspect you would be best off with a Rega arm.

If all is well with your current arm Audio Technica's VM95 SH will give you a taste of the high-end at peanuts price. See what you think.

The next step up is, I would suggest, a Technics SL-1200GR (£1300). You get the full monty here – stroboscope, cue light, speed control. It has fabulous build quality, a superb Technics motor that holds speed like no other and a very good arm with the convenience of an easily removable headshell.

I think these recommendations will be within your budget and show you what vinyl is capable of. **NK**

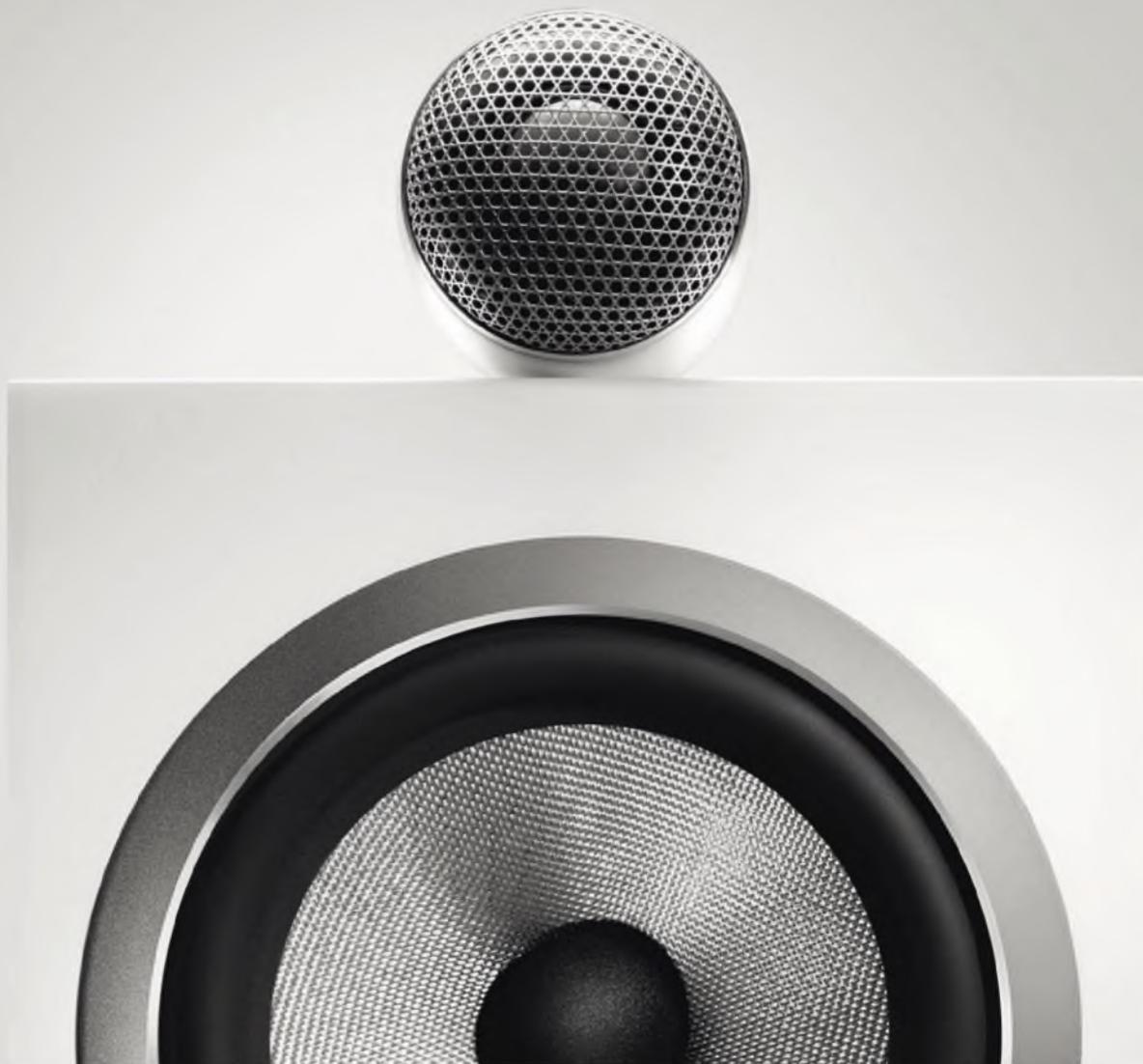
LIGHTS AND NOISE

The picture of the locking forceps associated with Mike Bickley's letter took me back more than 40 years to



Technics SL-1500 arm, a simple design with undamped alloy tube. Not ideal for high quality cartridges.

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my early electronics construction days. I had associated with several medically trained people, a couple of who were also electronics constructors in those days, and we often used locking forceps to hold items by their wires in place for soldering.

An added useful advantage, for example with capacitors and small transistors, was to use the forceps as a heat sink between the soldering area and the base of the component to prevent thermal damage. Also, if you needed to remove a component, these forceps were the best way to get a good grip and a firm pull in order to remove a wire in the minimum time in order to reduce heat damage to PCB tracks.

I'm still interested in components and design, and have even had to replace a failed part a while back in a top-name valve amplifier and that component was a Zener diode – so much for solid-state reliability.

Anyway, this week I thought I would have a look inside an E14 base LED golf ball bulb which had failed well within its warranty time. I took the offending item, placed it into an old bread bag, and hit it increasingly hard with a hammer to break what I thought was the glass bulb. On the 4th or 5th blow, a plastic top popped off in one piece to reveal a small PCB with the LED chips on the bulb base, and underneath which I could see a couple of capacitors and what was obviously a small inductor.

This was an aha moment as I realised the failure was likely not the LEDs themselves, that the bulb dissipation was not controlled by, for example, resistive buffering, but was done using a small switching supply, which had failed (though I've no idea why they use this approach, as Ohms law still applies overall to the voltage drop and current consumption parameters for the bulb).

I also realised that a recent observation which had puzzled me now made good sense and that this has some possible implications for hi-fi users. I have the luck to recently have completed the first construction of a proper workshop-cum-lab in the garden and whilst I was sorting and organising out there, I had Radio 3 or 4 playing on a small portable CD/radio, mains powered and using just its inbuilt aerial.

As it was getting darker I switched on one of the elegant-looking newly installed 1200 mm LED strip lights whereupon to my horror, a buzzy and unpleasant addition to the sound quality was immediately apparent, such that the sound really was no longer acceptable. I experimented with aerial positions, and

moved the unit about without much effect, and the clearly-best result was to turn the light back off.

Since then I have read a little about the electronic noise problems arising from internal power supplies for these bulbs, and am currently looking at whether to, for example, bother with installing ferrite rings on the lead-in wires to try to reduce the noise. In the first instance though, I will be moving an old-fashioned spare fluorescent fitting into the same space and making a sound comparison. I obviously want the lab to have a clean electronic background for my work to come, and would even consider installing a restricted number of old-fashioned incandescent bulbs, of which I have a stock.

However, I am now also worried that in the house itself, where the quality stereos are, I have methodically installed several formats of mains-voltage LED power saving bulbs, innocently thinking they were going to be clean and green. I know many years ago the discussion of LED-induced sound deterioration started, being mainly blamed on the sharp switching edge of the diodes as voltages rose and fell but this issue with a multiplicity these small internal switch supplies being everywhere seems to present a new kettle of fish. I would therefore be interested in your observations and comments, Noel, in the face of your vast experience in this field. Best regards,

Dr Richard H. Barton
Imperial College, UK

Hi Richard,
Thanks for the last bit – but I have no experience in this field! Interesting though that your radio shows LED bulbs emit strong radio frequency (RF) interference – not a problem recognised or talked about as yet.

Like you, I find LED bulbs fail often and don't work with all the 1980s dimmers in my house, even when their packaging says they do; wrong sort of dimmer perhaps. Having once had the house re-wired and fitted with low energy lights now banned by the EU (like incandescent bulbs) I am reluctant to go through the whole process again with LEDs because, as you say they use cheap internal switch-mode power supplies that radiate strong RF rubbish. A house full of them is going to be a very noisy environment, as you have found – and not the best place with hi-fi equipment that is sensitive to RF (phono stages in particular).

The contradiction here is that



Modern LED lights have hard plastic bulbs able to resist a hammer Richard Barton finds. Inside there is a noisy switch mode power supply to convert a.c. to d.c. "To my horror, a buzzy and unpleasant addition to the sound quality was immediately apparent" he says.

RF transmission from most products is strongly regulated by current EU law; why LED lamps are immune I do not know, but that could change. It's a bit like London's new Ultra Low Emission Zone (ULEZ) that, when I strayed into it by accident, was occupied mainly by buses, coaches and construction lorries – seemingly a completely contradictory situation.

Will LED lamps suddenly become targeted for obsolescence and replacement as a result of the RF noise they produce? RF noise from switch-mode supplies can be cut down, but capacitors and inductors are needed for filtering and they are sizeable, so RF is not easily eliminated in a light bulb. Awkward reality.

One possible solution to this noise problem is to send clean d.c. through domestic lighting circuits, straight to LED bulbs, making them smaller, cheaper and 'cleaner' because an internal switch-mode power supply unit would then be unnecessary. If the EU gets hold of this one we will all be forced to re-arrange our house supplies – again! Ignoring Brexit of course. But it would eliminate the RF rubbish that infects audio equipment and sort-of upsets EU lawmakers.

Better – we can all enjoy decent sound, on our hi-fis and on our radios in the shed! **NK**

Two Is The Magic Number

Jon Myles finds Tellurium Q's new Ultra Black II loudspeaker is a real star.

Tellurium Q cables have always been a bit of a mystery. Founder and chief designer Geoff Merrigan resolutely refuses to go into details about the construction, materials or make-up of his products.

Which is fair enough. His approach is very much just listen - if you like it buy it and if not buy

something else. There's no pseudo-science involved in their marketing.

So there's little I can tell you about the new Ultra Black II speaker cable's construction - apart from the fact that it replaces the original and looks pretty similar.

That means it comes in mono pairs with a flat outer sheath which, while it looks rather hefty, is easy to route through tight spaces. Run

your hands along that sheath and it's impossible not to be impressed.

There's obviously some shielding involved to minimise RFI and EMI interference - which is a growing problem nowadays with the growth of wi-fi networks, attached appliances and even the likes of mobile 'phones and gaming devices.

Tellurium Q also fit their own steel spacers and bespoke Z-plugs



(spades are also available). The Z-plugs are very well made – they fit tightly to both amplifier and loudspeaker inputs and once fitted do not come loose.

Bear in mind, though, that these cables are directional - which is clearly indicated on the connectors.

I'll readily admit I'm always sceptical about directional loudspeaker cables – but if the manufacturer recommends it then it's worth following their advice.

SOUND QUALITY

If you have the original Tellurium Q Ultra Black then this update might take you aback. It doesn't just improve on the original it takes the sound on in leaps and bounds. For example, Keith Jarrett's piano on 'The Koln Concert' had more body, echo and a fulsome, utterly realistic quality.

The same happened with New Order's 'Bizarre Love Triangle'

Martin Logan hybrid electrostatic loudspeakers via both a Creek Evolution 100A transistor amplifier and an Icon Audio Stereo 30SE valve-based integrated, the resolution of these cables became clear.

With the Creek there was power aplenty on Sarri Schoor's blues-rock album 'Never Say Never'. Keys player Bob Fridzema, guitarist Ash Wilson, bass man Mat Beable and drummer Roy Martin all came over as firmly in place on a well defined soundstage. Schoor's vocals - which are gruff but wonderfully blunt - also stayed firmly in the centre, never being overwhelmed by the backing track.

Switching to the Icon Audio it was apparent just how transparent these cables are. Playing the same Sarri Schoor album there was more warmth on offer thanks to the Icon Audio's single-ended design and its use of tubes.

A big difference? Actually yes.

Q's Silver Diamond cables in my home system - which are even more transparent. In comparison the Ultra Black II's are a little darker overall - however they are about a third of the cost of the Silver Diamonds which represents something of a bargain.

But that said they work superbly well in bringing out extra detail in even some of the most familiar recordings.

On Bob Marley and the Wailer's 'No Woman, No Cry' Live the quality of the opening organ notes was noticeably better than on the original Tellurium Q Black. These new cables have better scale, presence and openness. When Marley's voice came in it sounded more alive and plaintive than before, as I recall.

I heard the same effect on every track I played - leading me to believe that there's something special going on with these Ultra Black II's.

As I said at the start, if you have



remixes. The bass had more power while the electronic embellishments became clearer and easier to hear.

What this cable did so well was allow me to lay back and let the music flow over me or lean forward and follow individual instruments.

Plugged into our reference

Which is the beauty of these new Ultra Black II cables – they have the ability to let you know what your source and amplifier are doing.

So with the Creek they sounded powerful and rather forward, with the Icon Audio there was more warmth but a little less thrust to the sound.

That, to me, is the essence of a good cable – it lets the music through without imposing its own character on the sound.

That said, however, I use Tellurium

the original Ultra Blacks then the new design is a significant upgrade. Not only do they increase sound quality but also bring out a whole new level of enjoyment. I'd recommend a listen.

CONCLUSION

Tellurium Q's Ultra Black II's can be seen as one of the best loudspeaker cables on the market at their price. They are not cheap – but in terms of pounds for sound they out-perform many more expensive brands.

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Hi-Fi Wi-Fi

Noel Keywood looks at the issues behind sending audio over a wi-fi link.

For better or worse, hi-fi is moving to wi-fi. Wi-fi links are known for being prone to noise and interference, dropouts and randomly erratic behaviour, so to date we've seen little attempt to stream audio through them. Now the picture is changing. We recently reviewed Audiolab's 6000N streamer that relies on wi-fi linking and this month it is B&W's Formation Duo loudspeakers. With plenty more wi-fi products on the horizon from B&W and IAG Group (Quad, Audiolab, Mission etc), to name just two prominent in the UK, it is time to look at wi-fi for hi-fi.

Just as such products appear, 2019 has seen the launch of a new wi-fi standard – Wi-Fi 6. This

'phone wi-fi data rate is crucial, as I will explain later.

For most people in the UK I suspect wi-fi is something they get with their BT router, since BT dominate the UK market. Wi-Fi is a bolt-on radio transmitter / receiver system that comes with its own set of issues. As an example I ran into difficulties streaming 24/192 wav hi-res with DTS Play-Fi through my iPhone 6S with BT's Smart Hub – an absolutely standard UK set-up. Wi-Fi 5 is good enough in theory but in practice it can be inadequate, as I will explain in a little bit more complexity later.

Wi-Fi 5 is now yesterday, so if you are thinking of changing your mobile phone or home modem/router internet link, a wide set of

Because Wi-Fi 6 is so new, few products are available to work with it but that will change. Quite what it will give we have yet to see, because in practice data rates are often lower than quoted headline figures. Using 160MHz wide channel bandwidth it is quoted as having a maximum data rate of 2.4Gbps (Giga bits per



Recently announced iPhone 11. It has new, faster Wi-Fi 6 (802.11ax) on board for improved performance over all previous models. To exploit it, however, you will need a Wi-Fi 6 equipped router, or modem/router.

further complicates the picture we all face, since it makes current Wi-Fi 5 products obsolete; Wi-Fi 6 products will be faster and more durable. Wi-Fi 6 is backwards compatible with earlier Wi-Fi versions of course so nothing will stop working.

New Wi-Fi 6 also makes our 'phones obsolete; currently the only mobile 'phone with Wi-Fi 6 is Samsung's Galaxy S10 (£600); Apple have just announced the new iPhone 11 with Wi-Fi 6 but current models are Wi-Fi 5. This may well matter if you bump into DTS Play-Fi where

new options have just appeared. The future is Wi-Fi 6 and if you want to move to this right now, perhaps for streaming fast around the house in future – video as well as audio – then look at wi-fi routers like the TP-Link Archer AX6000 (£380), Asus RT-AX88 (£330) or Netgear Nighthawk x10 (£344.48). All have Wi-Fi 6 and can be hooked into your current internet modem from BT, Virgin etc, with an ethernet link. They'll give you Wi-Fi 6 around the house that will last for many years to come, guaranteeing top data rates over long distances.



Samsung's Galaxy S10 is one of the first new Wi-Fi 6 mobile 'phones capable of faster wi-fi speed than at present, potentially giving more stable hi-res audio performance.

second, where Giga is one-thousand million, or 10e9), where Wi-Fi 5 and Wi-Fi 4 are 866 Mbps and 450 Mbps respectively.

Wi-Fi 5 is – in theory at least – fast enough for transferring hi-res audio from router to product and back, so you can connect a streamer like Naim's NDX2 wirelessly with no problem whatsoever. B&W's Formation Duo loudspeakers in this issue use Wi-Fi 5 and again no problem with streaming hi-res.

That's because data rate for a 24/192 WAV stereo music file is 9.2 Mbps, undemanding by current wi-fi standards.

In most hi-fi systems controlled by an app on a mobile phone or tablet ('device') the device transmits instructions to the system, not audio. But "most situations" is not all situations and here Wi-Fi is now being pushed to stream audio from a 'phone – a very different situation to streaming between devices like B&W's Formation Duo loudspeakers.

With a mobile phone the upload speed (transmit or Tx) is constrained by a relatively weak transmitter (3 Watts max) to prolong battery life and not microwave your brain (there are international standards to



TP-Link Archer AX6000 wi-fi router capable of Wi-Fi 6 (802.11ax) performance.

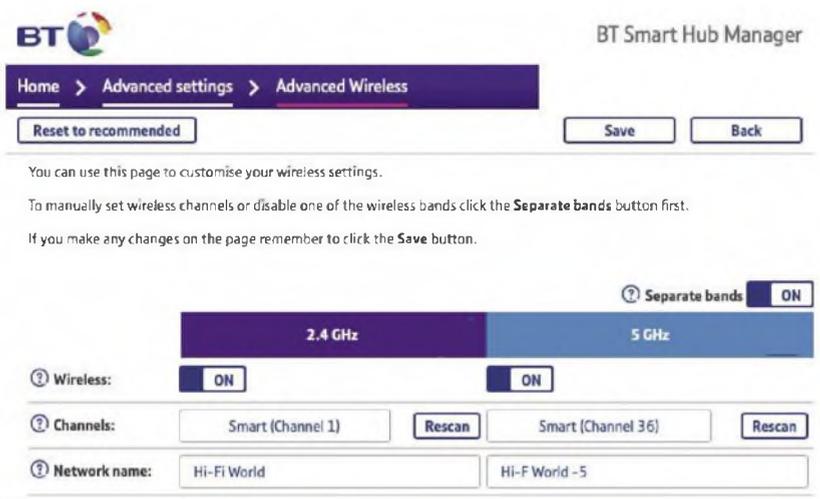
Another issue is use of Airplay music transmission protocol on all Apple products, including the dominant iPhone. Little is published

about its specifications; I am told it is CD quality at best, meaning 16bit at 44.1kHz sample rate – and this is what'll find on the 'net. However,

our measurements show 24bit resolution is achieved by DTS Play-Fi sending audio through Audiolab's 6000N streamer that has a high resolution ESS Sabre32 DAC on board.

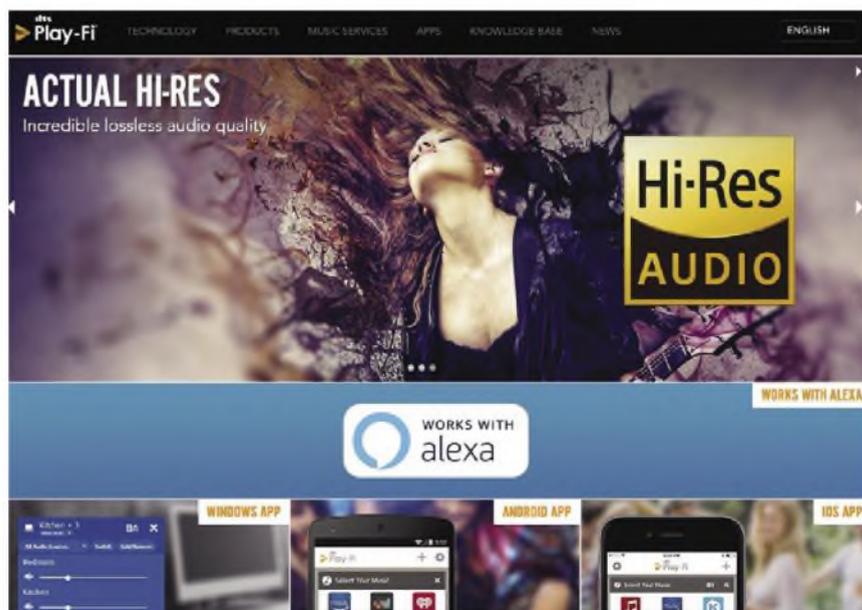
Does it use Airplay? It certainly seems to according to the 6000N's log-in screen – or is it a compatible variant such as that used by AirServer (www.airserver.com) that works on PC as well as Mac?

The point being that wi-fi data rate from such a protocol will be higher – probably far



Check out your modem/router's menus to see which wi-fi band you are using. On BT's current Smart router the bands must be separated before 5GHz can be set for faster speed.

prevent this). The transmitter aerial is also small. Put all this together and you get a real-life wi-fi speed from an iPhone (Wi-Fi 5, 802.11ac) well below the headline figure. With Wi-Fi 5 this is 866 Mbps Intel state, but many claim, on the 'net, to get 400Mbps or thereabouts. However, using the (free) Wi-FiSweetspots app on my iPhone 6S right next to a BT Smart hub I get 200Mbps and this falls to 160Mbps or lower just 12ft away, in a next door room with light plaster wall in between that will not significantly weaken the signal. This can be increased slightly by forcing use of the 5GHz band by switching off 2.4GHz at the wi-fi transmitter, be it an all-in-one hub with modem, or a dedicated wi-fi router. Suggesting that likely for safety reasons, a hand-held mobile has far lower Tx data rate than you might expect.



DTS Play-Fi currently directs all audio through the 'phone via its wi-fi link; turn the phone off and it falls silent. They are working on an update to provide an alternative we are told.



SPENDOR

REVEALING EVERY DETAIL

Spendor D-Line loudspeakers reveal every nuance of the performance with absolute clarity and realism. With their transparent, superbly natural sound and extraordinary resolution, they create an airy, spacious soundscape, then invite you in to explore it, uncovering new depths, textures and definition in your music

MADE FOR MUSIC. DESIGNED FOR YOU.

spendoraudio.com



Audiolab's 6000N streamer uses DTS Play-Fi that directs all audio through the mobile 'phone (or tablet) wi-fi link. Wi-fi speed and durability become important.

higher since video is handled – than that of audio alone. With hi-fi over wi-fi coming up as an issue in DTS Play-Fi, without many people even realising it, it may well be that Wi-Fi 6 will be needed for a stable service under all conditions.

You can also play music stored on a mobile 'phone to streamers via wi-fi, either from iTunes or – my favourite – a hi-res audio player like that from Onkyo. This is a great iOS app that costs £9.99 for the full featured version and will play all audio files including DSD (sending it via PCM over wi-fi). iOS has a 24/48 limit for audio files (OS-X does not).

Doing this again brings into play the phone's wi-fi transmitter,

its limited power and small aerial. Most times you will be close to the receiver, but if not then again reception could become erratic and Wi-Fi 6 a likely solution.

Wi-Fi 5 is able to handle hi-res audio from a mobile phone in unchallenging situations and for reviewing I use it consistently as a standard test procedure (Bluetooth is another issue). With Audiolab's 6000N, sending 24/48 audio test files from an iPhone 6S using Wi-Fi 5 gave full dynamic range from its ESS Sabre 32 series DAC, an impressive 118dB – and the music sounded suitably smooth and deep in ESS style.

If you want to play hi-res from

the 'phone like this, use free XLD (Mac) or dBpoweramp (PC) to convert hi-res files to 24/48. This way, Wi-Fi 5 copes well enough in my experience when playing hi-res stored on an iPhone.

Although Wi-Fi 5 can be speed optimised by using a high performance router and the 5GHz transmission band, forthcoming wi-fi products – including mobile phones – will be using Wi-Fi 6. If you are thinking of streaming hi-res audio either direct from phone, or through the phone via DTS Play-Fi, then best to know that new Wi-Fi 6 is the best option for high quality audio. And my commiserations to anyone who recently bought an iPhone 10X!

IEEE 802.11 Wi-Fi protocol summary from Intel

Protocol	Frequency	Channel Width	MIMO	Maximum data rate (theoretical)
802.11ax	2.4 or 5GHz	20, 40, 80, 160MHz	Multi User (MU-MIMO)	2.4 Gbps ¹
802.11ac wave2	5 GHz	20, 40, 80, 160MHz	Multi User (MU-MIMO)	1.73 Gbps ²
802.11ac wave1	5 GHz	20, 40, 80MHz	Single User (SU-MIMO)	866.7 Mbps ²
802.11n	2.4 or 5 GHz	20, 40MHz	Single User (SU-MIMO)	450 Mbps ³
802.11g	2.4 GHz	20 MHz	N/A	54 Mbps
802.11a	5 GHz	20 MHz	N/A	54 Mbps
802.11b	2.4 GHz	20 MHz	N/A	11 Mbps
Legacy 802.11	2.4 GHz	20 MHz	N/A	2 Mbps

¹ 2 Spatial streams with 1024-QAM modulation.

² 2 Spatial streams with 256-QAM modulation.

³ 3 Spatial streams with 64-QAM modulation.

We do not sell these products. It is for your information only.

WORLD CLASSICS

Here is our list of the great and good from audio's glorious past, products that have earned their place in hi-fi history. You'll also see some oddities which aren't classic as such, but are great used buys. The year of introduction is given, alongside the original UK launch price.

TURNTABLES

EAT FORTE 2009 £12,500
Lavishly finished two box, two motor turntable with gorgeous Ikeda 437 tonearm bundled. Exceptionally stable and unfussy performer with a relaxed but highly enjoyable gait.



FUNK FIRM VECTOR II 2009 £860
Innovative engineering gives a nimble, peppy and musical sound that's one of the best at the price.

REGA P2 2008 £300
Excellent value for money engineering, easy set up and fine sound.

MICINTOSH MT10 2008 £8,995
Big, expensive, controversially styled and glows more than some might consider necessary, but an astonishingly good performer.

REGA P3-24 2008 £405
Seminal affordable audiophile deck with fine bundled tonearm. Tweakable, and really sings with optional £150 outboard power supply.

ACOUSTIC SOLID ONE 2007 £4,050
Huge turntable, both in terms of sheer mass and sonic dynamics. Fit up to three arms and enjoy, just don't damage your back moving it.

AVID VOLVERE SEQUEL 2007 £4,600
Stylish high end vinyl spinner with industrial strength build quality and a sound to match. Sound is edge-of-the-seat stuff.

MICHELL GYRODEC SE 2005 £1,115
Design icon with superlative build. Sound is beautifully smooth, effortless and exceptionally expansive.

MARANTZ TT-15S1 2005 £1,299
Cracking all in one deck/arm/cartridge combination, this must surely be the best sound/plug and play package at this price point.

MICHELL TECNODEC 2003 £579
Superb introduction to Michell turntables - on a budget. Top quality build and elegant design mean it's still the class of the mid-price field.



MICHELL ORBE 1995 £2,500
The top Michell disc spinner remains a superbly capable all rounder with powerful, spacious sound that's delicate and beguiling.

SME MODEL 10A 1995 £4,700
Exquisitely engineered deck and SME V tonearm combo that's an extremely accomplished performer with classical music.

LINN AXIS 1987 £253
Cut-price version of the Sondek with LX arm. Elegant and decently performing package. Later version with Akito tonearm better.

ROKSAN XERXES 1984 £550
Super tight and clean sound, with excellent transients. Less musical than the Sondek, but more neutral. Sagging plinth top-plates make them a dubious used buy.

DUAL CS505 1982 £75
Simple high quality engineering and a respectable low mass tonearm made for a brilliant budget buy. Polished, smooth and slightly bland sound.

MICHELL GYRODEC 1981 £599
Thanks to its stunning visuals, this bold design wasn't accorded the respect it deserved. Clean, solid and architectural sound.

TOWNSHEND ROCK 1979 £ N/A
Novel machine has extremely clean and fluid sound. Substantially modified through the years, and capable of superb results even today.

MARANTZ TT1000 1978 £ N/A
Beautiful seventies high end belt drive with sweet and clean sound. Rare in Europe, but big in Japan.



REGA PLANAR 3 1978 £79
Brilliantly simple but clean and musical performer, complete with Acos-derived S-shaped tonearm. 1983 saw the arrival of the R3300, which added detail at the expense of warmth. Superb budget buy.

SONY PS-B80 1978 £800
First outing for Sony's impressive 'Biotracer' electronic tonearm. Built like a tank with a clean and tidy sound, albeit lacking involvement. Scarily complicated and with no spares support - buy with caution!

TRIO LD-70 1978 £600
The best 'all-in-one' turntable package ever made. Clean, powerful and three-dimensional sound, ultimately limited by the tonearm.

ADC ACCUTRAC 4000 1976 £300
Borlakers 1970s direct drive that uses an infra red beam to allow track selection and programming. More of a visual and operational delight than a sonic stunner.

PIONEER PLC-590 1976 £600
Sturdy and competent motor unit that performs well with a wide range of tonearms. Check very thoroughly before buying due to electronic complexity and use of some now-obsolete ICs.

PIONEER PL12D 1973 £36
When vinyl was the leading source, this brought new standards of noise performance and stability to the class, plus a low friction S-shaped tonearm. Later PL112D was off the pace compared to rivals.



TECHNICS SP10 1973 £400
Seminal Japanese engineering. Sonics depend on plinths, but a well mounted SP10/II will give any modern a hard time, especially in respect of bass power and midband accuracy.

LINN SONDEK LP12 1973 £86
For many, the Brit superdeck; constant mods meant that early ones sound warmer and more lyrical than modern versions. Recent 'SE' mods have brought it into the 21st century, albeit at a price.

ARISTON RD11S 1972 £94
Modern evolution of Thorens' original belt drive paradigm, Scotland's original super-deck was warm and musical, albeit soft. Still capable of fine results today.

GOLDRING LEWCO GL75 1970 £15.6S
Simple, well engineered motor unit with soft, sweet sound and reasonable tonearm. Good spares and servicing support even today.

GARRARD 301/401 1953 £19
Tremendously strong and articulate with only a veiled treble to let it down.



THORENS TD124 1959 £ N/A
The template for virtually every 1970s 'superdeck', this iconic design was the only real competition for Garrard's 301. It was sweeter and more lyrical, yet lighter and less impactful in the bass.

TONEARMS

REGA RB251 2009 £136
Capable way past its price point, the new 3-point mount version of the classic RB250 serves up a taut and detailed sound. A little lean for some tastes, but responds well to rewiring and counter-weight modification.

HELIUS OMEGA 2008 £1,595
Stylish and solid lump of arm with fabulous build quality, that turns in a dynamic and weighty performance.

AUDIO DRIGAMI PU7 2007 £1,300
The classic Syrinx PU3 updated to spectacular effect. Hand made to order, with any mass, length and colour you care for. Fit, finish and sound truly impressive.



GRAHAM PHANTOM 2006 £3,160
Sonically stunning arm with magnificent bass dexterity and soundstaging. Build quality up to SME standards, which is really saying something!

TRI-PLANAR PRECISION 2006 £3,600
Immaculate build, exquisite design and one of the most naturally musical and lucid sounds around.

MICHELL TECNOARM A 2003 £442
Clever reworking of the Rega theme, using blasting drilling and rewiring!

SME 309 1989 £767
Mid-price SME comes complete with cast-out aluminium armtube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision.

NAIM ARO 1987 £1,425
Charismatic unipivot is poor at frequency extremes but sublime in the midband; truly emotive and insightful.

SME SERIES V 1987 £2,390
Vice-like bass with incredible weight, ultra clear midband and treble astound, although some don't like its matter of factness!

NAIM ARO 1986 £875
Truly endearing and charismatic performer - wonderfully engaging mid-band makes up for softened frequency extremes.



ALPHASON HR100S 1981 £150
First class arm, practically up to present-day standards. Buy carefully, though, as there is no service available now. Totally under priced when new, exceptional.

SME SERIES III 1979 £113
Clever variable mass design complete with Titanium Nitride tube tried to be all things to all men, and failed. Charming nonetheless, with a warm and inoffensive sound.

TECHNICS EPA-501 1979 £ N/A
Popular partner for late seventies Technics motor units. Nice build and Titanium Nitride tube can't compensate for middling sound.

LINN ITTOK LVII 1978 £253
Japanese design to Linn specs made for a musical, rhythmic sound with real dynamics. The final LVIII version worth seeking out.

AUDIO TECHNICA AT 1120 1978 £75
Fine finish can't compensate for this ultra low mass arm's limited sonics - a good starter arm if you've only got a few quid to spend.

HADCOCK GH228 1976 £46
Evergreen unipivot with lovely sweet, fluid sound. Excellent service backup.

ACOS LUSTRE GST-1 1975 £46
The archetypal S-shaped seventies arm; good, propulsive and involving sound in its day, but ragged and undynamic now.

SME 3009 1959 £18
Once state of the art, but long since bettered. Musical enough, but weak at frequency extremes and veiled in the midband. Legendary serviceability and stunning build has made it a cult, used prices unjustifiably high.

PHONO STAGES

CREEK DBH-8 SE 1996 £180
Punchy, rhythmic character with oodles of detail makes this a great budget audiophile classic. Partner with a Goldring G1042 for an unbeatable budget combination.

MICHELL ISO 1988 £ N/A
This Tom Evans-designed black box started the trend for high performance offboard phono stages. Charismatic, musical and punchy - if lacking in finesse.



LINN LINNK 1984 £149
Naim-designed MC phono stage built to partner the original Naim NAIT - yes, really! Fine sound, although off the pace these days.

INTEGRATED AMPLIFIERS

NAIM NAIT XS 2009 £1,250
With much of the sound of the Supermail at half the price, this is powerful, articulate and smooth beyond class expectations.

MUSICAL FIDELITY PRIMO 2009 £7,900
Seriously expensive, but one listen explains why. Wonderfully exuberant sound that can only come from a top quality tube design.

SUGDEN A21A S2 2008 £1,469
Crystalline clarity, dizzying speed and forensic detailing. Power limited so needs sensitive speakers.

CREEK DBH-22 2008 £350
Brilliant value budget passive, with remote control, mute and input switching, plus an easy, a neutral sound.

CAMBRIDGE 840A V2 2007 £750
Version 2 addresses version 1's weaknesses to turn in a mightily accomplished performance, offering power, finesse and detail.

SUGDEN IA4 2007 £3,650
Goodly amount of Class A power, clarity and a breathtakingly fast, musical sound make this one of the very best super-integrates.

NUFORCE P-9 2007 £2,200
Impressive two box preamp with superb resolution and an engaging sound.

MELODY PURE BLACK 101D 2007 £3,295
The clarity and openness of valves plus firm grip and fine detail make this a preamplifier masterpiece.

AUDIOLAB 8000S 2006 £400
In another life, this sold for three times the price, making it a stand-out bargain now. Very clean, powerful and tidy sound.

MCINTOSH MA6800 1995 £3735
Effortlessly sweet, strong and powerful with seminal styling to match.

DELTEC 1987 £1900
Fast, dry and with excellent transients, this first DPA integrated is the real deal for aighties obsessives. Ridiculously punchy 30W per channel from a tiny, half-size box. Radical, cool and more than a little strange.

EXPOSURE VII/VIII 1985 £625
Saminal pre-power, offering most of what Naim amps did with just that little bit extra smoothness. Lean, punchy and musical.



AUDIOLAB 8000A 1985 £495
Smooth integrated with clean MM/MC phono stage and huge feature count. Extremely reliable, too. Post '93 versions a top used buy.

VTL MINIMAL/50W MONOBLOCK 1985 £1,300
Rugged, professional build and finish allied to a lively and punchy sound (albeit with limited power) make them an excellent used buy.

MUSICAL FIDELITY A1 1985 £350
Beguiling Class A integrated with exquisite styling. Questionable reliability.

MISSION CYRUS 2 1984 £299
Classic 1980s minimalism combines arresting styling with clean, open, lively sound. Further upgradeable with PSX power supply.



NAIM NAIT 1984 £350
Superb rhythms and dynamics make it truly musical, but totally monochromatic. Fine phono stage, very low power.

CREEK CAS4040 1983 £150
More musical than any budget arm before it; CAS4140 loses tone controls, gains grip.

MYST TMA3 1983 £300
Madcap aight as minimalism, but a strong and tight performer all the same.

ROTEL RA-820BX 1983 £139
Lively and clean budget integrated that arguably started the move to minimalism.

NAD 3020 1979 £69
Brilliantly smooth, sweet and punchy at the price and even has a better phono stage than you'd expect. The archetypal budget super-amp.

ROGERS A75 1978 £220
Lots of sensible facilities, a goodly power output and nice sound in one box. The later A75II and A100 versions offered improved sonics and were seriously sweet.

A&R A60 1977 £115
Sweet and musical feature-packed integrated; the Audiolab 8000A remains a classic.



SUGDEN C51/P51 1976 £130
Soft sounding early Sugden combo with a plethora of facilities and filters. A sweet and endearing performer but lacking in power and poor load driving ability.

SUGDEN A21 1969 £ N/A
Class A transistor integrated with an eminently likeable smoothness and musicality. Limited inputs via DIN sockets.

ROGERS CADET III 1965 £34
Sweet sounding valve integrated, uses ECL86 output valves, even has a half useable phono stage, sweet, warm a good introduction to valves.

CHAPMAN 305 1960 £40
Smooth pre/power combo with a sweet and open sound. Not quite up to Leak/Quad standards but considerably cheaper secondhand.

POWER AMPLIFIERS

ELECTROCOMPANET NEMO 2009 £4,995 (EACH)
Norwegian power station as cool as a glacier tonally, yet impresses with sheer physicality and fleetness of foot. 600W per channel.

NUFORCE REFERENCE 9SE V2 2006 £1,750
Brilliant value for money monoblocks with massive power and super-clean, three dimensional sound.

QUAD II-80 2005 £6,000 PER PAIR
Quad's best ever power amplifier. Dramatic performer with silky but dark tonality, blistering dynamics, serious power and compellingly musical sound.



QUAD 909 2001 £900
Current-dumper has a smooth and expansive character with enough wallop to drive most loads. Not the most musical, but superb value all the same.

NAIM NAP 500 2000 £17,950
Flagship amplifier will drive just about any speaker with ease. Factor in the company's trademark pace, rhythm and timing and it all adds up to one effortlessly musical package.

MARANTZ MODEL 9 1997 £8000
Authentic reproduction monoblocks still more than cut the sonic mustard. Highly expensive and highly sought after.

MICHELL ALECTO 1997 £1989
Crisp, clean and beautifully controlled with gorgeous styling. Partnered with the £1650 Orca this sounds delicious!



MUSICAL FIDELITY XA200 1996 £1000
200W of sweet smooth transistor stomp in a grooved tube! Under-rated oddity.

PIONEER M-73 1988 £1,200
Monster stomp from this seminal Japanese power amplifier, complete with switchable Class A and Class B operation. Clean, open and assured sounding, albeit a tad behind the pace on high speed dance music. Rosewood side cheeks and black brushed aluminium completes the experience.

KRELL KMA100 II 1987 £5,750
Monoblock version of the giant KSA-100 is one of the seminal 80s transistor power amplifiers. Massive wallop allied to clean and open Class A sound makes this one of the best amplifiers of its type.

RADFORD STA25 RENAISSANCE 1986 £977
This reworking of Radford's original late sixties design was possessed of a wonderfully rich, old school valve sound with enough power (25W) and lots of subtlety.

QUAD 405 1978 £115
The first of the current dumpers is a capable design with smooth, effortless power and a decently musical sound. 606 and 707 continue the theme with greater detail and incision.

HH ELECTRONICS TPA-50D AMPLIFIERS 1973 £110
Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain.

LECSON AP1 1973 £ N/A
Madcap cylindrical styling alluded to its 'tower of power' pretensions, but it wasn't. Poor build, but decently clean sounding when working.

QUAD 303 1968 £55
Bullet proof build, but woolly sound. Off the pace, but endearing nonetheless. Some pipe smoking slipper wearers swear by them!

LEAK STEREO 20 1958 £31
Excellent workaday classic valve amplifier with decent power and drive. Surprisingly modern sounding if rebuilt sympathetically. Irrepressibly musical and fluid.



LEAK STEREO 60 1958 £N/A
Leak's biggest valve power amp offers 35 Watts per channel and more low end welly than the smaller Stereo 20. Despite concerns over reliability rarity value means high price.

QUAD II 1952 £22
The all-time classic valve amplifier, with a deliciously fluid and lyrical voice. In other respects though, it sounds hopelessly dated. Low power and hard to partner properly.



LEAK POINT ONE, TL10, TL12.1, TL/12 PLUS 1949 £28
Early classics that are getting expensive. Overhauling is de rigueur before use, using original parts if possible. Surprisingly crisp and musical. Deeply impressive in fine fettle.

PRE AMPLIFIERS

AUDIOLAB 8000C 1991 £499
Tonally grey but fine phono input and great facilities make it an excellent general purpose tool.



CROFT MICRO 1986 £150
Budget valve pre-amp with exceptionally transparent performance.

CONRAD JOHNSON MOTIV MC-8 1986 £2,500
Minimalist FET-based preamplifier is brilliantly neutral and smooth with a spry, light balance in the mould of Sugden. Something of a curio, but worthwhile nonetheless.

AUDIO RESEARCH SP-8 1982 £1,400
Beautifully designed and built high end tube pre-amplifier with deliciously sweet and smooth sound. Not the last word in incision or grip.

LINN LK-1 1986 £499
A brave attempt to bring remote controlled user-friendliness to hair-shirt audiophile hi-fi. Didn't quite work, but not bad for under £100.

NAIM NAC 32.5 1978 £ N/A
Classic high end pre. Brilliantly fast and incisive sound that's a joy with vinyl! but a tad forward for digital.

LECSON AC-1 1973 £ N/A
Amazing styling courtesy of Allan Boothroyd can't disguise its rather cloudy sound, but a design classic nonetheless.

QUAD 33 1968 £43
Better than the 22, but Quad's first tranny pre isn't outstanding. Responds well to tweaking/ rebuilding though.



LEAK POINT ONE STEREO 1958 £ N/A
Good for their time, but way off the pace these days. Use of EF86 pentode valve for high gain rules out ultra performance. Not the highest-fi!

QUAD 22 1958 £25
The partner to the much vaunted Quad II monoblocks - cloudy and vague sound means it's for anacrophiles only.

LOUDSPEAKERS

WHARFEDALE DIAMOND 10.3 2010 £290
Great small standmounters for audiophiles on a budget; dry punchy sound with impressive sound-staging at the price.



YAMAHA SOAVO 1.1 2009 £3,000
Musical, transparent with impressive dynamics and cohesion. Excellent build and finish.

USHER BE-10 2009 £10,500
Clever high end moving coil design with immense speed and dizzying clarity allied to epic punch. Needs the best ancillaries to fly, though...



SPENDOR A5 2009 £1,695
Multi-talented floorstanders with generous scale and punch and Spendor's classic mid-range detail. Deliver a sound that thoroughly engages whatever you care to play

MONITOR AUDIO PL100 2008 £2,300
The flagship 'Platinum' series standmounter has a lovely warm and delicate sound with superlative treble.



MARTIN LOGAN SOURCE 2008 £1,600
Brilliant entry level electrostatics, giving a taste of loudspeaker esoterica for the price of most moving coil boxes. Tremendous clarity, evenness and delicacy, although not the world's most powerful sound.

PMC OB11 2008 £2,950
Cleverly updated floorstanders give scale and solidity in slim and well finished package

ISOPHON GALILEO 2007 £2,100
Big standmounters that really grip the music and offer quite startling dynamics and grip

ONE THING AUDIO ESL57 2007 £1,450
One Thing Audio's modifications keep the good old ESL57 at the very top of the game.

MOWGAN AUDIO MABON 2007 £3,995
Massively capable loudspeakers that offer dynamics, scale and clarity in an elegantly simple package. Wide range of finishes, too.

B&W 686 2007 £299
Baby standmounters offer a sophisticated and mature performance that belies both their dimensions and price tag.

B&O BEOLAB 9 2007 £5,000
Technically impressive and visually striking loudspeakers with sound quality that more than matches their looks



ISOPHON CASSIANO 2007 £12,900
Drive units featuring exotic materials allied to superlative build quality result in an immensely capable loudspeaker. Not an easy load to drive, however.

QUAD ESL-2905 2006 £5,995
The old 989 with all the bugs taken out, this gives a brilliantly neutral and open sound like only a top electrostatic can; still not a natural rock loudspeaker, though.

B&W 801D 2006 £10,500
In many respects, the ultimate studio monitor; dazzling clarity and speed with commanding scale and dynamics



REVOLVER CYGNIS 2006 £5,999
Revolver pull out all the stops and show what they can do with this magnificent flagship loudspeaker. A superb monitor that is like a mini B&W 801D in many ways.

USHER BE-718 2007 £1,600
Beryllium tweeters work superbly, allied to a fast and punchy bass driver. The result is subtle, smooth and emotive.

USHER S-520 2006 £350
Astonishingly capable budget standmounters that offer detail and dynamics well beyond their price and dimensions

ACOUSTIC ENERGY AE1 CLASSIC 2006 £845
Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made



MISSION X-SPACE 1999 £499
The first mass production sub and sat system using NXT panels is a sure-fire future classic - not flawless, but a tantalisingly unboxy sound nevertheless!

MISSION 752 1995 £495
Cracking Henry Azima-designed floorstanders combined HDA drive units and metal dome tweeters with surprisingly warm results. Benign load characteristics makes them great for valves

TANNOY WESTMINSTER 1985 £4500
Folded horn monsters which sound good if you have the space. Not the last word in tautness but can drive large rooms and image like few others.



CELESTION SL6 1984 £350
Smallest two way design complete with aluminium dome tweeter and plastic mid-bass unit set the blueprint for nineteen eighties loudspeakers. Very open and clean sounding, albeit course at high frequencies and limp in the bass. Speakers would never be the same again...

HEYBROOK HB1 1982 £130
Peter Comeau-designed standmounters with an amazingly lyrical yet decently refined sound. Good enough to partner with very high end ancillaries, yet great with budget kit too. A classic



QUAD ESL63 1980 £1200
An update of the ESL57, with stiffer cabinets. Until the 989, the best of the Quad electrostatics.

MISSION 770 1980 £375
Back in its day, it was an innovative product and one of the first of the polypropylene designs. Warm, smooth, clean and powerful sound,

ACOUSTIC RESEARCH AR18S 1978 £125
Yank designed, British built loudspeaker became a budget staple for many rock fans, thanks to the great speed from the paper drivers, although finesse was most definitely not their forte...

YAMAHA NS1000 1977 £532
High tech Beryllium midband and tweeter domes and brutish 12" woofers in massive sealed mirror image cabs equals stunning transients, speed and wallop allied to superb transparency and ultra low distortion. Partner carefully!

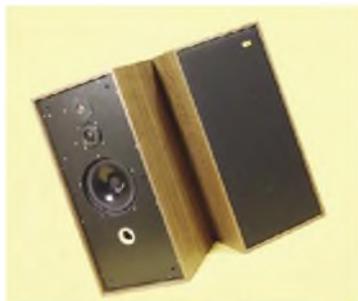


JR 149 1977 £120
Cylindrical speaker was ignored for decades but now back in fashion! Based on classic KEF T27/B110 combo as seen in the BBC LS3/5a. Doesn't play loud, needs a powerful transistor amplifier, but has clarity and imaging.

KEF R105 1977 £785
Three way Bextrene-based floorstander gave a truly wideband listen and massive (500W) power handling. A very neutral, spacious and polite sounding design, but rhythmically well off the pace.

IMF TLS80 1976 £550
Warm and powerful 1970s behemoth with transmission loading and a mixture of KEF and Celestion drive units. Impressively physical wideband sound but rhythms not a forte.

SPENDOR BC1 1976 £240
Celestion HF1300 tweeter meets bespoke Spendor Bextrene mid-bass unit. The result is a beautifully warm yet focussed sound. A little bass bloom necessitates careful low-stand mounting.



HH ELECTRONICS TPA-50D AMPLIFIERS 1973 £110
Simple design with easily available components, solid build quality and fine sound make for a surprisingly overlooked bargain. Not exactly stylish, however.

BBC LS3/5A 1972 £88
Extremely low colouration design is amazing in some respects – articulation, stage depth, clarity – and useless in others (both frequency extremes). Came in wide variety of guises from various manufacturers building it under licence.

LEAK SANDWICH 1961 £39 EACH
Warm sounding infinite baffle that, with a reasonably powerful amplifier can sound quite satisfying.

QUAD ESL57 1956 £45 EACH
Wonderfully open and neutral sound puts box loudspeakers to shame. Properly serviced they give superb midband performance, although frequency extremes less impressive. Ideally, use in stacked pairs or with subwoofers and supertweeters.

SYSTEMS

MERIDIAN SOOLOOS 2.1 2010 £6,990
Crisp styling, bright, colourful touchscreen, plus excellent search facilities. This is one hard disk music system with a difference. Best partnered to Meridian active loudspeakers.



NAIM UNITIQUE 2010 £995
Great little half width one-box system with truly impressive sound allied to a wealth of source options.

ARCAM SOLO MINI 2008 £650
Half the size and two-thirds the price of a full-sized Solo, the Mini gives very little away in terms of performance to its bigger brother.

MERIDIAN F80 2007 £1,500
Fantastically built and versatile DVD/CD/DAB/FM/AM unit, designed in conjunction with Ferrari. Ignore nay-sayers who sneer that it isn't a 'proper' hi-fi product. Just listen.

MARANTZ 'LEGEND' 2007 £22,000
The combination of SA-7S1 disc player, SC-7S2 preamp and MA-9S2 monoblocks delivers jaw-dropping performance.

SHANLING MC-30 2007 £650
Quite possibly the cutest all-in-one around with fine performance from the CD player, tuner and MP3 player input. Very low power, though.



AURA NOTE PREMIER 2007 £1,500
Lovely shiny CD/tuner/amplifier with fine sound quality and dynamic abilities.



ARCAM SOLO NEO 2006 £1,100
Excellent all-in-one system, with a warm, smooth and balanced sound to match the features and style.

PEACHTREE AUDIO IDECCO £1,000
Excellent sounding iPod dock, impressive DAC and fine amplifier section make this an excellent one box style system.



TUNERS

ARCAM FMJ T32 2009 £600
Excellent hybrid FM/DAB+ tuner with a smooth, engaging sound. Factor in its fine build and it's a super value package.



MAGNUM DYNALAB MD-100T 2006 £1,895
One of the best ways to hear FM that we know; superbly open and musical sound in a quirky but characterful package.

MYRYAD MXT4000 2005 £1,000
Sumptuous sound and top-notch build quality make for a tempting AM/FM package. Warm and richly detailed on good-quality music broadcasts.

NAIM NAT03 1993 £595
The warm, atmospheric sound is further proof of Naim's proficiency with tuners.

CREEK CAS3140 1985 £199
Excellent detail, separation and dynamics - brilliantly musical at the price. T40 continued the theme...

QUAD FM4 1983 £240
Supreme ergonomics allied to a pleasingly lyrical sound with plenty of sweetness and detail made this one of the best tuners around upon its launch.



NAD 4040 1979 £79
Tremendously smooth and natural sound allied to low prices and good availability make this budget analogue esoterica.

MARANTZ ST-8 1978 £353
Marantz's finest radio moment. Warm, organic sound plus an oscilloscope for checking the signal strength and multipath.

YAMAHA CT7000 1977 £444
Combines sleek ergonomics, high sensitivity and an explicit, detailed sound.

SONY ST-5950 1977 £222
One of the first Dolby FM-equipped tuners, a format that came to nought. Still, it was Sony's most expensive tuner to date, and boasted good sound quality with brilliant ergonomics.



ROGERS T75 1977 £125
Superb mid-price British audiophile design, complete with understated black fascia. Smooth and sweet with fine dimensionality.

SANSUI TU-9900 1976 £300
A flagship Japanese tuner. It boasts superlative RF performance and an extremely smooth and lucid sound.



TECHNICS ST-8080 1976 £180
Superb FM stage makes for a clean and smooth listen.

REVOX B760 1975 £520
The Revox offers superlative measured performance although the sound isn't quite as staggering as the numbers. Fine nonetheless, and surely the most durable tuner here?



SEQUERRA MODEL 1 1973 £1300
Possibly the ultimate FM tuner. Massive in terms of technology, size and features dedicated to extracting every ounce of performance from radio, including impressive multi-purpose oscilloscope display.

LEAK TROUGHLINE 1956 £25
Series I an interesting ornament but limited to 88-100MHz only. II and III are arguably the best-sounding tuners ever. Adaptation for stereo easy via phono multiplex socket. Deliciously lucid with true dimensionality.

HEADPHONE AMPLIFIERS

GRAHAM SLEE NOVO 2009 £255
Dynamic headphone amplifier with a great sense of timing. Crisp, clear treble and warm midrange gives an involving sound.



MUSICAL FIDELITY X-CAN V8 2008 £350
Open and explicitly detailed sound plus serious bass wallop. A great partner for most mid-to-high end headphones.

CD PLAYER/RECORDERS

MUSICAL FIDELITY TRIVISTA 2002 £4000
When playing SACDs, the sweetest, most lucid and lyrical digital disc spinner we've heard. Old school stereo, pure DSD design. CD sound is up in the £1000 class, too! Future classic.

MARANTZ SA-1 2000 £5,000
The greatest argument for SACD. This sublime Ken Ishiwata design is utterly musically convincing with both CD and SACD, beating most audiophile CD spinners hands down.



SONY MDS-JE555ES 2000 £900
The best sounding MD deck ever, thanks to awesome build and heroic ATRAC-DSP Type R coding.

PIONEER PDR-555RW 1999 £480
For a moment, this was the CD recorder to have. Clean and detailed.

MARANTZ DR-17 1999 £1100
Probably the best sounding CD recorder made: built like a brick with a true audiophile sound and HDCD compatibility.



CAMBRIDGE AUDIO CD4SE 1998 £200
A touch soft in the treble and tonally light, but outstanding in every other respect.

SONY TCD-8 DATMAN 1996 £599
Super clean sound makes this an amazing portable, but fragile.

LINN KARIK III 1995 £1775
The final Karik was a gem. Superb transport gives a brilliantly tight, grippy dynamic sound, albeit tonally dry.

NAIM CDS 1990 £ N/A
Classic Philips 16x4 chipset with serious attention to power supplies equals grin-inducing sonics.

TECHNICS SL-P1200 1987 £800
CD version of the Technics SL-1200 turntable. Massively built to withstand the rigours of 'pro' use and laden with facilities - a great sightless icon.

SONY CDP-R1/DAS-R1 1987 £3,000
Sony's first two-boxer was right first time. Tonally lean, but probably the most detailed and architectural sounding machine of the eighties.

MARANTZ CD73 1983 £700
A riot of gold brushed aluminium and LEDs, this distinctive machine squeezed every last ounce from its 14x4 DAC - super musical.



MERIDIAN 207 1988 £995
Beautifully-built two-box with pre-amp stage. Very musical although not as refined as modern Bitstream gear. No digital output.

CAMBRIDGE AUDIO CD1 1986 £1500
Inspired Stan Curtis redesign of Philips CD104, complete with switchable digital filter. Lean but tight and musical performer.



MERIDIAN MCD 1984 £600
The first British 'audiophile' machine was a sweeter, more detailed Philips CD100. 14x4 never sounded so good, until the MCD Pro arrived a year later.

SONY CDP-701ES 1984 £890
Sony's first bespoke audiophile machine used a 16x2 DAC to provide a clinically incisive sound; supreme build quality allied to the pure unadulterated luxury of a paperback-sized remote control.

YAMAHA CD-X1 1983 £340
Nicely built 16x2 machine with a very sharp and detailed sound; sometimes too much so. Excellent ergonomics, unlike almost every other rival of the time.

SONY CDP-101 1982 £800
The first Japanese CD spinner was powerful and involving. Brilliant transport more than compensated for 16x2 DAC, and you even got remote control!



ANALOGUE RECORDERS

AIWA XD-009 1989 £600
Aiwa's Nak beater didn't, but it wasn't half bad nonetheless. Massive spec even included a 16x4 DAC!

NAKAMICHI CR-7E 1987 £800
The very best sounding Nakamichi ever - but lacks the visual drama of a Dragon.



SONY WM-D6C 1985 £290
Single capstan transport on a par with a Swiss watch, single rec/replay head better than most Naks. Result, sublime.

PIONEER CTF-950 1978 £400
Not up to modern standards sonically, but a great symbol of the cassette deck art nonetheless.

YAMAHA TC-800GL 1977 £179
Early classic with ski-slope styling. Middling sonics by modern standards, but cool nonetheless!

SONY TC-377 1972 £N/A
A competitor to the Akai 40000 open reel machine, the Sony offered better sound quality and is still no slouch by modern standards.

REVOX A77 1968 £145
The first domestic open reel that the pros used at home. Superbly made, but sonically off the pace these days.

COMPACT DISC TRANSPORTS

ESOTERIC PD 1997 £8,000
The best CD drive bar none. Brilliantly incisive, ridiculously over-engineered.

TEAC VRDS-T1 1994 £600
Warm and expansive sound made this a mid-price hit. Well-built, with a slick mean.

KENWOOD 9010 1986 £600
The first discrete Jap transport was beautifully done and responds well to re-clocking.

DACs

DCS ELGAR 1997 £8500
Extremely open and natural performer, albeit extremely pricey - superb.

DPA LITTLE BIT 3 1996 £299
Rich, clean, rhythmic and punchy sound transforms budget CD players.

CAMBRIDGE AUDIO DAC MAGIC

1995 £99
Good value upgrade for budget CD players with extensive facilities and detailed sonics.

PINK TRIANGLE DACAPO 1993 £ N/A
Exquisite; the warmest and most lyrical 16bit digital audio we have ever heard.

QED DIGIT 1991 £90
Budget bitstream performer with tweaks aplenty. Positron PSU upgrade makes it smooth, but now past it.

CABLES

MISSING LINK CRYO REFERENCE 2008 £495/0.5M
High end interconnects, with deliciously smooth, open and subtle sound without a hint of edge.

TECHLINK WIRES XS 2007 £20
Highly accomplished interconnects at an absurdly low price. Stunning value for money.

VDH ULTIMATE THE FIRST 2004 £250
Carbon interconnects that help you forget the electronics and concentrate on the music. Miraculous transparency. Tight and tuneful bass mixed with air and space.



WIREWORLD OASIS 5 2003 £99/M
Excellent mid-price design with a very neutral, silky and self-effacing sound. Superb value for money.

TCI CONSTRUCTOR 13A-6 BLOCK

2003 £120
Top quality 'affordable' mains out at block, with fine build and good sonics. Well worth the extra over standard high street specials, which sound coarse and two-dimensional by comparison.

Meet our new NAITs – with added love for vinyl



The third generation of the legendary Naim Audio NAIT integrated amplifiers is here, building on the success of its predecessors with extensive upgrades, all in service of the music.

As well as a significant step up in performance, the **NAIT XS 3** and **SUPERNAIT 3** both now offer built-in phono stages – making them perfect partners for turntables, as well as for streamers,

CD players, or just about any other music source you want to enjoy with the signature Naim sound.

Each component within the amplifiers has been scrutinised to identify and implement areas of improvement, from optimising transistors to doubling the speed of the voltage gain stage.

The result? The best-sounding integrated

amps Naim has ever produced, delivering greater pace and intimacy, whether they are driving a pair of speakers or headphones.

Handmade here in England, **SUPERNAIT 3** and **NAIT XS 3** are ready to power your favourite music – whatever format it is on – at specialist Naim retailers worldwide.

naimaudio.com

Seven Heaven

Spendor Audio has updated its popular D Line series. Jon Myles listens in and comes away impressed.



Loudspeaker manufacturer Spendor take a reassuringly measured approach to launching new products. They are not one of those companies that rushes products to the market as soon as possible simply to boost sales.

Hence the new D Line floorstanders – the flagship D9.2 and the smaller £4500 D7.2 on review here – have been more than two years in development.

Talking to head man Philip Swift he explained this was mainly due to the upgraded mid-range driver which uses a revised polymer to better integrate with the proprietary tweeter and main bass cone.

That tweeter is the same as in the original D7 – built around a stainless steel front plate that forms a damped acoustic chamber in front of a lightweight woven polyamide diaphragm. This creates a balanced pressure environment to enable the high frequency unit to always operate in a linear mode.

The bass driver is a Kevlar composite assembly augmented at the rear by a slotted port to help boost low frequency response (more of which later). There's also a single pair of high-quality 'speaker binding posts above (so bi-wiring is not on the agenda).

As ever with Spendor construction of the D7.2s is top-notch – the company now has its own cabinet building facility based in the Yorkshire city of Sheffield – and a range of finishes are available including black ash, dark walnut, cherry, natural oak and the now, almost obligatory, satin white.

Another nice feature are the magnetically attached grilles – meaning there are no unsightly holes on view if you choose to leave them off, as I always do for reviews.

Size-wise the D7.2 measures 980mm x 192mm x 333mm (H/W/D) and sensitivity is quoted at 90dB (see our Measured Performance for the authoritative figures) meaning they will easily go loud on the end of even low-powered valve amplifiers.

SOUND QUALITY

I've always had a soft-spot for Spendor loudspeakers. They tend to have an effortless, easy-

X1

Pro-Ject
AUDIO SYSTEMS

THE NEXT GENERATION OF AUDIOPHILE TURNTABLES

In 1991, Pro-Ject Audio Systems started a revolution in the Hi-Fi world with the introduction of the Pro-Ject 1 turntable. A new high-end, low budget turntable at a time when CD was king. Against all odds, we were creating interest in analogue audio at a time when others were turning their backs.

Flash-forward to the present day, with the introduction of our all-new X1 which reimagines the classic turntable design and elevates the sound performance to new heights. You will find no plastic here, only high-end, durable materials that boast an audiophile sonic performance at a fantastic price.

The X1 is available in three finishes to suit any home décor; a premium walnut wood veneer or luxurious black or white eight-layer gloss paint.



Electronic speed control
for 33, 45 and 78 RPM

8.6" carbon/aluminium
sandwich tonearm



Pick-IT S2 MM cartridge
designed by Ortofon

Belt-driven acrylic
platter supplied





The rear port features an aerodynamically designed central baffle to smooth airflow and augment low frequency response in a controlled way.

going nature yet don't lack for detail or drive when required.

These new D7.2s are no exception. That new mid-range unit is a significant upgrade from the original D7 and integrates seamlessly with the bass and tweeter so you never get the impression you are listening to three separate drivers.

Connected to a range of amplifiers, from a powerful Creek Audio Evolution 100A transistor to

an Icon Audio Stereo 30 SE single-ended valve model in triode mode, they had the ability to go loud without any strain.

So with The Clash's 'London Calling' Paul Simonon's bass flooded the room as it descended down the scales, but it was always tuneful, devoid of that one-note thump that some floorstanders suffer. Topper Headon's metronome-like drumming was also spot-on, driving the track along with pace and precision.

Switching to Estonian composer Arvo Pärt's much gentler 'Tabula Rasa' the quality of the piano playing was exceptionally lifelike. This is one of the harder instruments for any loudspeaker to reproduce but here if I closed my eyes it was as though the pianist was right there in front of me.

The twin violins were also well delineated, both having a lush, smooth sound while never sounding edgy – a problem of metal cones. This piece – while relatively simple – demands close listening to get its full effect and leaning forward the decay of the notes was beautifully rendered.

James Blake's 'Limit To Your Love' revealed just how well the rear port works. It is a floor-firing aperture with an aero-dynamic central baffle to smooth the airflow. One advantage is that the D7.2s can be used within sight of a rear wall without any problem.

So on the Blake track I could

hear rumbling sub-sonics. Admittedly, the absolute lower octaves were not there (you'll need 'speakers with 12" drivers to get that), but overall I never got the feeling that anything was missing in the presentation.

In terms of showroom appeal there's no getting away from the fact that on an initial listen other loudspeakers might sound rather more exciting. But watch out – that initial excitement can easily pale over extended listening. These Spondors, on the other hand, have a sophistication and smoothness that invites you back. In fact they are just the sort of loudspeakers I could live with for years while upgrading other elements in the system. And that is true value for money.



CONCLUSION

Beautifully-made, relatively compact yet having a sound that boasts extended treble and a smooth mid-band allied to some real punch in the bass department. There's a room-filling sound on offer and they are not too fussy about positioning. As floorstanders go in this price range there's little to touch them. Listen in and enjoy.

A new damped polymer mid-range driver allied to Spondor's proprietary tweeter, plus a potent bass driver, deliver smooth and detailed sound.

MEASURED PERFORMANCE

The updated Spondor D7, to D7.2 form, was even in output from 40Hz up to 20kHz our third-octave analysis of pink noise shows. This is similar to the original D7 reviewed in our July 2014 issue, if with slightly better treble extension and a little less bass lift to give a drier and more controlled sound in a medium sized (17ft long approx) room. The small amount of lift in our analysis is grille off; grille on shaves this to flatness.

As before the D7.2 is still "academically flat" with strong upper midband output that will throw out detail but also be revealing of poor source material – a critical but accurate loudspeaker.

Also as before, and to quote: "the low frequency drive unit is loaded by an interesting floor port with a wide mouth area and an internal flow regulator. Tapered ports are in truth horns, matching the internal air load to that of the room, albeit imperfectly. All the same, a broad mouth and tapered profile does a better job than a simple tube and measurement showed the benefits of Spondor's port".

This remains the case in the D7.2 where the red trace shows broad port output and commensurately broad damping of the bass unit. Port output reaches down to 20Hz so the D7.2 goes very low and will produce subsonics in a large room. The impedance curve confirms the extent of bass damping, being flat and resistive except for a narrow residual and reactive peak containing little energy. All this suggests bass control will be excellent, but this does not look like a bass heavy or boomy design. It will however "play a bass tune" properly.

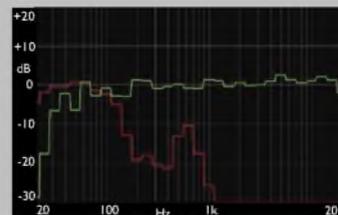
The D7.2 produced a good 88dB sound pressure level from one nominal Watt (2.8V) of input, so it goes loud with little power and needs amplifiers of around 50 Watts or more for high volume. It is a relatively easy load for an amplifier, measuring 6.6 Ohms impedance overall, but has a 4 Ohm bass unit.

The new Spondor D7.2 retains the original's accuracy and loses 2dB sensitivity – likely through less

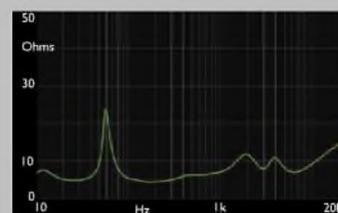
emphasised bass to give a more controlled sound in real rooms, counteracting room boom. This is a deeply controlled and honed design in measurement terms. **NK**

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



SPENDOR D7.2

£4500



OUTSTANDING - amongst the best.

VERDICT

A revised mid-range unit elevates the new D7.2 above its predecessor. If you are looking for a floorstander with punch yet a smooth and refined nature then they should be on the top of your wish list.

FOR

- smooth sound
- detail
- build quality
- low-end punch
- ease of placement

AGAINST

- nothing at the price

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70th Anniversary

**2-Channel Vacuum
Tube Amplifier
McIntosh MC2152**

JUST LAUNCHED

**2-Channel Vacuum
Tube Preamplifier
McIntosh C70**



- Commemorative system marked with matching serial numbers
- 150 watts x 2 channels
- (8) KT88, (4) 12AX7A and (4) 12AT7 vacuum tubes

- (5) 12AX7A and (1) 12AT7 vacuum tubes
- MM & MC phono inputs
- All analog design and a retro look
- Standard editions also available

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Warranty



Includes McIntosh History Book that contains a certificate of authentication

**Belt Drive Turntable
McIntosh MT10**

- Illuminated speed meter
- Inc. moving coil cartridge
- Includes dust cover

£ 13,700

36 Months
Warranty



McIntosh

AVAILABLE TO ORDER

**Stereo Integrated Amplifier
McIntosh MA252**

- 160 watts per channel
- Hybrid design: vacuum tube preamp and solid state power amp

£ 4,500

36 Months
Warranty



McIntosh

ON DEMO

**Stereo Vacuum Tube Amplifier
McIntosh MC275 MK VI**

- 75 watts per channel @ 2, 4 or 8 Ω
- Vacuum tube design
- Legendary design now in Mark VI form
- Bridgeable to 150 watt monoblock

£ 7,100

36 Months
Warranty



McIntosh

ON DEMO

**Stereo Integrated Amplifier
McIntosh MA9000**

- 300 watts per channel
- 8-band tone control
- DA1 digital audio module
- MA7200 also available

£ 12,995

36 Months
Warranty



McIntosh

ON DEMO

**Monoblock Solid State Amplifier
McIntosh MC611**

- 600 watt quad balanced
- Monogrammed heatsink
- 2, 4 and 8 Ω outputs
- 55% increase in dynamic headroom compared to previous model

£ 19,995 /pair

36 Months
Warranty



McIntosh

ON DEMO

**2-Channel Solid State Amplifier
McIntosh MC312**

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- 27% increase in dynamic headroom compared to previous model
- McIntosh Autoformers™

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36 Months
Warranty

JUST LAUNCHED



McIntosh

ON DEMO

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McIntosh MC2301**

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- Sentry Monitor short-circuit protection

£ 29,800 /pair

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- Reference headphone & phono stage
- Includes remote control
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Technics Direct Drive Turntable SL-1000R / SP-10R

- Coreless direct drive
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ON DEMO

SME Turntable Model 20/3 + Series V Arm

- Gold detailing
- Probably the best belt drive turntable in the world at this price point



£15,450

24 Months Warranty



JUST LAUNCHED

ON DEMO

SME Turntable Synergy + Series IV Arm

- Built-in NAGRA phono stage
- Ortofon's 'exclusive series' MC Windfeld Ti cartridge
- Internal crystal cables



£14,950

24 Months Warranty



ON DEMO

JUST LAUNCHED

SME Turntable Model 10 Ltd Black

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24 Months Warranty



ON DEMO

JBL Passive Loudspeakers L100 Classic



- Classic 70s look
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£3,995 /pair

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ON DEMO

Avantgarde Speakers UNO XD

- 2-way horns system speakers
- 18 Ohm high-impedance voice coil design, efficiency of 107 dB
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£24,000 /pair

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ON DEMO

Avantgarde Speakers DUO XD

- 2-way horns system speakers
- Powerful SUB231 XD subwoofer module
- Various colour combinations available
- Why not book an in-store demo today?



£31,000 /pair

36 Months Warranty



ON DEMO

Gold Note Belt Drive Turntable Pianosa

- Extra rigid & dampened
- High precision platter
- Available in black, white or walnut



£2,227

24 Months Warranty



ON DEMO

SME Tonearms Series 309

Series 309



£2,450

Series IV

£3,550

Series V

£5,200

Series V-12

£7,550



ON DEMO

Audio-Technica Tonearm Lifter AT-6006R

- Automatically lifts tonearm before runout extending the life of your stylus
- Universal, works with any turntable



£112

24 Months Warranty



ON DEMO

Audio-Technica Cartridges AT-ART1000

- Moving Coil
- Special line contact stylus

Available in-store only



£4,450

24 Months Warranty



ON DEMO

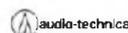
Audio-Technica Cartridges AT-ART9

- Flagship magnetic core MC type cartridge
- 15 Hz – 50kHz
- Special line contact stylus



£899

24 Months Warranty



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- 2 separate inputs
- 6 EQ curves
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- For use with MM & MC cartridges

- Worldwide voltage
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PH-10 & PSU-10 also available in silver

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24 Months Warranty

£864

ON DEMO

Shelter Cartridges Model 9000

- Moving coil
- Elliptical stylus



£2,950

12 Months Warranty



ON DEMO

Audio Technica Headphones ATH-ANC100BT

- Wireless In-ear Noise-Cancelling



£89

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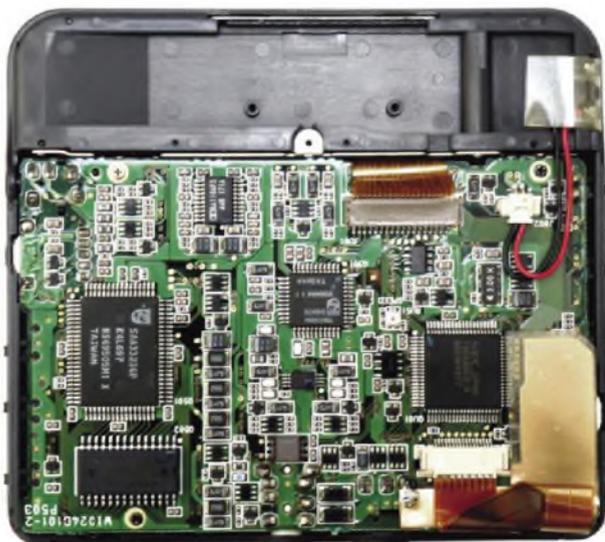
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A compact tale

Martin Pipe takes a close look at Philips DCC digital cassette system, using a DCC170 he picked up cheap.



Here are my DCC170's internal circuit boards. The main one contains most of the circuitry, including the ADC/DAC, analogue-playback Dolby B decoder and 'jungle' chips designed specifically for DCC signal processing.

The success of the analogue 'Compact Cassette' format, which debuted in 1962, probably took even inventor Philips by surprise. Originally intended for portable note-taking and dictation purposes, the cassette was designed for ease of use and portability rather than the ultimate in fidelity. That said, pre-recorded 'musicassettes' first appeared in the mid-1960s, albeit in mono form. Stereo ones followed, but their sound quality didn't challenge the vinyl record or the then-dominant reel-to-reel format. Convenience was what counted.

Cassettes began to outsell vinyl records – a phenomenon that was helped by the 1979 launch of the Sony Walkman personal player – and, for all but professional users and the most serious of audiophiles, reel-to-reel was dead. Cassettes were

m&rw

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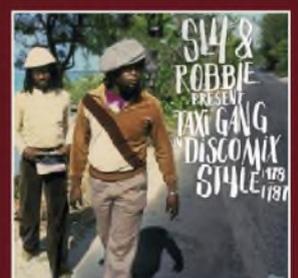
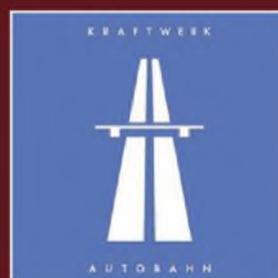
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If you take apart a DCC170 in order to replace its drive belt – an involved task that should be avoided by the faint-hearted, not least because a soldering iron is involved! – this is what you’ll see. The whole shooting-match is controlled by the motor and solenoids, all of which are under the control of the DCC170’s microprocessor. The ribbon cables go to the head assembly.

everywhere – they stored computer data, took telephone messages in your absence, kept motorists in the groove, logged police interviews and much else besides.

In the early 1980s, Philips – in conjunction with Sony – launched CD. Digital audio replay had arrived in the home. But could you record digitally in the home? Not easily. Digital Audio Tape (DAT) proved too expensive for all but the most serious of home users. Something radically-new was required.

Sony brought us the Minidisc. Philips’ approach was to bring its cassette into the digital era. Both Minidisc and DCC used a clever new technique – lossy compression – to pare down data rates. Doing so ensured that audio recording on digital storage media of comparatively-limited capacity could become a reality.

Lossy compression, like the MP3 ‘codec’ essentially worked by discarding quiet sounds that were masked by louder ones. Sony, Philips and research institutes both academic and commercial were working to exploit this psycho-acoustic

phenomenon, which could reduce data rates to a tenth of the original with no apparent ill-effect. Both Sony and Philips went to a lot of trouble to ensure that most couldn’t tell the difference from uncompressed PCM sources, relying on listening panels amongst other things.

Sony was to licence Minidisc to quite a few manufacturers. Only a few signed up to DCC – Philips aside, we had Marantz (then a Philips subsidiary, funnily enough) and Panasonic/Technics (Matsushita). Grundig and Radio Shack/Tandy sold ‘badged’ DCC decks made by Philips.

Blank DCC media for recording purposes – from brands like BASF, Philips and Memorex – were of the same size and shape as conventional analogue cassettes. However, personals for playback only were



Here’s a DCC cassette. You don’t ‘flip it over’, all DCC hardware being auto-reverse as standard. The metal shutter, which protects the tape from dust, means it can be inserted only one way around.

also on the DCC roadmap, the very first being a unit in the spirit of the Sony Walkman. The Matsushita-built DCC130 (circa 1992) could, like the home decks, play analogue and digital cassettes whilst travelling. What was needed, though, was a personal recorder – and that’s where the DCC170 comes in, the product I am focussing on here.

Arriving in the mid-1990s, this compact and elegant machine was capable of recording from 3.5mm optical digital inputs and outputs, as well as analogue connections. There was even a microphone input for field recordings.

I can imagine that a fair few ‘bootlegs’ were captured with the DCC170, which could easily be hidden. It also helped that the machine will run continuously for up to three hours from its (replaceable) internal battery. Contributing to the



Philips has managed to cram connectors and switches onto just about every surface! The left side has controls for auto-reverse mode, Dolby B for analogue cassettes and the bass-boost function that was at the time apparently obligatory on all Walkman-type devices. Here too is the volume thumbwheel, and a headphone socket that also accepts an inline remote ‘dongle’ (an essential accessory for bootleggers!).



exposure



exposure

Exposure Electronics Limited

Unit 18, Winston Business Centre, 43 Chartwell Road
Lancing, West Sussex, BN15 8TU, United Kingdom

www.exposurehifi.com

small size was integration of much of the circuitry into a handful of surface-mounted chips.

Another factor is undoubtedly the economical mechanism of the DCC170, which was made in Matsushita's Japanese factory. It's closer to that of a Walkman than the VCR-style transports of previous digital recorders. Two capstans – one for each tape side, an adjacent pinch-roller being engaged as appropriate – are belt-driven from a substantial motor. This belt is tiny and thin; other than the rechargeable battery, it's the item most likely to fail in a DCC170. Thankfully, replacements are available online should you pick one up second-hand.

Coming into contact with the tape is a delicate head assembly of highly-advanced design by early 1990s standards. Its thin-film magnetoresistive technology was derived from computer tape drives and instrumentation recorders. The DCC170 head simultaneously-scans both sides (18 tracks; 9 per side) with 18 read heads and a further four magnetoresistive elements for analogue playback. A complex head helped to simplify the mechanics, electronic switching and a 'reverse' of tape travel being used to select cassette side. You were warned not to apply a demagnetiser, of the sort sold for analogue recorders, to these heads. Doing so would ruin them!

As one of the last DCC products the DCC170 makes use of 18-bit bitstream conversion in both the analogue-to-digital and digital-to-analogue modes. These converters are in a single chip, the TDA1309H. In 'legacy' playback mode the signals from the analogue heads are passed, via a preamp and Dolby B chip, to the ADC. As a result, it's available on the



Looking into the jaws of the DCC170 mechanism, showing how a DCC cassette is loaded. Obscured are the magnetoresistive head assembly and pinch-rollers, although the capstan drive shafts can be seen. In front, the battery compartment; the DCC170 runs for up to three hours from a 720mAh rechargeable NiCd battery – visible. The 4.8 Volt battery can be removed and replaced if necessary.

optical digital output in 44.1kHz/16-bit digital form – useful if you want to 'digitise' cassettes. All DCC machines offered this very useful feature. Analogue recordings are sampled at CD's 44.1kHz; however, the DCC170 also natively-supports recording at 32kHz and 48kHz sampling rates from digital sources.

Sound quality of the DCC170 impresses even today, headphone listening revealing a surprisingly-open and detailed character with a range

of music. Playback of analogue tape also benefits from a decent frequency response, thanks to Philips MR heads. However, speed instability gives the game away; piano notes and sustained synth chords can be heard to waver. The belt-driven flywheels behind each of the DCC170's capstans, the job of which is to 'iron out' such irregularities, are much smaller than the ones you'll find in home decks. Being digital, neither wow nor flutter impairs DCC audio. However, there's another limitation that can affect DCC recording with the DCC170. The mic preamp is far too noisy – so bad, in fact, that, I built an external battery-powered preamp for use with mine.

Impressive though the DCC170 must have seemed in 1995, it arrived too late to save the format – the following autumn, Philips announced that DCC would be discontinued. It was clear that Minidisc was winning this particular battle.

I wonder if DCC might have fared better if Philips – ironically, then a big supplier of audio to most of the big carmakers – had pushed it as a more flexible alternative to automotive CD.



On the other side is a switch that switches the analogue input – the 3.5mm connector also accepts optical digital audio from a CD transport or similar unit – between microphone and line sensitivity.

The mike input is noisy. Recording level can be controlled automatically or by the thumbwheel. The latter is an analogue adjustment. It locks out most of the other controls (to prevent accidental operation) although the remote is unaffected.



WORLD STANDARDS

Your guide to the best products we've heard that are currently on sale in the UK...

TURNTABLES

AVID INGENIUM £800
Great bass response and upper midrange detail allied to clarity makes this a must-hear at its price-point.



CLEARAUDIO INNOVATION £6400
Expensive, but offers great results from a finely honed and beautifully finished belt drive turntable, with servo control from the platter to keep a grip on tempo like few others. Can be fitted with a Clearaudio tangential arm, or any conventional design. Awesome.



INSPIRE MONARCH £4,350
A rebuilt from the ground up Technics Direct Drive, having blistering pace and dynamics allied with smoothness, sophistication and purity of tone. A true reference.



LINN LP12SE £3,600
The UK's most iconic turntable, the legendary Sondek goes from strength to strength. New Xeel sub-chassis and Radical DC motor add precision and grip to one of the world's most musical disc spinners. Expensive though.

MICHELL GYRO DEC £1700
Wonderful styling coupled with great build and finish make this turntable a delight for friends and family. It has an attractive clear acrylic dust cover, and you can mount just about any arm. A current design standard.



PRO-JECT ESSENTIAL DIGITAL £300
A budget turntable that turns in a great analogue performance, but also has a hi-res digital output. Send 24/96 across your lounge via optical cable to a DAC and get great audio quality. Or record LP to your laptop.



REGA RP3 £550
The first of the super-quality Regas, little compromised by price and featuring Rega's outstanding R3003 tonearm, suitable for MM and MC cartridges. A standard at the price point.

TIMESTEP EVO £2100
The famous Technics SL-1210 MKII Direct Drive but with improved plinth isolation, main bearing and power supply, plus an SME arm (add £1500) DD convenience, rock steady pitch and fab sound at a great price. Our in-house reference.



TONEARMS

ORIGIN LIVE ENCOUNTER MK3C £1,745
Origin Live combines carbon fibre and ebony to marvellous effect in its new 12-inch arm. Creamy and rich in presentation, the Encounter delves deep into the mix for a satisfying listen.

HADCOCK GH-242 EXPORT £810
Consummately musical, lyrical sounding tonearm, but needs the right turntable.

ORIGIN LIVE ONYX £450
Easy, smooth, creamy nature that reminds you why you're listening to vinyl in the first place. Essential audition at the price.



REGA RB303 £300
A one-piece tapered casting makes this arm's structure almost unrivalled. Great dynamics and superb imaging, for MM and MC. Reference quality for peanuts.

SME 312S £1,600
Twelve inch magnesium alloy tapered arm tube plus SME V bearings. An insightful yet smooth and relaxed sound. Superlative build completes the package. Our Editor's steel.



SME 309 £1500
A one-piece tapered 9in arm finished like a camera and slick to use. Superlative SME quality and sound at affordable price.

SME V £3000
Offers rapid fine timing and a sense of precision, plus rock solid dynamics. Top dollar for deep pockets.

CARTRIDGES

AUDIO TECHNICA AT-OC9 MIII MC £420
A fine sounding MC with strong bass and super fine treble from a great stylus – yet inexpensive.



AUDIO TECHNICA AT-F3/III MC £150
Great value entry level moving coil with detail and grip you just can't get from similarly priced moving magnets.

BENZ MICRO ACE SL MC £595
Smooth, lucid and full-bodied, award-winning, hand-made cartridge from Switzerland.

BENZ MICRO WOOD SL MC £945
Highly finished Swiss moving coil that plays music with riflebolt precision.

DENDON DL-103 £180
A popular and much loved budget MC with big bass, smooth treble and deep sound stage. Fantastic value.



LYRA TITAN I MC £3,500
Breathtaking speed and dynamics from LP, helped by diamond coated, boron rod cantilever.



ORTOFON 2M MONO SE MM £80
A mono cartridge purposed for The Beatles in Mono microgroove LPs. Fitted with a top quality Shibata tip. Fab for the four.



ORTOFON 2M BLACK MM £400
As good as it gets from MM. Fabulous detail and insight from a Shibata stylus, good bass and excellent tracking.

ORTOFON CADENZA BRONZE MC £1,400
A mid-price MC with a slightly livelier presentation than the super smooth Cadenza Black. High-end sound at midband price – great value.



ORTOFON CADENZA BLACK MC £1,800
Ultra smooth and dimensional moving coil with bass and punch aplenty. Lovely stylus.

ORTOFON A95 MC £3,750
Fast and extremely detailed, this is an MC cartridge that sets standards.

REGA CARBON MM £35
Budget price for a competent cartridge with a fairly unflappable nature. Ideal for beginners.



GOLDRING 1012GX MM £250
A glorious sounding cartridge with solid bass and strong dynamic punch, plus excellent treble from its Fritz Geiger stylus. Fun and affordable.



SHURE M97XE £80
Big warm sound, but great tracking and bullet proof stylus protection from damped guard. A survivor.

VAN DEN HUL DDT-II SPECIAL MC £995
Long-established cartridge from Holland with an open and dynamic sound.

PHONO PREAMPS
CAMBRIDGE AUDIO 651P £200
Clean, concise sound from MM and MC cartridges at a very low price. A real bargain.

ICON AUDIO P33 MKII £2,500
All valve MM phono stage with MC transformer option, graced by big, spacious and relaxed sound.



LUXMAN EQ-500 PHONOSTAGE £4,495
A fully-equipped phonostage from Japanese manufacturer Luxman that offers comprehensive cartridge matching allied to superb sound.



LEEMA ACOUSTICS ELEMENTS ULTRA £1,199
Smooth and detailed sound with the ability to accommodate most modern cartridges. Exceptional value for money.



PRO-JECT TUBE BOX DS £425
Compact MM and MC phonostage with valve output circuit and a big sound.



QUAD QC24P £995
MM and MC, oodles of gain, a volume control – and valves! Looks superb and sounds even better: smooth, atmospheric and big bass.

TIMESTEP T-01MC £995
New, minimalist phonostage that sonically punches well above its weight.

PREAMPLIFIERS
ICON AUDIO LA-4 MKIII £1,400
Uses early 6SN7 triodes for liquid sound. Has plenty of gain and a remote control into the bargain.



MF AUDIO CLASSIC SILVER £4,500
One of the best preamplifiers we've heard at any price, this transformer-coupled marvel does very little wrong. It's powerful, clean and open, yet delicate. Its sound is unmatched at or near the price.

MING DA MD7-SE £1,520
A valve preamplifier with an open, effortless sound and a big soundstage. It has plenty of gain so will accept any source and drive any power amp. A real beauty.



INTEGRATED AMPLIFIERS
ARIAND PRO845SE £1,499
Pure single-ended valve magic. Low-powered but immediately gorgeous, easy-going yet forcefully dynamic at the same time.



AUDIO RESEARCH VS160 £3,500
Power house sound with enormous pace and punch from traditional U.S. muscle master Audio Research. Breathtaking, but expensive.



CAMBRIDGE AUDIO AZUR 651A £350
Dual-mono construction and meaty toroidal power supply combine to produce a solid and sharp sound with sonics far beyond its price point.

CREEK EVOLUTION 100A £1,500
Superb build and smooth confident sound make this powerful amplifier a benchmark.



CYRUS 8DAC £1,400
Trademark shoebox-sized Cyrus integrated now offering 88Watts per channel, plus DAC. Svelte delivery from a dainty case that fits in anywhere – and isn't Class D!

EXPOSURE 1010 £495
Entry-level integrated from Exposure has excellent upper mid-performance with an almost valve-like sound.



ICON AUDIO STEREO 60 MKIII £2,800
Excellent tube integrated with plenty of power and an expansive soundstage, plus KT150 tube option and bias meter for easy adjustment.



NAIM NAIT 5Si £925
Naim's fabled entry-level integrated amplifier is updated to Si status. Demos Naim's superbly muscular sound at entry level.

SUGDEN A21SE £2,480
Class A amp with fantastic sound quality producing hard, sculpted images, deep detail and tight bass. Just don't expect disco-like sound levels!



POWER AMPLIFIERS

AUDIO RESEARCH VSI75 £7,498
Powerful, fast valve sound that makes everything else look weak at times. Needs careful matching but well worth the effort.

AUDIO RESEARCH VSI15 £5,000
Oodles of power with enormous punch. Rafael Todes said it provided "shock and awe" while retaining incredible smoothness and texture.

ICON AUDIO MB845 MKII £7,600
With 120W from big 845 valves right down to low frequencies, this power amplifier has massive dynamics and bass swing, yet is easy on the ear.



ICON AUDIO MB81PP £15,000
Big Russian transmitter valves deliver 200W from these massive monoblock amplifiers. Frightening in every sense.

MCINTOSH MC-152 £4,995
Stunningly insightful sound with enormous bass punch from a uniquely designed transistor amp. Amazing audio, a league up, if expensive.



QUAD ELITE QMP MONOBLOCKS £2400 PR
The proverbial iron fist in a velvet glove. Plenty of power but delivered with an assured and confident nature. Smooth on top and easy on the ear but can rock out when needed.

QUAD II-EIGHTY MONOBLOCKS £6,000 PR
Powerful and expansive sound from modern design monoblocks that also look lovely. Superb – used by us as a reference.



LOUDSPEAKER FLOORSTANDER

B&W 803 D3 £12,500
B&W's updated statement floorstanders deliver depth and definition with breathtaking speed and authority, aided by a diamond coated tweeter. Expensive – but enormously impressive.

CASTLE AVON V £1,600
A big floorstander at a modest price that suits the average room. Refined ribbon treble and deep bass give it a great delivery.

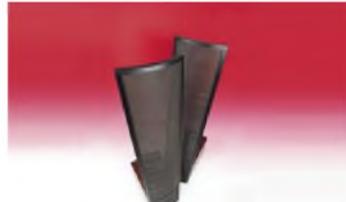


EMINENT TECHNOLOGY LFT-8B £2,500
Excellent U.S. planar magnetic loudspeaker at bargain price. Utterly superb - a must hear.

EPDS K2 £1,000
A fun sound that is tidy all round and very engaging, with solid bass. Music as you hope it to be.

FOCAL ARIA 926 £1,400
Simple, clean, neutral sound – easy going but well engineered and affordable.

MARTIN LOGAN SUMMIT X £16,698
Matches Martin Logan's XStat electrostatic panel to a powerful subwoofer to provide extended, powerful bass. Dramatic sonic purity. Awesome – all but unmatched.



MARTIN LOGAN ELECTROMOTION £2,500
Martin Logan's budget baby XStat hybrid electrostatic. Fits into any lounge to give electrostatic levels of clarity and imaging.



QUADRAL CHROMIUM STYLE 8 £1,700
A supremely smooth yet open sounding loudspeaker. Clean and detailed treble from a fine ribbon tweeter. Accurate yet informative and enjoyable. Pure class.

QUADRAL ORKAN VIII AKTIVS £6,200
Active loudspeaker with tight, powerful bass, perfect accuracy and detailed treble from a ribbon tweeter.



Q ACOUSTICS 2050i £480
A large floorstander at a budget price. Offers high sensitivity and big sound and has very few flaws for the price.

SPENDOR SP100 R2 £6,495
Retro looks but a sound that's hard to match. Spendor's 12" bass unit provides massive low-end grunt with a room-filling sound.



SPENDOR A3 £1,300
Fine little floorstander with a smooth, natural midband and even tonal balance. Ideal for smaller rooms.

TANNOY DEFINITION DC10 Ti £6,000
Enormous power with great projection. Glorious subsonics too. Need little power to go very loud and have superb finish into the bargain.



TANNOY KENSINGTON £9,950
Big but not overpowering, punchy modern sound from classic cabinetry. Need little power to go very loud and suit a traditional home, or castle.



LOUDSPEAKERS STANDMOUNT

ACOUSTIC ENERGY NEO 1 V2 £225
Civilised sounding speaker with fast and tuneful bass.

ACOUSTIC ENERGY AE1 CLASSIC £845
Brilliantly successful remake of an iconic design; not flawless, but surely one of the most musical loudspeakers ever made.



ELAC BS243 £1,000
More transparent and spacious than they've a right to be at this price, these refined mid-price standmounters represent top value.



EMINENT TECHNOLOGY LFT-16A £1,200
U.S. planar magnetic bookshelf loudspeaker with unrivalled mid-band and treble. Hear it before all else.

WHARFEDALE DIAMOND 220 £200
Builds on the success of previous Diamond ranges with better bass, more detail and a greater sense of scale.



KEF LS50 £800
Supremely musical mini-monitors which sound much bigger than they look.



MARTIN LOGAN MOTION 35 £1,300
Folded Air-Motion tweeter gives a taste of Martin Logan's electrostatic sound in a standmount. Different from the standard mini-monitor and all the better for it.



PMC TWENTY.21 £1,575
Transmission line loaded standmount with a big box sound from a compact cabinet. Punches well above its weight.



Q ACOUSTICS 2020i £165
Great little bargain-priced stand-mounts with a friendly, fun yet surprisingly refined sound. Hard to better for a pair of starter loudspeakers.

WHARFEDALE DENTON £500
A beguiling mixture of retro looks with modern, high-technology drive units. The Denton has an easy-going, big-hearted sound with a touch of trad warmth that should appeal to many.



HEADPHONE AMPLIFIERS
CREEK OBH11 £150
Designed specifically for low to medium impedance (30 Ohm – 300 Ohm) headphones the little Creek has a marvelously well-judged sound.

CHORD MOJO £399
Class leading portable DAC and headphone amp with ability beyond all else. Big, open spacious sound.



EPIPHANY EHP-02 £99
PP3 battery-powered portable gives great sound quality at an almost giveaway price. Happy with the output from an iPod or CD player, the little epiphany is a true bargain.



ICON AUDIO HP8 MKII £650
The HP8 MKII valve-based headphone amplifier brings the spacious sound of valves to headphones. And it matches 'em all.



FIDELITY AUDIO HPA 100 £350
Great little headphone amplifier with a lively yet refined and open sound.

MUSIC FIRST PHONE BOX £276
Brings a big stage, plenty of detail and rich, deep colours to the sonic spectrum.



OPPO HA-2 £250
Remarkable performance and sound from ESS Sabre32 DAC in a slim portable package.



CD PLAYERS
AUDIOLAB 8200CDQ £949
Inspired CD player and DAC with price-performance ratio like no other. Capable of matching designs costing much more.



CANOR CD2+ £3,100
Musically coherent and tuneful valve-driven CD player from Slovakia. Lovely liquid sound.



CAMBRIDGE AUDIO AZUR 651C £410
Snappy modern presentation from this budget CD player. Cracking audiophile entry point for any digital fan.

CHORD RED REFERENCE MKIII £16,000
A unique and massive engineering exercise that could well be the best CD player available. Chord's Pulse Array DAC technology produces a musical experience like few others. A true reference player.



ESOTERIC K-03 £9,495
Superb high-end silver disc spinner that is beyond criticism. Devoid of its own character but has a flawless presentation.



EXPOSURE 101 £395
Detailed player with fine sense of timing should be an automatic entry on any demo list at this price.

ELECTROCOMPANIE EMP-1/S £4,650
Epic in scale, lavish in tone and exuberant in its musicality - this is a memorable SACD spinner. Quirky in operation and modest in finish, though.



OPPO BDP-105D £1200
Universal player and DAC that makes CD and Blu-ray (+DVD) sound deep, spacious and full bodied. Reference quality that's affordable.



REGA APOLLO-R £550
Rega comes up with a fine CD player again. Tremendous detail and an easy, unforced sound at all times. Few bells and whistles but made up for by its superb sonic ability.



ROKSAN KANDY K2 £900
A charmingly musical performer at the price - this is a surprisingly sophisticated CD player for the money.

TUNERS

CAMBRIDGE AUDIO AZUR 651T £299
Value-packed AM/FM/DAB and DAB+ ready tuner. Precise and detailed with excellent resolution of spoken word.



CREEK DESTINY 2 £550
Creek's tuner expertise shines through in the Destiny 2. This AM/FM receiver is wonderfully three-dimensional and smooth.



MAGNUM DYNALAB MD-90T £1,900
Exceptionally able, but commensurately priced, audiophile tuner that cannot fail to charm.



DACS

AUDIOLAB M-DAC £600
Excellent sound from ESS Sabre32 DAC and impressive flexibility with a unique range of filter options make this a stand-out product. Low price is the icing on the cake.



AUDIOLAB Q-DAC £250
Stripped-down version of Audiolab's M-DAC loses some features but retains much of the sound, making it a veritable bargain.

ANTELOPE ZODIAC GOLD/VOLTIKUS £3,095
DAC/preamp/power supply combination majors on detail but has a remarkable un-digital sound. One of the best at its price.



CHORD 2QUOTE HD £990
Superb build quality and exceptional sound from this compact unit. Boasts the ability to handle DSD direct via USB and has an exceptional soundstage. One of the best DACs you can buy.



DCS DEBUSSY £8,000
DCS's bespoke 'Ring DAC' circuit gives a beautifully-fluid, almost analogue sound that encourages long listening sessions. Not cheap but worth every penny.

NORTHERN FIDELITY DAC £650
Packed full of features, including Bluetooth and USB, this ESS Sabre32 equipped DAC offers crisp, insightful sound at low price.



METRUM OCTAVE £729
Unique two-box digital-to-analogue converter with great sound at a great price. Cuts upper treble, though.

NAIM DAC £2,400
Superb high-end digital converter with a probing, punchy and forensically-detailed sound.



TEAC UD-501 £699
Feature-packed DAC with benefit of DSD playback. Superb sound means little to touch it at the price.



RESONESSENCE INVICTA MIRUS £4,499
One of the most highly spec'd DACs available, with a smooth yet enthralling presentation. Few approach it.



NETWORK PLAYERS

CHORD DSX100 £7,500
Chord's proprietary DAC circuit shines in their top-of-the-range streamer. Hear-through clarity with a sound rich in detail, dynamics and soundstage.



CAMBRIDGE AUDIO NP30 £399
Budget offering from Cambridge offers a great introduction to network streaming.

CYRUS STREAM X £1,400
Gorgeous sound quality even from compressed digital music. New control app makes everyday operation a doddle.



CONVERT TECHNOLOGIES PLATO £2999.00
A network player with amplifier that does it all, including turn LP to hi-resolution digital, and add cover artwork from the 'net.



NAIM NDX £2,995
Clean, incisive and very detailed sound with Naim's traditional pace and timing make this one of the best network music players around.

NAIM ND5XS £2,175
Great sound quality with traditional Naim heft. A wonderful DAC with full 24/192 handling. Only the display could be better.

NAIM NAC-N172 XS £1,650
A pre-amp/DAC/streamer package provides a taut, rock-solid presentation with a tonally rich midband and a superior sense of rhythm.



PRO-JECT STREAM BOX RS £1,095
Unusual valve-based streamer/preamp with variety of inputs and a lovely liquid sound. Not the most detailed but compensates with sheer musical verve.

QUAD PLATINUM DMP £2,500
Combined CD/network player has all the usual Quad elements but with added zest and detail that brings life to everything you care to play.



DIGITAL SOURCES

ASTELL&KERN AK100 MKII £569
Portable high-definition digital player with superb sound quality. Punchy and fast.



FiiO X3 £150
Fabulous value player with nice easy sound and full range of abilities. Small and light. For newbies.

LOTTO PAW GOLD £1,500
Reference quality sound; it's like carrying your hi-fi in your pocket. Equivalently large too, but stunning headphone quality.



NAIM HDX £4,405
Interesting one-box network-enabled hard-disk music system that gives superb sonics together with impressive ease of use.

NAIM UNITILITE £1,995
A 50W amplifier with traditional Naim heft, a CD player and vhf/fm radio, plus network input and Bluetooth make this a great all-in-one.



PORTABLE SPEAKERS

BAYAN SOUNDBOOK £149.99
Superb design and great sound make for one of the best portable Bluetooth speaker/radios on the market. Not the cheapest – but worth every penny.



RIVER IBA-50 £69
Big, warm sound with plenty of volume and clean at high levels. Muscular sound compared to many rivals.

CABLES

BLACK RHODIUM TWIST £71/3M
Twisted to fight off radio frequency, the Black Rhodium speaker cable is easy on the ear with a fine sense of clarity and focus. A remarkable performer at the price.



MAINS CABLES R US NO.27 £95
Offers a sprightly pace with a precise nature. Fast performance enhance frequencies and beautifully etched detail.



CHORD SIGNATURE REFERENCE £900
Majors on timing, detail and openness. Capable of getting the best from most systems and a recommended upgrade.



TELLURIUM Q BLACK £280/3M
A deep, dark, velvety performer that's nevertheless highly musical, it represents excellent value as mid-price cables go.

TELLURIUM Q SILVER DIAMOND £804/M
An open, natural and transparent sound that is difficult to beat, from these great loudspeaker cables.



HEADPHONES

AUDEZE LCD-3 £1,725
A planar magnetic 'phone that offers monitor quality. Strong sound with silky, dark quality that others struggle to match.



B&W P3 £170
Beautifully presented headphones from the loudspeaker specialists. Feed them a good quality source signal and they reward with excellent sound.

JAYS V-JAYS £49
Wonderful little budget over-ear portable 'phones with a clean, clear sound to beat the best of the rest at the price.



NOBLE K10 INC. FITTING £1,279
Custom fit in-ear phones with 10 drivers deliver a sound that is out of this world. Personal and perfect.



OPPO PM-1 £950
Planar magnetic phones with a warm, easy but big bodied sound that draws you in. Need a lot of drive, but deliver superb bass.



SENNHEISER HD700 £599
Tremendously fast with a strong, focussed, lower-frequency range and a firm bass punch.



YAMAHA HPH-MT220 £150
Purposed for indoor monitoring yet light and comfortable enough to be used on the move. Excellent sound quality marred only by a slight warmth to vocals.



ANN ARBOR BLUES FESTIVAL 1969

Volumes 1 & 2
Third Man

Until Third Man drew my attention to it, this festival had completely passed me by.

It took place across 1-3 August, 1969 at Fuller Flatlands, University of Michigan-Ann Arbor, just two weeks before the legendary Woodstock Festival. But this was no Summer of Love, it was in fact a Summer of Blues.

Curated by a small group of University students, for three days, this festival featured the cream of the blues crop: Mississippi Fred McDowell, Big Mama Thornton, Junior Wells, Muddy Waters, Howlin' Wolf, Big Joe Williams and many more.

As the liner notes stated, "From the city to the country, the West Coast to the Gulf Coast, Mississippi to Chicago, 24 masters of the idiom were booked to perform for this new audience – an estimated 10,000-plus kids, listening to the artists they saw as vanguards of the music that had

dominated the decade's counter-culture.

Fortunately, some enterprising, bright spark had a 1/4" reel-to-reel player rolling at the time and so much (I'm not quite sure if there is more hidden away) of the festival music was recorded and a fair amount has been released here, spread over two gatefold, double albums and covering a total of twenty-six tracks.

Featuring an excellent, large format, booklet with rare images of the festival this set is a sort of field recording. The basic source produces no relevant bass, restrictive mids and treble with a questionable dynamic range. None of that matters, though, because this is a valuable sonic document. The point of these releases is not the sonic quality, but its very existence. That said, the mono recording helps to corral the soundstage and Third Man has done a good job in tidying up the overall sound. A brilliant set.

AUDIOPHILE VINYL



THE BLUETONES

The Singles
Demon

In many ways, I'm still trying to make my mind up about The Bluetones. Were they the next step from the baggy Manchester era of music? Were they an antidote to Britpop as they hit the scene as that genre's popularity was on the wane? Were they just an inoffensive, bland indie band whose songs all sounded the same? Did they in fact add delicacy, nuance, subtlety and fine-dining sonic flavours? How could you even doubt such artists after hearing the track, Bluetonic?

What I do know is that Bottlegarden – the band's original name – were formed in 1994 in Hounslow and occupied by Adam Devlin on guitar, drummer Eds Chester, Mark Morris had the microphone in his hand while brother Scott noodled the bass.

During 1995, the group released two singles, 'Are You Blue or Are You Blind?' and the above-mentioned 'Bluetonic'. They prompted attention

but it was the 1996 release of the track 'Slight Return', which forged the group to the No.2 spot in the charts. The associated album, 'Expecting to Fly', debuted at number one on the British charts. Later, they would be tarred by the Britpop brush. The genre almost grabbed them by the ankles and sucked them into the same drowning quicksand pit.

This collection of singles, on vinyl for the first time (blue, funnily enough) and spanning two discs in a gatefold sleeve, was originally released in 2002.

In mastering terms? Coloured vinyl was an audiophile anathema because the stylus tended to play the pigment, causing noise. Relatively recent improvements have solved the case so sound from coloured vinyl is now on a par with black vinyl. The basic mastering is slightly dull and claustrophobic with rolled off mids and treble but I'm being picky. Overall, the music speaks for itself which is a good thing.

Davis joined Warner Bros in 1985 and began recording this album later that same year with producers Randy Hall and Zane Giles. Davis was reported to have changed his musical direction, entering into a soul and funk theme with vocalists Al Jarreau and Chaka Khan in tow. The album was never issued.

After the release of the 4-track Rubberband EP for Record Store Day, Rhino/Warner Records has finally issued the LP.

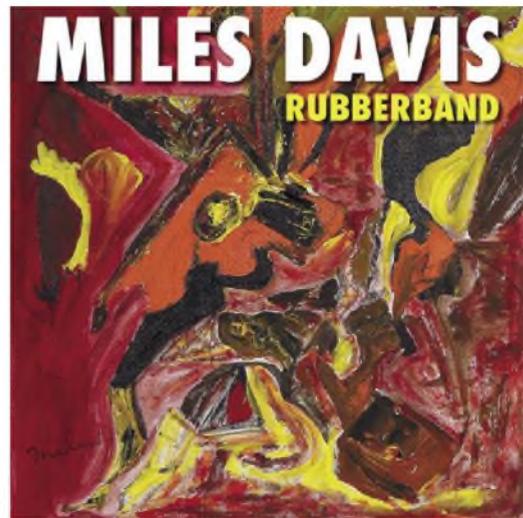
Finished by the original producers Hall and Giles, and Davis' nephew Vince Wilburn Jr., who played the drums on the original sessions for the album in 1985-86, the album also features newly recorded vocals from Lalah Hathaway (daughter of Donny Hathaway) and Ledisi.

On the album, Davis plays both trumpet and keyboards alongside keyboardists Adam Holzman, Neil Larsen and Wayne Linsey, percussionist Steve Reid, saxophonist Glen

Burnis and Vince Wilburn, Jr. on drums. An original painting by Miles Davis is featured as the sleeve art.

The mastering is generally good although there is a slight boost in the upper frequencies which adds a touch of gain to the mids and is noted on crescendos. There's nothing to be overly upset about, though.

The music itself feels commercial and over-produced. Just ready for an appearance on Smooth Jazz FM or backing an eighties Bill Cosby comedy TV show. Soul is fine and I love funk but both often swamp the fine delicacies of the Davis trumpet. From a brass perspective, he often sounds like a guest artist on his own album and a simple session man in keyboard terms. You could even argue that most of the music would sound better without the Davis trumpet getting in the way. There may have been an artistic point when the album was created but it sounds dated now. Pleasant. Easy listening. Irrelevant.



MILES DAVIS

Rubberband
Rhino

AUDIOPHILE VINYL

The difference between The Impediments and The Replacements seems to be a matter of semantics. The sort argued over a fifth pint of beer on a Saturday night. Yet, the former became the latter in 1979. That band, formed by Paul Westerberg, Bob (guitar) and Tommy Stinson (bass) and drummer Chris Mars, this garage punk outfit became known in Minneapolis as a bunch of drunken wildmen.

The band didn't really mature (sober up?) until 1984 with the LP 'Let it Be' which showed a maturity in Westerberg's songwriting, spanning hard hitting rock to delicate ballads. Maybe this is why Sire signed them up in 1985.

Yet, the band never seemed happy with the commercial role expected of them. Proof of that was seen on the USA TV show, 'Saturday Night Live' when the group performed, weighed down by hops, shall we say. Drugs followed and

Bob Stinson was kicked out to be replaced by Slim Dunlap.

After slapping themselves around the face a few times and promising to be good boys...they released this album. It's about as near as the band ever came to being a true, blue commercial outfit. It was effectively the last outing as a unified band.

As such, this nice mastered reissue is a bit of a celebration, a 4CD/1LP set in a hard-backed cover that features the album mixed as it was originally intended ('Don't Tell A Soul Redux', based on the 1988 Paisley Park mix), along with a collection of previously unheard tracks ('We Know The Night: Rare & Unreleased' including a session with Tom Waits), and a concert from 1989 ('The Complete Inconcerated Live', the band's entire June 2, 1989 show at the University of Wisconsin-Milwaukee). In total, the set includes sixty tracks, fifty-eight of which have never been heard before.



THE REPLACEMENTS

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AURALIC PRESS AWARDS



"How many LPs have I bought and binned?"



Noel Keywood

Streaming is upon us, like the cassette once was. Simple, convenient inexpensive – but not so great in quality. Apple recently announced the demise of iTunes, a download service, in favour of Apple Music – yet another streaming service. Not impossible to deduce then that streaming is where it's at, as sales figures from the RIAA (Radio Industries Association of America) show. Downloading in all forms is in decline, from hi-res files to those stored on your computer by iTunes. Yet again we are seeing a metamorphosis from one medium to another, but this time an altogether more vapour one. Finally, we will cease to own the music we buy.

Yes, from now on you get a license to listen only. Want to listen again? Then pay again. Except of course these days that is a subscription of £19.99 per month (£239.88 per annum) for Tidal, one of the better services quality wise. So what is the cost? Is streaming going to cost us all dearly?

If you listen to 10 tracks a day on average, let's say, that amounts to a sizeable 300 tracks per month, so at £19.99 the cost is 7p per track. Take a music package like LP with 10 tracks total at a cost (today!) of £25 then a single track play is £2.50. After playing it 36 times you have paid 7p per track.

So, where does that leave us with the cost of streaming? For a start it is no rip-off. Fantastic LPs I have played endlessly in the past and perhaps more than 25 times (never sat there counting!) cost me less per listen, but how many LPs have I bought and binned? One or two plays perhaps and no more. It's difficult to compare streaming to LP that's for sure, but a quick jiggle with the figures suggests to me streaming costs are reasonable compared to past formats like LP and

cassette.

Streaming has the great advantage that it makes more music available for a quick listen. You don't buy on a hope and a prayer. With streaming your shelves remain clear of unwanted LPs and the floorboards aren't threatened by the sheer weight of unwanted vinyl.

The figures suggest we should stream to find new music we like – then buy it in storable format to be heard forever thereafter, for yourself and that obsession with one track (!), for the rest of the family and even for your grandchildren who'll be suitably amused at what you were obsessed with. I will leave out the children here because they know you're outdated and will only sneer!

That's the economic argument. Less than 36 plays streaming is cheaper, more than 36 plays it may not be: get the download or the LP instead.

The topic of sound quality fits neatly into this scenario. Streaming offers good but not wonderful quality. Spotify, Apple Music, Qobuz et al are fine for everyday use but not so fine if you'd like to hear right into a performance rather than experience it as sonic wallpaper. That's where Tidal comes into the picture.

Another problem that concerns me is quality of the link from distant music servers to hi-fi player. This is where high quality downloads and modern LPs make their mark. It is the hi-fi bit and it still has value. An LP or a download doesn't travel the world to reach you. It isn't generated within a server farm in Texas. You have it at home and know its vinyl or electronic provenance – or think you do. With digital you do not; hi-res files are often derived from CD I suspect, from measurement. But with vinyl the sleeve notes and info etched into the disc next to the run-out groove gives a truer picture.

For the time being I am not going to use externally streamed music for review purposes – but I admit the idea passes through my mind. At present I use locally streamed music, from a Melco N10 NAS drive on our office network that serves music to us in similar fashion to Tidal, Qobuz, Spotify etc. With the in-house Melco we have a high quality dedicated audio server of assured quality, rather than a server of unknown ability somewhere on the planet connected through dodgy digital cables with fish swimming above. It may just be that Tidal, Qobuz, Spotify et al can deliver great quality music files we could use for review, but without basic server test files I can't be sure. From our Melco set-up I can; it carries test tracks as well as music, its performance validated by measurement.

This is important to me as a reviewer because there are problems with noise and jitter from long digital lines; by using a distant music server coarse sound from a product under review may well come from the streamed music, not the product itself.

Streaming at present may be the latest audio technology to land after the cassette – well, with a few in-between! – but irrespective of source quality at the servers, what we receive at home possibly thousands of miles away is a different and altogether more uncertain music file. They might transmit music in good quality, but that does not mean you and I will receive it in good quality.

All the same, when you do a few sums streaming looks like a very good way to enjoy a massive catalogue of music at low cost. I won't be dissuaded from buying today's audiophile LPs that are stunning, but streaming appears to make more sense than cassette – other than you don't get to own a Nakamichi. ●



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"That interconnectivity in the bad was ultimately a force for good"



Paul Rigby

Do you ever remember a TV personality named James Burke? A man of many talents, a TV producer and author – but it was his dual role of science historian and broadcaster that stuck in my impressionable 14 year old memory. Back in 1978, he presented (created, wrote and produced) a ten-part TV series called 'Connections'. It was inspirational, enlightening and revealed a truth that is too often ignored because, well, truth is messy. Life is messy. Yet messy is often hard to sell. Which is why we tend not to hear about it.

Balding yet strangely cool. Bespectacled in playboy-esque glasses. Casual yet learned. Oh – and dryly funny! Burke looked at discoveries, scientific achievements, world events and more and showed the connections between each and every one, leading up to current technological accomplishments.

As Burke had it, there was no linear progress for change but a highly complex, interconnected web. The research, the ideas and the undoubted intricacy of the world and its history was quite astounding. Burke's theories were a refreshing change to the often linear, seemingly inevitable stories you heard about at school or read about in history books.

His thoughts recur to me when I look at music. I received a batch of CDs from the popular reissue label, Jasmine (www.jasmine-records.co.uk) and found the same sort of connections as James Burke. Same but different, I suppose. My connections were linked by a shared negativity. Suffering, if you will. And how that interconnectivity in the bad, was ultimately a force for good. For positivity. Happiness. Inspiration even.

You could say that each of us shared a black experience. But in its

broadest and widest sense.

The first black experience highlighted how black men and women often struggled against their environment and the society around them, reaching for success yet taking a box of scars with them, along for the ride. 'The Story of My Blues' is based on the songs of Big Mama Thornton, who grewled the original 'Hound Dog', pre-Elvis (he would never acknowledge Thornton). As the New York Times said in 1971 "...what Janis [Joplin] was after and never got near".

A big woman, tough, Big Mama Thornton talked mean, beginning her life cleaning spittoons in bars (a soulless job if ever there was one). She suffered from hard drinking, a bad car accident in the seventies and the memories of the son she gave away. Yet she inspired. Joplin being one of those recipients. She amazed and she is still remembered as a Blues powerhouse.

As is James Brown. Seen on 'I've Got Money I've Got the Power: Singles 1958-1962', Brown was a fighter. Poor: "I was 9 years old before I got a pair of underwear from a real store; all my clothes were made from sacks and things like that", he said. He was jailed for stealing a car, later for firearms offences and drug busts, yet he became a notable activist for both social freedom and the value of education, as his 1965 single 'Don't Be a Dropout' attests.

Brown was also a musical innovator as his work in the funk genre proves. Every artist in the field of hip-hop owes James Brown a large debt.

Lefty Frizzell was white but sometimes lived in darkness. A giant in the field of country, he was jailed for under-age sex. He was also ruled by alcohol which would trigger health problems later in life. His talent changed country music for ever,

evolving honky tonk and opening doors for stars like George Jones and Willie Nelson. You can hear more on 'With you Always: Chart Hits 1950-1959 Plus!'.

Darkness can be revealed in a mirror too. In this case, via Hollywood. The CD 'Sound of Film Noir, 1941-1958' reflected world changes in society and the conflicts that they triggered. The Noir (French for black of course) genre spawned the likes of the 'Maltese Falcon' (where trust was low and deceit ruled), 'Touch of Evil' (combining terrorism and police corruption) and the Third Man (reflecting the callous harshness of the black market in post war Berlin).

Significant related sound tracks provided an emotional insight into the darker recesses of the human spirit.

Yet they provided artistic inspiration for future filmmakers and even a sense of reflection in social history terms.

All of these artists and their music are connected in a complex and convoluted manner. They were all spawned from a society in upheaval. Disaffected and adjusting from two world wars, the mass movements of populations and a growing protest against poverty and the right to freedoms.

Both world wars focused attention on social issues, they fast forwarded the ideas of evolution because they accelerated change. Despite the terrible backdrops, people saw more of the world – especially those who fought. They talked to people from different cultures, saw how they lived, where they lived and why. Those memories were taken back home. And that got them to thinking...

The above music was both a reflection of that but also a product of that. Music has a lot to say, as James Burke had a lot to say. ●

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Hi Fi News said:

Any great turntable gives you a certain frisson when you hear it. It's that old 'shivers down the spine' feeling, a sense of being let into a world to which you had previously not been privy. This is a remarkable turntable, and arguably the apex of vinyl playback. It's difficult to see how the SP-10R motor unit can be improved upon. It is a definitive statement of engineering prowess, and marks the return of direct drive to the top tier of turntables.

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“Who would have forecast streaming as the form of consuming music in 2019”



Jon Myles

Many of my friends are music enthusiasts – and are bemused at my obsession with the equipment that delivers the sounds they love to their ears.

So I was taken aback when a friend who I'd recently introduced to streaming via a Naim NDX went out and bought a Supernait 2 to replace her – perfectly good – Arcam amplifier to get the full Salisbury experience. Inspired by this purchase she asked me what I thought the next big thing in hi-fi would be.

I realised there was no easy answer to such a question. Part of this comes down to the fact that we've already seen a mini-revolution in the way we consume music in the past few years – although many people may not have noticed how the landscape has changed.

In my eyes it all started off with the iPod and iTunes – which changed everything. Suddenly you could get all the music you wanted on a small device that could be taken with you wherever you may be. It became an instant hit and those iconic white earphones could be seen on trains, tubes and buses everywhere – including in my ears!

The only problem was the fact that in terms of sound quality the iPod and iTunes were somewhat lacking – although sheer convenience made up for that. Easy to use and a doddle to buy music via iTunes – what was there not to like? Well, sound quality perhaps. And the restricted dynamic range available.

For a good while though the iPod ruled the market – until the likes of Astell&Kern from Korea and FiiO from China came along with a range of high-resolution portables that offered much better sound quality and – with FiiO's base

models – at a price that undercut the iPod.

With these players you could store the same amount of tracks on a similar-sized device yet in file sizes typically up to 24bit/96kHz – far better than CD in quality and way, way better than iTunes.

Paired with a good set of headphones – either in-ear or over-ear – the jump in sonic resolution was astonishing. It was like upgrading your hi-fi system with a new, more revealing set of loudspeakers.

Suddenly you were able to hear the leading edge of guitar notes, the decay in a piano solo and vibrancy in the mid-range, bringing vocals to life. Everything became more detailed and realistic. I well remember listening to Kraftwerk's 'Minimum Maximum' through a FiiO X1 and being taken aback at the quality of sound compared to my iPod.

And the quality of headphones has also come on in leaps and bounds. If you've got a high-resolution digital audio player then the market for buying headphones to match has never been stronger or so wide-ranging.

For me, buying a pair of Noble K10s in-ears opened up a whole new sound experience from my new FiiO X5, revealing just how detailed and nuanced this player is.

In my mind this has been one of the biggest leap forwards in hi-fi in recent years – the advance of the digital audio player and the increasing quality of headphones to match.

But back to the original question: what will be the next big thing in hi-fi? Well, I can see the rise of the one-box system such as the Naim Mu-So 2 featured in this issue becoming the norm for many people, especially where space is limited in many of Britain's houses and flats.

However the future will not so much lie in the physical speakers or amplifiers but in the software that controls them. Imagine, if you can, an amplifier that adapts automatically to correct over-processed highs and lows and tailors the sounds to suit your listening tastes. All done without any input from yourself. That might be anathema to many of us who believe hi-fi should just accurately reproduce the source material and eschew the likes of tone controls and digital signal processing, but not to a majority who are less finicky – less purist.

Many amplifiers – from the bargain end of the market to high-end models from the likes of Luxman – already include such features. They tailor individual tracks to the listener's individual tastes. Digital equalisation is with us and is something I can see becoming more widespread in future.

Apart from that it's hard to make predictions. Who would have forecast a decade ago that streaming would become the predominant form of consuming music in 2019? But it has and the big three providers – Apple Music, Tidal and Spotify – are all reporting significant growth in subscribers.

One thing I can see, though, is that all three may not survive. Apple has its huge cash pile behind it so will plough on regardless, Spotify has only just moved into profit whereas Tidal – despite providing probably the best service out there in terms of quality and ease of use – is still struggling in terms of revenue.

So, as to my friend's question about the next big thing in hi-fi – well, we'll just have to wait and see! No one could have predicted the re-birth of the LP; streaming faces a future similarly impossible to predict. ●

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"Retailers have a legal obligation (the WEEE Directive) to recycle products"



Martin Pipe

The Royal Society of Chemistry estimates that as many as 40 million pieces of obsolete technology – among them laptops, phones, digital cameras, personal music-players and tablets – could be squirreled away in UK homes. We're encouraged by marketing – or, through the planned-obsolescence strategies of the corporate giants, forced – to buy the latest, yet we are reluctant to give up what they replace. Obsolete gadgets collect in drawers or gather dust on top of cupboards. As for my own hoard, don't ask...

Part of the explanation is a matter of security; not so long ago, the media spat out scare-stories of personal data including bank records being retrieved from PC hard-drives that had ended up in Africa. Hang onto hardware and there's no danger of that happening, right?

Other reasons are that you may want to retain devices that cost small fortunes and may once again become useful. With DCCs (as featured in *Olde Worlde*), Minidiscs, 8mm/DV camcorders, VHS VCRs and cameras reliant on tape, throw away the hardware and you can forget about playing the associated media in future!

Optical drives are fast-disappearing from our tech, and with them the ability to play or 'rip' CDs and DVDs. Long ago, most said goodbye to their open-reel tape machines and VCRs that used tape formats. You'll have to scour eBay, or take your media to a third party able to retrieve the content and migrate it to whatever media's currently in vogue.

So why is the Royal Society of Chemistry taking such an interest in our tech-consumption habits? It's worried about rare elements

running out thanks to mankind's insatiable thirst for gadgets. An example is indium, a soft silver-white metal used in the manufacture of touch-screens of the sort that grace phones, tablets and the very latest high-tech hi-fi. In order to extract a few milligrammes of indium, you need a kilogram of the ore that contains it. Yields of indium are declining, and there wasn't an awful lot to start with. Most of the reserves are in British Columbia. Other precious elements used in tech come from regions that are somewhat less-stable politically. Much of the world's tantalum, for instance, comes from coltan mined in the Democratic Republic of Congo. Some materials are concentrated in the vast land-mass of China, currently engaged in trade-war with the US.

The Royal Society of Chemistry wants us to 'recycle' our gadgets. When you upgrade your phone, give the old one to whoever is selling you its replacement. Retailers have a legal obligation (the WEEE Directive) to recycle the device – which means sending it to a firm that can extract the precious metals. Some dumps set aside better-quality items for resale, the rest goes into crates destined for processing by facilities set up to deal with WEEE (Waste Electronic and Electrical Equipment). Landfill is not an option...and reuse must always be prioritised over recycling.

Currys PC World is currently pushing a laptop trade-in scheme. I asked what becomes of the hardware that's brought in. Is it put 'out of use' to facilitate 'growth' at the expense of the environment? "During the financial year 2018/19" I was told, "89% of devices traded-in were reused as complete units". They are apparently passed on to

"reuse charities" and other worthy causes. Part of the refurbishment process involves performing a "data-wipe". Other units are used for spares, and the rest goes off for metal extraction.

But there's still far more that industry – and ourselves – could do. Do we really need to replace kit so frequently? We should pressure manufacturers to design their products for upgradability – and repairability. An expensive Microsoft Surface tablet that came my way recently was rendered useless by a faulty Power button (a known fault that nevertheless persisted through multiple generations of the device). The lack of visible screws necessitated the careful use of a heat gun for disassembly. Only then did I find large quantities of screws that would allow disassembly. Asked to explain this, Microsoft declined to comment.

You often see microwave ovens and inkjet printers left for dustmen to collect. The fault with the former can be a turntable motor that has given up the ghost – if there is actually a fault at all; sometimes such products are discarded fully working, for something newer. Printers, priced cheaply because manufacturers make money out of the patent-protected consumables you'll use over its lifetime, can fail due to a belt or motor that are simple to repair.

Hi-fi is thankfully a lot more sensible. Gear tends to be cherished, and when not any more passed on or sold. So be aware of WEEE and of what the Royal Society of Chemistry has to say about all this. We all need to put effort into trying to re-use or usefully re-cycle our discarded electronic products. It's a pity that at present how to do so isn't obvious or easy. ●



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"Are we all that lazy and incapable to hit a proper mains switch?"



Dave Tutt

As I go through the range of equipment that arrives at the workshop I have to say that sometimes it looks like the rest of the world – and certainly the manufacturing industry – is against me! So much silly design and build of things, it is hard to decide if there was any intention of making any of this stuff last more than a few years – and certainly no green credentials. Are hi-fi products getting better?

I know its old, but if someone from Denon could tell me why you would make the TU260 tuner so that it has its transformer permanently connected to the mains, so it is drawing current all the time and eventually goes open circuit, I would like to know. Fortunately the transformer used in some Denon CD players, whose lasers are no longer available as spares, are perfect replacements.

But hey, TU260 tuners have been around for 20 years so I guess my unit in for repair has lasted pretty well. All the same, I wonder how many Watts of power have been used in just the TU260 when not turned on? How many are still powered across the world drawing about 8 Watts each? If they sold 150,000 of them across the world that could be 1,200,000 watts. Not exactly saving the planet are we? Perhaps it is good they are now antiques even if they are nice sounding radios! The Sony CDP-790 CD is the same.

If a product must draw power all the time in stand-by mode you then need far more complex switching to turn the main circuits on and off. Downstream from the mains transformer, switching multiple DC lines means transistors and IC control systems that all draw current when in reality they are unnecessary without stand-by.

Likewise all those AV amps that have stand-by switching on the mains have a 15-20VA transformer permanently attached just so we can use a remote control to turn them on.

There are now vast numbers of products that makers tell us draw less than 2 watts in stand-by – but why do we need stand-by? Even if you use a remote to turn a player on, you can't get it to physically find the silver disk you want to play, open its case, prise it off the spigot then load it – so why do we need to have the horrible standby process in these things? We are going to have to get up close to the machine to put in the disc so are we all that lazy and incapable to hit a proper mains switch beforehand?

Over the years the availability of mains switches, that you would assume is a staple part for any repair process, has waned. Finding a push/push mains switch, with a safe current rating of say 5 Amps, a component everything during the '50s to the late '80s would have had, is now becoming difficult. Where there were 20 plus different designs, with additional contacts to do magic additional things at start up, or shaped to fit specific cabinets, there are now 3 designs (or so) – all much the same and all difficult to fit to some equipment. A Musical Fidelity A100 amplifier is a typical example where a new switch to maintain the look and function of the amp is crucial. Good job my spares bucket had a few!

Greenness is not a major concern when the average current demand in stand-by is very low. I have seen today's equipment quoted at 0.2 Watts, just enough to light an LED. In the EU, products must these days consume less than 1 Watt in stand-by and this is sufficient. Hence all the TVs and hi-fis that do exactly

the same thing, sitting there with the little lights showing just waiting for that remote command.

However, the mains switch is very important. Large amounts of modern equipment use switching power supplies, all of which must have a mains filters built into them. These filters are capacitors and inductors connected to the mains and I wouldn't expect them to last long even though they are designed to fail safe. They are constantly connected and thus are filtering dirt from the mains 24/7. So when you get up in the morning and find your TV, that you put into stand-by last night, is now dead and cannot be switched on either from the front panel or the remote, it may well be that the internal fuse has blown because the filter capacitors went bang because of some sort of power surge during the night. Likewise, all those other stand-by only devices are equally vulnerable just because they are doing their job all the time whilst permanently connected to the mains.

All those tiny dribbles of current consumed by stand-by systems add up. All that capacitance of all those filters add up too, as does all the electrical noise all this equipment makes. It is quite remarkable that the national grid can still be remote switched via signals through the power cables with all that rubbish we put into it. It is therefore something of a surprise that we can have hi-fi that is generally immune to the rubbish modern equipment sends into the mains. Or perhaps it isn't immune, explaining why mains filtering is needed. One way or another, the good old-fashioned mains switch that truly disconnects a product has a lot going for it; drawing current all the time from the mains, just so we don't have to get up and walk across the lounge to press a button, is a bad idea. ●

HI-FI SERVICE & REPAIR
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Navigating the A11

Martin Pipe finds his way around the well equipped, budget Rotel A11 amplifier.

We may feature all manner of tasty exotica in these pages, but it's the affordable stuff that sells by the container load. Rotel's new A11, an integrated amp that can be yours for £450 or so, is in the latter category. Yet despite its modest asking price, the slim and functionally-designed A11 has – amongst other things – apt-X Bluetooth, an MM phono stage, remote-control, a Class AB output stage claimed to deliver 50 watts per

channel, headphone socket and independently-selectable provision for up to two pairs of speakers.

Our particular A11 was finished in a retro-70s silver, but an identically-priced black version is also available. Rotel also makes a matching CD player, the CD11, and a very pretty pair they make.

The A11's fascia is dominated by a large LCD panel that indicates volume level, selected source and menu-related information. A row of push buttons under the display select the desired source. As well

as Bluetooth and Phono, there are three line-level sources. Two further buttons engage or disengage the speakers – typically when headphone listening, using the adjacent 3.5mm socket.

Menus tweak the bypassable bass and treble tone controls, make available two 'loudness-type' bass-boost modes, modify the stereo balance, limit the volume, adjust display brightness to reflect your listening conditions and allow the sensitivity of each input to be altered so that you won't be troubled by any



obvious ‘jumps’ in sound level when changing between them. The A11 will switch into standby ten minutes after the disappearance of a source signal.

Modest it may be, but its (regulated) low-impedance power supply incorporates a custom-designed toroidal power transformer and slit-foil electrolytic capacitors that have been made especially for Rotel. There are metal-film resistors and polystyrene or polypropylene capacitors, built onto symmetrically-designed circuit boards; doing so, reckons Rotel “ensures that the precise timing of the music is maintained and faithfully-recreated”.

SOUND QUALITY

I tried the A11 with a two sets of speakers - Acoustic Energy AE109 floor-standers, and the little Triangle Esprit Titus Ezs I reviewed last month. Sources were a Valhalla-era Linn LP12/Basik Plus/Ortofon 540 MkII and a Cambridge CXNV2 streamer.

With Bluetooth I pressed into service my Google Pixel 3a smartphone and was given reasonable insight into the music. However, some nuances were glossed over - and a slight roughness was evident on occasions - the dominant synth riff of Ashra’s New Age of Earth track Sunrain, for example.



Under the toroidal mains transformer (top left) is a small standby one. A daughter board contains the remote-control circuitry, Bluetooth DAC and control microprocessor chip. A front-panel rotary encoder controls volume.

The app-based functionality of a phone is handy when it comes to feeding a wide of material to Bluetooth-equipped audio gear like the A11 but Radio 3 gained an obvious improvement when heard instead via the Cambridge CXN - here fed into the A11’s CD line-level input.

Losslessly-compressed music, also played via the CXN, was a better judge of the A11’s potential. And with percussively-driven material - notably Kraftwerk’s Tour de France Soundtracks, and Can’t Rely on You from the Paloma Faith album A Perfect Contradiction, there was plenty of rhythmic immediacy and





ortofon
accuracy in sound

CADENZA

The Cadenza Series of high-end Moving Coil (MC) cartridges allow you to get the most from your vinyl records. By carefully implementing cobalt-iron pole pieces, using new improved winding processes on the armature, and employing an extruded aluminium housing - amongst other changes - the Cadenza Series is able to out-perform all those that came before it.

The name *Cadenza* comes from the Italian word for cadence, which refers to a soloist during an orchestra performance where they play alone in an elaborate manner. It therefore seemed fitting that such a capable and nuanced cartridge series should use the same name.

Like other modern ranges, the Cadenza Series is structured in Ortofon's preferred colour-tier nomenclature; so there are Red, Blue, Bronze, and Black variants available to suit varying budgets and tastes.



Red

This MC cartridge and introduction to the series features a Nude Fine Line stylus which delivers open, dynamic sound with a touch of warmth.



Blue

Featuring much greater dynamics and resolution, the sound is more open and reproduces more accurate details thanks to the Nude FG 70 stylus.



Bronze

A step up in the range, this cartridge boasts a Replicant 100 stylus to produce stereo imaging capabilities that illuminate the farthest corners of the soundstage.



Black

Flagship of the range, the Cadenza Black is simply the best and features a Nude Shibata stylus which guarantees amazing tonal neutrality, dynamics and purity of sound.



Four line-level inputs, plus an input for MM cartridges, complete with earthing post, and a pre-amp output. The latter, which are affected by volume/balance and tone controls, are for bi-amping or active speakers. You can also see here the remote connections, Bluetooth aerial and the two sets of independently switchable speaker outputs.

drive on offer. Good marks too for how the latter track's bass was handled; it plunged surprisingly deep and only started to lose control when the volume was edged out of the A11's comfort zone.

Rotel's little amp fared well with stripped-down material. The scratched strumming that opens Revelation-themed *The Man Comes Around* – the only song Johnny Cash composed specifically for his final album, the Rick Rubin-produced album *American IV* – was accurately conveyed. And when the Man in Black began singing, his presence was so palpable I could be forgiven for believing he was there with me.

A general observation is that the A11 is a little treble-shy; the brass parts of the *Charleston* – as featured on Mike Oldfield's *Platinum* – sounded a little recessed and lacked bite.

Playing vinyl records, the other frequency extreme was affected. John Deacon's Chic-influenced bass playing in *Another One Bites The Dust*, from

Queen's 1980 LP *The Game*, lacked the depth and impact I was expecting. It was restored after hooking a Project Phono Box S2 Ultra into circuit. Perhaps the low filter (to eliminate 'cone-flap') is to blame. In other regards, the phono stage does a fair job considering the A11's low price. The delicate jazz-guitar flourishes of George Benson's *Masquerade* worked, as did – thanks to the amp's handling of tonal colour and imaging – an early EMI stereo recording of Dvorak's *New World Symphony*, as performed by the Berlin Philharmonic.

CONCLUSION

It may have a few minor weaknesses, but the Rotel A11 is a compelling performer given the asking price. Under normal listening conditions, it is a more musical amplifier than one has any right to expect at this level. Its basic design and spread of features have been carefully-tailored for the user on a tight budget. After all, we look upon features like Bluetooth and a basic phono stage – both of which are executed well here – as essentials nowadays.

MEASURED PERFORMANCE

The Rotel A11 delivered 78 Watts into 8 Ohms and 90 Watts into 4 Ohms so it has enough power to go loud. Ideally power should double into 4 Ohms; internal power supply wilt restrains 4 Ohm power here. Output impedance measured a low 0.12 Ohms, giving a high damping factor of 69.

Distortion levels were low in the midband (1kHz), measuring 0.01%. At

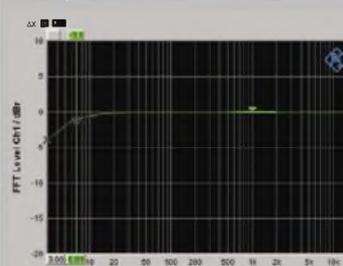
high frequencies (10kHz) the rise was small, reaching just 0.04% into 4 Ohms, our analysis showing just second harmonic, making the A11 effectively free of classic crossover distortion and the slight sonic grain that arises from it.

Input sensitivity was high, just 220mV needed from external sources for full output. There are no balanced XLR inputs.

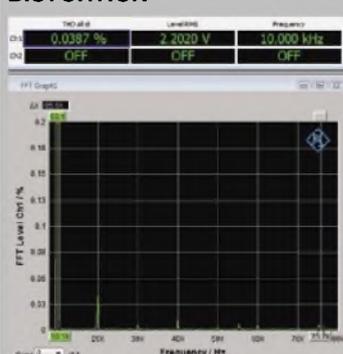
The phono stage was also sensitive, needing just 2.6mV for full output to be delivered, where 4mV or so is common. Overload, at 52mV, was well above the 30mV that a high output MM cartridge can deliver, so plenty of leeway here. Noise was low at -76dB and frequency response flat from 18Hz to 20kHz. Below 18Hz a warp filter rolls down gain fast, output measuring -10dB at 5Hz – sufficient to suppress loudspeaker cone flap from warped LPs.

Rotel have engineered a distortion free budget amplifier here with fine measured performance all round. **NK**

FREQUENCY RESPONSE



DISTORTION



Power (8 Ohms)	78 Watts
CD/tuner/aux.	
Frequency response (-1dB)	
7Hz-80kHz	
Separation	88dB
Noise (IEC A wtd)	-97dB
Distortion (10kHz, 1W, 4Ω)	0.04%
Sensitivity	220mV
Damping factor	69



The infra-red remote is comprehensive and does the job. It will also control other Rotel products, such as the matching CD11 disc-spinner. The rear panel points to further possibilities that are unusual for a £450 amp – a RS232 control port, infra-red sensor input and 12-volt triggers for other gear. This sort of thing tends to appeal to the high-end custom-install market.

ROTEL A11 ROTEL A11 £450



OUTSTANDING - amongst the best.

VALUE - keenly priced.

VERDICT

The A11 is a good no-nonsense integrated. As Rotel say: "Simply plug in associated components and enjoy". Value - Excellent

FOR

- engaging and musical
- attractive yet practical design
- everything the budget-minded music lover will need

AGAINST

- lack of bass weight and treble softness on occasions
- can't use the integral DAC with other sources
- no provision for tape

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POW Wow!

Jon Myles tries out the new POW Mo Bluetooth loudspeaker – and likes what he hears.

It looks unusual, it is different and certainly something new – but the POW Mo pocket-sized loudspeaker is certainly worth taking notice of for many reasons.

Bluetooth enabled, it measures a rather svelte 11.11 cm by 6.35 cm by 2.38 cm (L/W/H). That, though, is in its collapsed form.

Take it out of the box and you are able to expand it upwards to give an extra bass boost. Basically it will sit on the back of a mobile 'phone or will be just as happy on a table-top or bookshelf.

Additionally on the back are holders for credit and debit cards or whatever else will fit.

The magnetic back means it can be placed anywhere you want - I tried it on a hi-fi stand, a fridge and

even a metal pole. There are two mid-range/bass drivers inside which work in tandem. Keep the unit closed and they keep bass down. Expand it and it sounds – well – much more expansive! Bass gets deeper and the sound more weighty.

It comes with a universal mount (for both Apple and Android 'phones) as well as a USB-C charging cable and a basic guide.

To get the full sound you need to hold the POW Mo firmly in one hand by its base then use your other hand to pop out one side first and then pop out the other side. It sounds a little complicated but after a few tries I got used to this little process.

The POW Mo is very well built. There's a pleasing solidity to it and a sense of purposefulness despite its small dimensions.

SOUND QUALITY

Given its dimensions I wasn't expecting too much from the POW Mo – but it came over as refined and enjoyable.

On Bruce Springsteen's 'Thunder Road' the harmonica came with real presence with the unit attached to my iPhone. That was with it unexpanded. Placed on a fridge with the device expanded there was even more oomph to the sound, since placing a loudspeaker like this against a flat surface strengthens lows and bass. I couldn't help but be impressed by the low-end power on tap. Bass doesn't go as deep as you might wish but it is quite accurate and doesn't dominate.

So mounted, playing James Blake's 'Limit To Your Love' there was the sense of a wide soundstage and good scale to the sound.

Perfect? Absolutely not but for its price and size this is one lovely piece of kit. I used it on my daily commute, at home and even at a friend's house and never failed to be impressed by its ability.

CONCLUSION

The POW Mo might look a bit gimmicky at first – but don't be fooled. It is a good portable loudspeaker that pays dividends with a mobile 'phone. Pocketable, easy to use and good sounding. There's really nothing to fault it.



The click mount allows users to attach the MO onto the back of a mobile phone or any metallic surface. It also includes a magnetic wallet for storing credit cards or other things such as Oyster or travel cards.



POW AUDIO MO
£100



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

A very clever little 'speaker that delivers in terms of sound and convenience. Very hard to fault.

FOR

- sound
- convenience
- compact nature

AGAINST

- nothing at the price

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The **KA-RC-1** not only removes troublesome noise efficiently, to give new life to your vinyl, it also provides a level of sonic transparency that is truly astounding. Once you hear the effects yourself, you'll realise that you've never actually heard your record collection. Not properly. As such, I have to declare that the KA-RC-1 is the best record cleaner on the market. Bar none. - **Paul Rigby - Hi-Fi World - Jan 2018**

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Mains man

A budget mains cable grabs Martin Pipe's attention.

Hard to believe, but the well-received MCRU No. 7 IEC mains cable has been with us for a few years now. Fitted with silver-

plated Furutek connectors at either end – a FI-UK 13-amp mains plug, and a FI-11 IEC C13 type at the other – it performs well, as you might expect from a mains cable that sells for £360 in its cheapest (0.7m) form.

But what's this? A more affordable 'entry level' model – £65, in 0.7m guise – has just been introduced.

Confusingly, it also happens to be sold as a "MCRU No. 7 IEC mains power lead". MCRU needs to sort this out!

This less expensive No. 7, supplied to us in 1.2m (£85) form, is the product featured here. It is equipped with a MS-328 "HD Power copper" UK mains plug and - at its other end - a 'cryo-treated' Furutek FI-15 IEC C13 connector. It may be described as 'copper', but the pins of the review sample's chunky MS mains plug are plated with an undisclosed silvery metal. As MCRU put it "silver is the best conductor of electricity known to man...copper comes second". It's fitted with a MCRU "gold-plated audiophile" 13A fuse, and has an external clamp to accommodate the large-diameter cables associated with hi-fi applications.

As regards the FI-15 CU line socket, this robust item is a lot more 'military' in appearance than that fitted to the more expensive No. 7 model. It incorporates what MCRU calls a "floating field damper system". Linking the two together is mains cable with silver-plated copper conductors "encased in a silicone elastomer". Its outer jacket is surrounded with "acoustic

braiding...to reduce resonances". Internal inspection reveals a high standard of construction, and that ferrites – which can reduce RFI – have been fitted to all three conductors at either end of the cable.

In material terms, then, MCRU gives you a lot of cable for your cash - its invitation to "cut out the middleman, and deal direct with the cable maker" may well have some merit! As well as 1.2m, the manufacturer can also supply 0.7m (£65), 1.7m (£105), 2.2m (£125), 2.7m (£145), 3.2m (£165), 3.7m (£185), 4.2m (£205) and 4.9m (£225) versions. MCRU claim that in all cases the "new price-to-performance ratio will be difficult to beat...the new No.7 mains power lead offers startling performance for modest cost".

SOUND QUALITY

And if my experiences with a Cambridge CXN v2 streamer feeding a Chord Hugo TT DAC, Arcam A49 integrated amplifier and Quadral Aurum Wotan VIII

floorstanders are anything to go by, MCRU need not fear an unexpected visit from Trading Standards officials. Most obviously, the noise floor seemed to have dropped. This was particularly noticeable with hi-res music - with an inky-black silence between tracks, and low-level subtleties more apparent.

In order to achieve a meaningful comparison, direct connection to a mains outlet was made. I found that the No. 7 yielded the greatest improvement - relative to a bog-standard computer-type IEC mains cable - when used with the amp (the DAC has an internal battery supply, charged by a wall-wart, so I couldn't try that). I also noted benefits in terms of dynamics, and more fulsome basslines.

CONCLUSION

The 'affordable' No. 7 IEC is a credit to MCRU - it offers quite astonishing value for money. You no longer have an excuse not to replace the cheap IEC cables that were bundled with your equipment...and reap the rewards!



**MCRU NO. 7
MAINS POWER
LEAD £85 (1.2M
VERSION)**



**OUTSTANDING - amongst
the best.**

VALUE - keenly priced

VERDICT

An affordable upgrade that will help make the most of your hi-fi system.

FOR

- quieter
- more dynamics
- better resolution of detail

AGAINST

- nothing at the price

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Clever Cowon

It's small but potent. Jon Myles takes Cowon's iAudio digital audio player out on the road.

High-resolution digital audio players (DAPs) are shrinking in size nowadays. Take the new iAudio Hi-Fi, price just £100, from Korean manufacturer Cowon.

To say it's small would be an understatement. It measures just 43mm x 95mm x 8.9mm (W/H/D) and weighs a meagre 40gms.

But it packs a lot into that small form factor. Included is 64GB of memory, a 2-inch capacitive

LCD touch screen and support for almost all file formats – going up to 24bit/192kHz and including native DSD, ALAC, WAV, FLAC etc via its Cirrus Logic CS43131 digital-to-audio converter that also handles the headphone output.

Compared to something like an Astell&Kern or a FiiO player it's like having a Mini compared to a Bentley Continental! But, that actually makes it ideal for the daily commute as it takes up little space and you hardly know it's there.

On the bottom is the 3.5mm earphone jack plus a USB port for transferring music, while side buttons include power on and off, volume and the ability to slide back and forward between tracks.

Oh, and there's also a voice recorder plus a radio function which takes some beating in something so small.

To charge the Cowon takes around 1 hour 40 minutes for its in-built lithium-ion battery from which it ran – for me – three days without any problems.

The compact size, though, is useful for those of us who don't want to carry around big players. It took me a couple of days to get used to the small-sized buttons but once I became familiarised everything was natural and intuitive.

The display screen, while small, is also well-lit – text and graphics easy to read. Album artwork shows up well and track listings are clear and legible. There's also a function to make playlists.

Included in the package is Cowon's proprietary JetEffect and BBE software that in effect work like tone controls if you choose to use them.

JetEffect is impressive in boosting bass on hard-driving tracks that need a little enhancement through cheaper in-ear headphones.

That said, with quality monitors like the Noble K10s – my earphones of choice – I preferred turning the sound processing off.



The Cowon's album art screen is small but well defined, colours showing up clearly.

However, it's good to have this option for how you like to listen and what part of the sonic register is most important to you. I'd definitely recommend experimenting with it – if it works for you fine, if it doesn't then just ignore it.

SOUND QUALITY

Loading up the iAudio Hi-Fi with some of my favourite high-resolution tracks and plugging in the Noble K10s proved its sound has a pleasing and well-balanced quality.

Like most other Cowon players I have listened to, it does not exaggerate either the low-end or the top-end. Instead, it is smooth and steady. Tommy Smith's detailed 'Sound Of The Insects' came over with excellent balance on his saxophone. Not just nuanced but also hitting the mark in terms of timing. The drumming and little chiming details behind the track were also excellent.

On the solo that forms the centre of the piece, Smith's notes soared – taking the track away





The underside of the Cowon has a 3.5mm headphone socket, plus a USB socket for importing tracks and charging.

from my head and into a different landscape altogether.

The only thing I missed was a little detail from the Cirrus Logic chip. The likes of the ESS Sabre32 DACs drag more from high-resolution digital – but of course they cost more.

When switching to a pair of Bang & Olufsen Beoplay H3 in-ear headphones the differences were not so obvious. Listening to Amy

Winehouse's 'I Don't Want To Go To Rehab' the two sets of headphones sounded similar. Both are excellent but the Cowon didn't have the resolution to bring out the difference in their sound. The Nobles are crystal clear, the B&Os have a beefier sound.

But that's not to play down the abilities of this new Cowon. It does what it does very well indeed and in a shape and at a price that will appeal to many people.

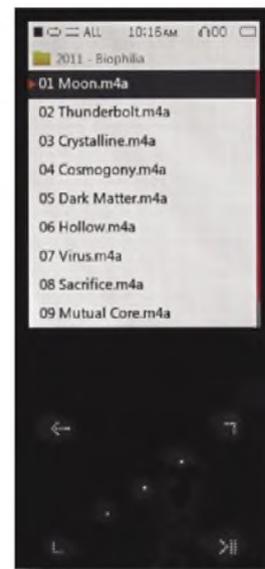
One thing I did find annoying is that once pocketed the Cowon is a bit hard to control with my fat fingers – the side buttons being very small. If you are deft, this may not be

a problem – it's horses for courses in this regard.

Sound-wise, though, the Cowon's small iAudio certainly hits the mark. It packs a lot of technology into a small space to give a pleasing result.

CONCLUSION

Small, potent and powerful. If you want a digital audio player to fit easily into a pocket, handbag or briefcase then this Cowon is for you. Only problem? The buttons and screen are small: good eye sight and a deft touch are required.



The song menu is easy to read, scrolling through various tracks simple.



The small screen at top shows album artwork, artist and song titles, while below sit controls to move between tracks and files. Its compact form factor means it takes a while to get used to, but once mastered the interface is intuitive.

MEASURED PERFORMANCE

With a 192kHz sample rate WAV file frequency response measured flat to 83kHz, in Fast filter mode and Normal BBE JetEffect filter (i.e. filter off). Switching to slow filters made little difference.

Output measured 2V, oddly with volume limiting on or off, but this is plenty enough to go very loud with all headphones.

Distortion at full digital level (0dB) was a very low 0.0003%. At -60dB however distortion from the Cirrus Logic CS43131 DAC rose to 0.18%, just below that from CD (around 0.22%). As a result of this and some noise, EIAJ Dynamic Range was mediocre at 93dB, below that expected from CD (98dB).

The iAudio measured well enough for a small player of very low price, but it is slightly below CD quality. NK

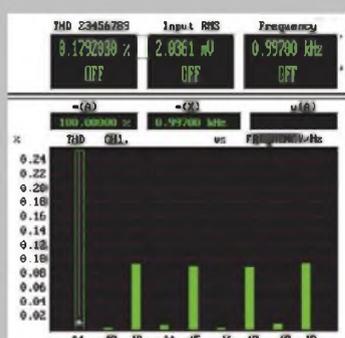
Frequency response (-1dB)	4Hz - 82kHz
Distortion (-60dB)	0.18%
Separation (1kHz)	71dB

Noise (IEC A)	-92dB
Dynamic range	93dB
Output	2V

FREQUENCY RESPONSE



DISTORTION



COWON IAUDIO £109



EXCELLENT - extremely capable.

VALUE - keenly priced

VERDICT

Excellent little DAP that is small but sounds refined.

FOR

- small size
- simple interface
- touch screen

AGAINST

- control buttons are fiddly
- plastic finish

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CHARISMA AUDIO MUSIKO 86

A simple MM/MC phono stage with audiophile pretensions, reviewed by Noel Keywood

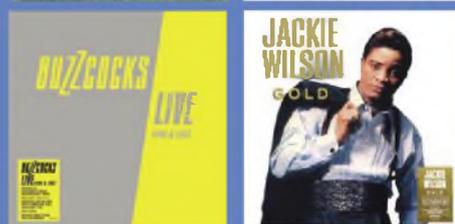
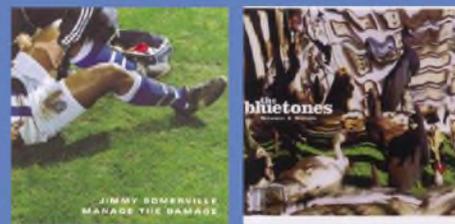
ORIGIN LIVE CARTRIDGE ENABLER 91

Martin Pipe checks out an interesting little cartridge tune-up device

AUDIOPHILE BOOK 93

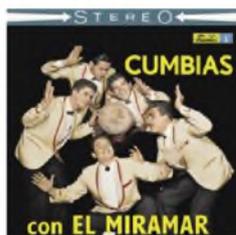
Paul Rigby reviews Wilco-Pedia, a book on 'America's best band'

news



MUNSTER

Three from the Spanish audiophile outfit (munster-records.com) includes Cumbias Con El Miramar (1965), a real



dance affair with plenty of associated rhythms from Cuba.

For Los Shain's 'El Ritmo De Los Shain's (1966)'. Think distorted garage rock. Loud. Frantic. Harsh cymbals. Mad surf guitars. All of that head-shaking craziness.

Lito Barrientos Y Su Orquesta's 'Very Very Well' (1965). Sporting a classic horn section, expect cumbia, porro, Cuban this, Puerto Rican that plus Mexican additions. Jolly. Fun. Dancey.

DEMON GOODIES

New releases from UK audiophile outfit (www.demonmusicgroup.co.uk), Demon includes Jimmy Somerville's third solo album, 'Manage the Damage' (1999), reissued on (white) vinyl for the first time.

The 2000 issue of The Bluetones' 'Science & Nature' was supposed to signify a change in direction for the band but ended up sounding like every other Bluetones LP you've ever heard. Great for fans, released on translucent vinyl.

Two from the Buzzcocks now 'Live 1990 & 1992' on grey vinyl. Previously available as a vinyl picture disc, now on two discs and created after the band's 1989 reformation. The 1990 group features Pete Shelley, Steve Diggle, Steve Garvey and John Maher. The 1992 line up includes Steve Diggle and Pete Shelly with a new rhythm section.

Also look out for three 'Gold' best-of packages from Jackie Wilson, Belinda Carlisle (2LP) and the mighty Mungo Jerry. All are pressed on gold coloured vinyl.



DARKTHRONE

The Norwegian black metal artist's release 'Old Star' (peaceville.com) offers blistering noise but tremendous clarity with it. This music runs straight from A-Z, keeping the distance short. The message remains intelligible and definite yet powerful and driving. But remember, hair and mustachios, guys. Hair and mustachios.

CHARLY

Two from this classic UK label (www.charly.co.uk) include 'Surfin' Bird, The Best of The Trashmen'. A top rock'n'roll outfit, unfairly derided in some quarters, the band played excellent surf-guitar tracks. You can hear the glory here.

Also check out 'Soul Shack: Time & Place', a collection of rare funky soul tracks from Francine King, Eddie Bo, Little Buck and Ohio Players.



BANDCAMP BEAUTIES

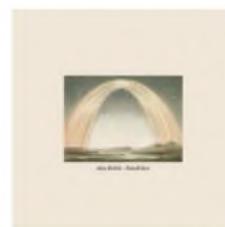
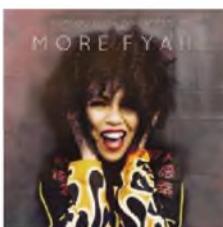
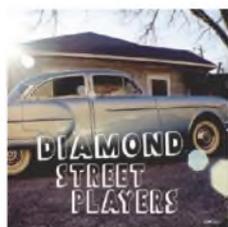
Singer-songwriter, Lillie Mae's 'Other Girls' (lilliemae.bandcamp.com) takes a country-nasal, melodic delivery with dirt-track, small-town weirdness. As if Mae doesn't wear shoes, have a change of clothes... or wash much.

The Diamond Street Players' debut, self-titled album (diamondstreetplayers.bandcamp.com) combines soul and jazz with bits of Hammond-infused funk. Light – fun – party time.

Mungo's Hi Fi x Eva Lazarus' 'More Fyah' (mungoshifi.bandcamp.com/album/more-fyah) takes ska, dub and occasion-reggae beats to modern soul and rapping flavours to offer a melange of old and new styles. A lesson in hip-grooving.

'Klingra' from Afenginn (*aka Kim Rafael Nyberg*; afenginn.bandcamp.com). Described as a chamber pop symphony in four movements, the music provides ambience, classical structures and an underlying meditative balm.

Alice Hubble's 'Polarlichter' (happyrobotsrecords.bandcamp.com) has that early-eighties minimal synth thing. Retro, rhythmic and deliberate. She thinks before every key of her synth is pressed.



HANK!

Four LPs from guitar maestro, Hank Marvin (Demon) spanning 1982-1993. 'Words and Music' (1982) produced his lone chart success with 'Don't Talk'. 'All Alone with Friends' (1983) sees the albums' first vinyl reissue. 'Into the Light' (1992) is released as a twin disc album from the original's single disc, as is 'Heartbeat' (1993) which features Cliff Richard on four tracks, as well as Mark Knopfler on 'Wonderful Land'.

JACKSON BROWNE

Released back in 1977, Browne produced a sort-of on-the-road concept album called 'Running on Empty' – now reissued by Elektra/Asylum. Mostly covers and co-written pieces, his most vacuous release, void of ideas, it was also his most commercial and successful LP. It was also fun, with infectious songs.



...AND FINALLY

Lettuce's 'Elevate' (roundhillmusic.com) the band's sixth studio album, combines jazz, funk and moody electronic beats for a sparkling, bouncy, sometimes thoughtful outing with plenty of variety.

Russian sax man, Nick Vintskevich' 'California Spirit' (floatingworldrecords.co.uk) spouts smooth jazz with harder sax edges. Throttle back, lean back, kick back. Music to drift by...

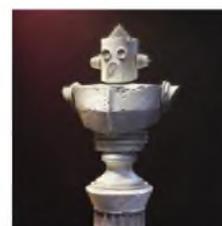
Austin Gold's self-titled mini album (six tracks) follows the 'Before Dark Clouds' (jigsaw) debut LP. Think FM radio and stadium AOR rock: Boston, Foreigner, Styx, Asia... Austin Gold.

William Clarke's 'Heavy Hittin' West Coast Harp' (*Bear Family*; www.bear-family.com). Offering a 'fat', distorted harmonica tone, it's a raucous, bluesy/R&B-infused career retrospective to his death in 1996.

Singer-songwriter, Tal Wilkenfeld's 'Love Remains' (BMG) seems to have a spine. Strong in will as well as voice with a firm delivery, it is enhanced with frequent double-tracked harmonies.

I Am The Morning's 'The Bell' (*Kscope*; kscopemusic.com) combines classical piano, ethereal vocals, rock and folkish elements. Often introspective with searching lyrics.

Finally, French electro-pop, feel-good outfit, Caravan Palace's 'Chronologic' (*MVKA*; www.caravanpalace.com). Despite the irritating template-vocal styles and beats by algorithm...they've got something. Is it the '60s TV theme arrangements? The playful constructions? The 70s disco effects? OK. You got me.



Simple Pleasure

A free-of-frills MM/MC phono stage reviewed by Noel Keywood

Charisma Audio's Musiko phono stage I'm reviewing here is a not-inexpensive unit (£1500) you could quite easily pass by. It lacks arresting looks, lacks facilities and is functionally basic, but I'd say "best not to pass it by".

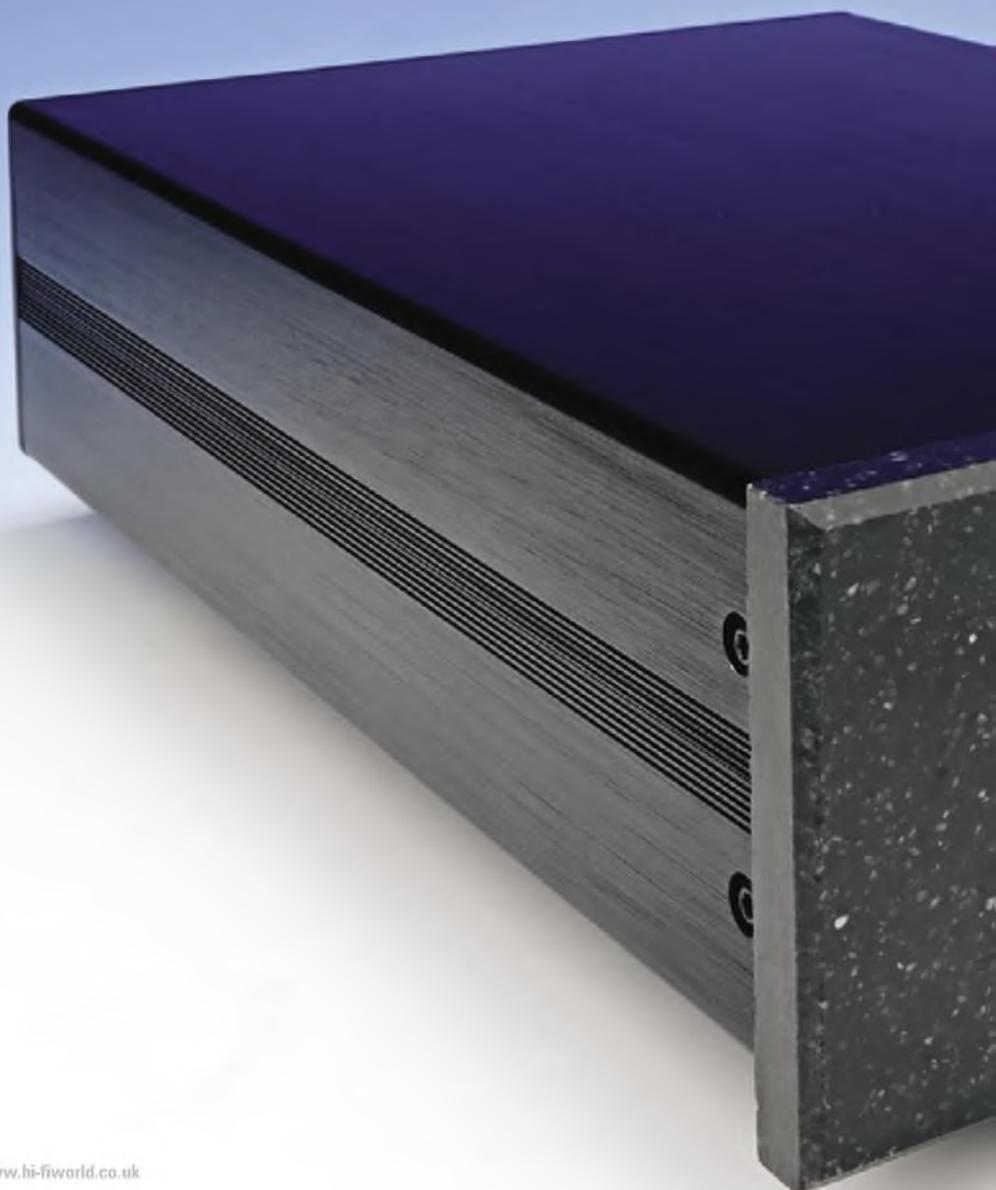
The Musiko is a phono stage for turntables that offers moving coil (MC) and moving magnet (MM)

cartridge compatibility in a simple package. It is minimalist to the point of not even having a power switch, so if you want to turn it off this must be done at the mains power point. And you will want to do this since we found that plugging in the 35V (very high) wall-wart power supply drove a big spark out of the rear power input socket that was a tad unnerving. The instructions do however warn that the

two units must be connected together before power is switched on and they also suggest it is left powered up – hence no on-board power switch.

As a quick aside: high voltage allows big signal swings and guards against overload, whilst the spark shows heavy current draw from a big power supply, so the theatrics don't necessarily count against it.

The case is a conventional pressed



chassis with folded cover arrangement, measuring 171mm wide, 290mm deep and 75mm high, powered from an external wall-wart switch-mode power supply rated at 36V, through a slim cable 1m long. There is one pair of phono socket inputs and one pair of outputs, plus the usual earth terminal. Weight is a reasonable 1.62kgm.

DIP switches for Left and Right channels are mounted on the rear and used to alter gain and input impedance to suit MM or MC cartridges. For MM there is standard 47k Ω load and 42dB ($\times 126$) gain, a bit above the usual $\times 100$ figure. For MC there are three gain values, quoted as 58dB, 61dB and 64dB – in effect low, normal and high. The 64dB value is relatively high ($\times 1585$) where (60dB, $\times 1000$) is the usual value used for MC cartridges; there is good leeway to match just about any MC with the gain values provided.

The load values for MC are in fine steps from 117 Ω to 1k Ω – satisfactory. Standard MC load is 100 Ω , ten times the usual generator value of 10 Ω . Some high output types are specified as needing a 300 Ω load,

so the Musiko covers MC load requirement well enough.

The unit is not grounded to mains earth so cannot form a hum loop; however, if both turntable and amplifier are grounded and connected together via the Musiko a ground loop and resultant hum is still possible. Missing from this preamplifier is a volume control allowing use with a power amplifier, balanced XLR outputs, capacitance selection for MM and a warp filter, which is why I said earlier it is pretty basic by current norms.

SOUND QUALITY

I paired the Musiko with our Timestep Evo modified Technics SL-1210Mk2



Direct Drive turntable, with SME309 arm and Ortofon Cadenza Bronze MC cartridge. I also used an Audio Technica VM750SH MM cartridge. Amplifier was a Creek Evolution 100A feeding Martin Logan ESL-X hybrid electrostatic loudspeakers via Chord Company Signature Reference cables. The system was fed by an Isotek Evo Mosaic

Banks of power supply capacitors and what look like high current voltage regulators populate the power board. Obviously, this is quite different to the norm.



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Genesis regenerated supply for clean mains free from distortion and noise, to avoid such outside influence.

Up to the point of listening, the Musiko failed to ring any bells in my head, but spinning True Love Will Never Fade, from Mark Knopfler on Kill to Get Crimson, I immediately sat up. Here was an expansive and full bodied sound that was deep and natural. His guitar strings resonated with a rich metallic twang, no hint of sharpness but with beautifully extended harmonics. This is also the Cadenza Bronze sound, the Musiko teasing the best from it. I have heard apart our Icon Audio PS3 MkII valve phono stage. And it struck me whilst listening that the Musiko is very valve-like: it has wonderful stage depth, glorious imaging, lacks the slight grain and haze of solid-state phono stages, and reveals the timbral richness of instruments.

But going back to Mr Knopfler (an audiophile!) his LPs sound superb and my True Love Will Never Fade review test track was as good as I have ever heard it, except that there was subtle extra heft to the bass line behind this track, introduced by the Musiko's equalisation. It was just below intrusive.

Hugh Masekela's Uptownship from Hope, (180gm, Analogue Productions) hit me with a big, bold sound where opening hand drum strikes were fast and hard, kick drum strikes had power and Masekela's trumpet blared out centre stage with a timbral richness and feeling of body that took me aback. Transistors? Nah! But it was true: there are no valves inside; I searched for them.

With Big Band Spectacular, from The Syd Lawrence Orchestra, String of Pearls from the direct-cut LP (Chasing the Dragon) was deliciously powerful: the band was enormous in front of me, arranged in a wide and deep sound stage that I could possibly fall into. Yet it all seemed easily natural, without enhancement: horns had scale and power but also a rich brassy quality.

Marianne Thorsen's wonderful bow work playing Mozart's Violin Concerto No4 often sounds a little light and bright from 2L's 180gm LP of this piece, recorded digitally in DXD 384kHz. The Musiko picked out her exquisite playing, giving the instrument a fulsome, detailed sound, well separated from the Trondheim soloists accompanying her. Again, a deep and wide sound stage with precise instrument separation made for an



Simple rear panel with sturdy gold plated RCA phono sockets, plus left and right channel DIP switches to set gain and load. The switches are unmarked except by numbers so the instructions must not be lost, or a sticker placed on the underside.

exciting listen; there was nothing here I could criticise – it was pure enjoyment.

CONCLUSION

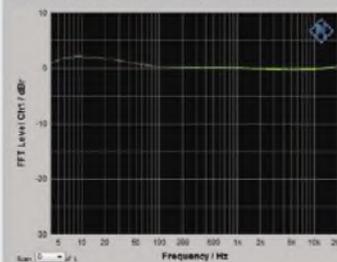
Charisma Audio's Musiko phono stage is, shall I say, disarmingly simple. It isn't a very engaging product of its kind, in appearance or facilities. Not difficult to add a volume control or XLR balanced outputs at the price, which is high. All the same, my scepticism

ground to a halt when I listened to it. No doubt the Musiko has superb sound quality, with a deep sound stage, a timbral richness to instruments, great ability to separate out all on the sound stage, and a sense of low end warmth plus heft to bass that makes rivals sound challenged. It was worryingly good! The Musiko isn't a product that will appeal by most metrics, but it is well worth hearing. I enjoyed it immensely.

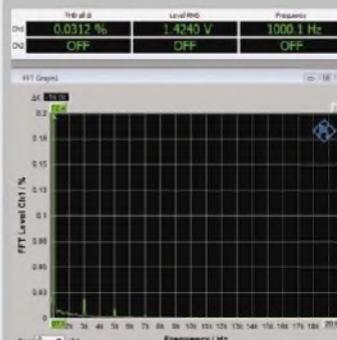
MEASURED PERFORMANCE

Frequency response of the Musiko was characterised by bass lift below 40Hz, our response analysis shows, at all gains up to the highest. A lift of +3dB around 20Hz with MM and +2dB with MC is sufficient to add obviously stronger bass than is common, but it also lifts gain all the way down to 3Hz, making loudspeaker cone flap from disc warps a potential issue. There is no warp

FREQUENCY RESPONSE



DISTORTION



filtering of any sort, optional or integral.

Gain values were approximately as quoted, a high x140 (43dB) for MM and up to x1186 (62dB) for MC – a sufficiently wide range to cope with all cartridges. Running from a high voltage supply (36V) the Musiko also has a high output swing of 11.8V and correspondingly high input overload values of 84mV with MM down to 9mV with MC at full gain (62dB).

Measuring 0.34µV, equivalent input noise (IEC A wtd) was higher than the lowest value possible (0.1µV) and 3-4dB above most else, so this is not a low noise design. However, in use hiss was not obvious so high LF gain may account for the high noise value.

Measurement shows the Musiko has raised bass output, plus high subsonic gain and no warp filter, so cone flap caused by warped LPs may arise. Otherwise it is accurate, has a broad gain range and high overload levels. **NK**

PHONO (MM/MC)

Frequency response (-1dB)
40Hz-20kHz

Distortion (1kHz, 5mV in) 0.03%

Separation (1kHz) 68dB

Noise (IEC A, e.i.n.) 0.34µV

Gain (MM, MC) x140-x1186 / 42-62dB

Overload 11.8V out

CHARISMA AUDIO MUSIKO PHONO STAGE £1500



EXCELLENT - extremely capable.

VERDICT

Simple MM / MC phono stage with great sound, frill-free but expensive.

FOR

- sound quality
- no hum or noise

AGAINST

- no volume control
- no balanced output

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Get enabled!

Martin Pipe discovers a cheap but effective upgrade from Origin Live.

Bit of an unusual one, this. I can always remember being told to bolt my cartridge firmly to the headshell for the best possible performance... but Southampton-based turntable manufacturer Origin Live thinks that isolating the two, as far as practicality allows, with a gasket will give audibly-superior results when listening to vinyl. They compare cartridge isolation to "the suspension of a car travelling down a road full of pot holes". How so? "Resonant jagged edges which jar and detract from the performance are removed", giving a "sense of increased ease and vibrancy to the music". To this end Origin Live now sells a £19 'Cartridge Enabler' kit to help you affordably-experiment with isolation.

The core element of the Cartridge Enabler is a thin sheet of specially-cut synthetic cork-like material (the exact composition of which is not disclosed) that is fitted between the cartridge and headshell. It can only be fitted one way round, the word 'TOP' helpfully being embossed onto one surface. Also in the kit are six washers - three made of a 'black soft' material, and three nylon. You fit these under the heads of your existing screws in a 'sandwich', the black washer mating with the surface of the headshell.

Under most circumstances you'll only need two of each sort of washer - the others can be considered as 'spares'. Origin won't supply individual replacements; they are "not essential", apparently making only "slight" contributions to the sound. So there's probably no great problem if the top surface of your headshell has recesses machined into it and in the rare case where three bolts are used to secure your cartridge an additional hole can be pierced in the enabler.

Once the Enabler is in position



and everything has been reassembled, the bolts should be tightened so that they - in Origin's words - just start to 'bite'. By tightening one bolt more than the other, the Enabler is 'squeezed' on one side and the cartridge will be tilted ever so slightly. That way, azimuth errors can be compensated for so that the cartridge is parallel to the record surface - as it should be.

PERFORMANCE

I tried the Cartridge Enabler with two very different turntables - a Valhalla-era Linn LP12/Basik Plus/Ortofon 540 MkII and a Technics SL-1200Mk3 with Audio Technica AT440MLb fitted to an ADC magnesium headshell. The tables were connected via a Pro-Ject Phono Box S2 Ultra to an Arcam A49 integrated amplifier driving Quadral Aurum Wotan VIII speakers. So what difference did this modest little accessory make? In both cases, a firmer and more solid soundstage was noticed with a variety of LP material - notably Vivaldi's Concerto in C for Bassoon and Strings (English Chamber Orchestra/ Daniel Smith/ Philip Ledger, ASV Digital). Smith's bassoon benefitted from the tweak, its texture being made a tad more distinctive.

The bass line that dominates the second half of Fleetwood Mac's The Chain (Rumours) was conveyed

with extra depth and 'punch', while the dobro that kicks off this song emerges with finesse and can still be heard clearly even as the complexity builds. You're drawn further into the atmosphere of Dire Straits' Private Investigations (Love Over Gold), Mark Knopfler's guitar work seeming fresher and more vital than it did previously. Only playable by my 45rpm-capable Technics was a 12in. single of Freeez's Southern Freeez. Here, the percussion and rhythm guitar were - amongst other elements - better-communicated than was previously the case.

CONCLUSION

The Cartridge Enabler is probably one of the most affordable upgrades any vinyl fan can make - in some respects, it's as if your cartridge has been replaced by a more upmarket model. On the whole, I felt that the Linn deck made more from its presence; although the Technics definitely sounded better with the Enabler, the 'leap' was more evident when records were being played on my LP12. I would never have imagined that a tiny piece of material could - albeit placed in a critical position - make so much difference.

ORIGIN LIVE CARTRIDGE ENABLER £19



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

A cartridge upgrade...for less than £20? Quite possibly.

FOR

- an effective azimuth 'fix'
- improved imaging and clarity
- reasonably straightforward to fit

AGAINST

- at this price, nothing!

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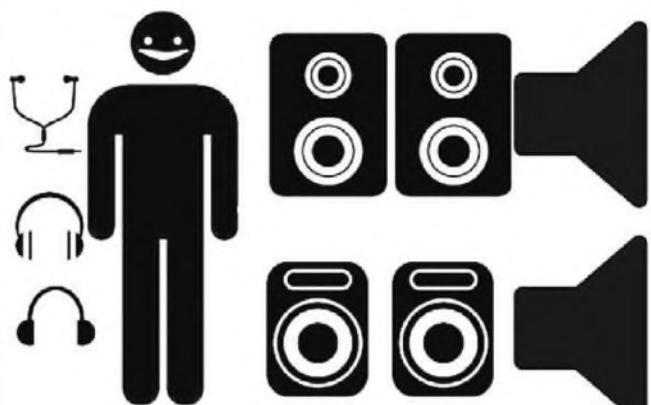
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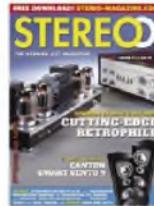
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Wilco-Pedia

Billed as 'A comprehensive guide to America's best band' Paul Rigby reviews a book on Wilco.

Daniel Cook Johnson

Author: Jawbone

Price: £14.95

Johnson targets the experimental pop outfit, Wilco and serves the fan over 320 pages.

And he's pretty thorough too. After a brief introduction we're off, into a completely different band – Wilco's historical past, before the Wilco was Wilco and when Jeff Tweedy was part of an earlier group, and alt-country outfit called Uncle Tupelo.

Johnson looks at a highly selective array of Uncle Tupelo songs involving Tweedy as a creator. Hence, on the 1990 Uncle Tupelo album, 'No Depression', that means a single track, two from the LP 'Still Feel Gone' (1991), two from 'March 16-20, 1992' and from 1993's 'Anodyne'. Five tracks.

I have an issue with this as the selection appears a little haphazard. In my opinion, Johnson should have gone through each and every track on all the Uncle Tupelo albums. Firstly, because I've seen conflicting song-writing credits which suggest that Tweedy had a greater part in the songs not featured here and, even if Tweedy's direct input was not impacted by a credit note, he was there, he was present in the life of the band members. He had an influence by just standing there, by talking with the other guys, going for a beer with them, sharing his hopes and dreams with them. He had a hand in those songs, don't try and tell me otherwise. So they should all have been covered.

Next is a band biography. A series of mini profiles on each band

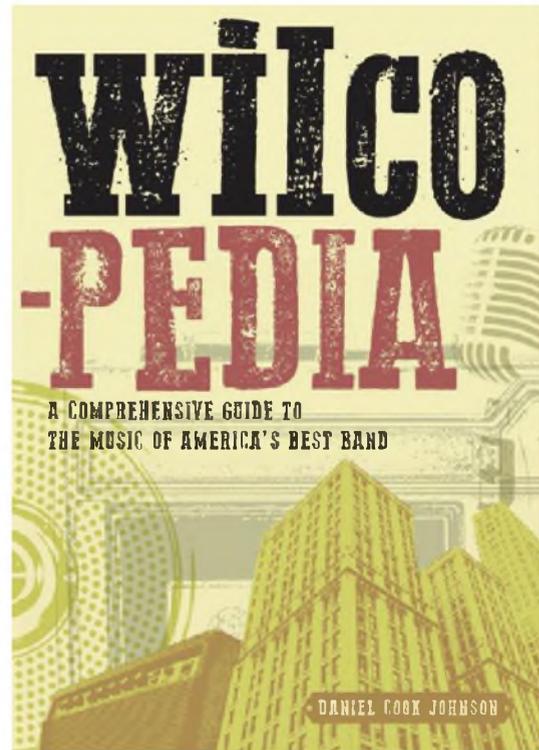
member. I'm not after a 300 page biography on each but I think each person deserved more than half a page to two pages each. Even main man Jeff Tweedy gets around three. Not enough. This area really does feel like a Wiki entry. Despite the fun title, I expected more. More research, more insight, new revelations. More.

There's no excuses here. Don't give me what I can see via a quick Google search. This is a book. Not a smartphone entry. Either do it and do it right or don't do it at all. Don't give me half a job, though.

On page forty, the track-by-track entries appear. Again, frustrations emerge. Johnson mentions three post-Uncle Tupelo/pre-Wilco tracks. He talks about two of those at the beginning of the band's career but pushes the third ('The T.B is Whipping Me') back to 'Chapter 9' because it's a cover. This decision seems odd. Is time the governing factor in how all of the examined tracks are sorted in this book? It seems that the answer is yes, unless it's a cover, then it's pushed back into a covers section. This is messy.

All three tracks appear in the 2014 rarities box set 'Alpha Mike Foxtrot: Rare Tracks 1994-2014'. So why not just have an additional, separate entry for this box set and feature all the tracks there instead of scattering them? There are other box set tracks haphazardly found elsewhere in this book too.

The general track-by-track



coverage lists each song within their respective albums, including any special editions of the same plus TV appearances, those covers I mentioned and live releases. Each song lists the band line-up and instruments played, then Johnson looks at the background to the song, offers a personal view, other critical comments, how the song's been treated in live shows if at all and so on. The pace is lively, informative and succinct.

In fact, the majority of the book is excellent, packed with interesting details that serve as a useful reference.

The book itself should have been tweaked, though. The first forty pages binned or reduced to a two page introduction with the content order re-organised. I partly blame Johnson but mostly blame Jawbone for offering no guidance to the author and failing to impose their editorial authority on the final layout.

That said, climb over the irritations and you've got yourself a worthy tome of Wilco. **PR**

HI-FI WORLD

ON THE APP STORE

The screenshot shows the App Store page for the Hi-Fi World app. At the top, there's a navigation bar with 'Sign In', 'Music', 'Films', 'TV Programmes', 'App Store', 'Books', 'Podcasts', and 'iTunes U'. Below this, the breadcrumb trail reads 'App Store > Entertainment > audio web publishing ltd'. The app's icon is a red 'HI-FI WORLD' logo on a white background. The developer is 'audio web publishing ltd'. There are buttons for 'Details', 'Ratings and Reviews', and 'Related'. A 'Screenshots' section shows three preview images: the magazine cover for November 2015, a 'contents' page, and a 'NOVEMBER 2015' issue page. The magazine cover features 'B&W FORMATION DUO wireless speaker system' and 'FREE READER CLASSIFIED ADS IN THIS ISSUE!'. The 'contents' page lists sections like 'LOUDSPEAKERS', 'DIGITAL', 'AMPLIFICATION', and 'VINYL'. The 'NOVEMBER 2015' page lists articles such as 'CABLES', 'FEAT.URES', 'OLD WORLD', 'VINYL', 'DIGITAL', 'AMPLIFICATION', and 'REGULARS'. On the left side of the app page, there's a 'Rating: 4+' and a 'TOP IN-APP PURCHASES' list with 10 items, each with a price. Below that are 'LINKS' for 'Privacy Policy' and '© 2014 Hi-Fi World'. At the bottom, there's a 'Description' section with a paragraph and a bulleted list of features. Below that is an 'Information' section with a table of app details.

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Description

Hi-Fi World brings you the best in hi-fi...from around the world!

- We listen and measure products in depth, at our London offices.
- Expert opinion from a team of renowned writers, musicians and engineers.
- International standard measurements using Rohde & Schwarz test equipment...

Information

Developer	audio web publishing ltd
Category	Entertainment
Updated	7 Dec, 2014
Version	1.0
Size	9 MB
Rating	Rated 4+
Family Sharing	Yes
Compatibility	Requires iOS 5.0 or later. Compatible with iPhone, iPad, and iPod touch.
Languages	English

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Loudspeakers Cherrywood excellent speakers, condition and sound bargain, only £475! London, 07957384795 (Evan)

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KUDOS X2 speakers. Fantastic condition. Barely used, Grilles never unwrapped. Boxed. Instructions. Rosewood veneer. £825. Email: timelinetraining@aol.com (Sutton Coldfield area)

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CLASSIC AUDIO Research SP6A valve pre-amp (not hybrid) which used to be mentioned regularly in Absolute Sounds. £550. Meridian rare black 101b pre. 104 tuner, 105 (2x mono amps each with power supply) so stacked 3 high in pairs. £595. Tel: 01704 628968 or 07968769595 (Southport)

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RUSS ANDREWS classic Powerkord for sale with high quality Isotek IEC wattgate connection and high quality mk tough plug excellent sounding mains cable for all quality hifi worth £140, sell for £75. Tel: 01484 427426 or Email: andrewstringer476@yahoo.com

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NEXT MONTH

DECEMBER 2019 ISSUE

PRIMALUNA EVO 300 INTEGRATED AMPLIFIER

PrimaLuna of Holland have introduced an entire new series of amplifiers – and near the top is the Evo 300 integrated that delivers 42 Watts per channel from EL34 valves in Ultra-linear mode, or 24 Watts in Triode mode – switchable by remote control. Using super high quality components, adaptive auto-bias and even a 'bad tube indicator' they are proud of this new design. Don't miss our exclusive review in the next great issue of Hi-Fi World.

Also, we hope to bring you –

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DEVIALET PHANTOM REACTOR 900 SOUND SYSTEM
KLIPSCH THE THREE II TABLETOP SPEAKER

...and much more.



This is a selection of what we hope to bring you, not a complete list. We regret that due to a wide range of issues, we cannot guarantee that all products listed above will appear.

PICK UP THE DECEMBER 2019 ISSUE OF HI-FI WORLD ON SALE OCTOBER 31ST 2019, OR SUBSCRIBE AND GET IT DELIVERED TO YOUR DOOR: SEE PAGE 20

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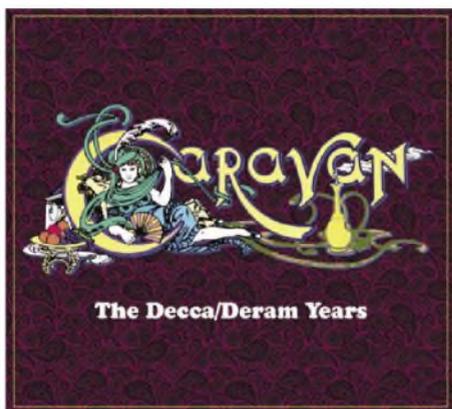
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CARAVAN

IN THE LAND OF GREY AND PINK

DECCA



"There was a lovely, slightly under-stated, decidedly English flavour of humour"

Caravan were an odd band. At first glance in the music press – and if you took a quick Vox pop around music fans in the early seventies – you would have thought that the band was topping just about every chart out there and had achieved global success. The reality was much different. Up to and including 1975, arguably the band's commercial heyday, Caravan never really bothered the charts and music sales trundled along nicely but without the band thinking about opening Swiss bank accounts to hold the resultant income.

Caravan was highly thought of and the group's fans, including media representatives, shouted loudly about Caravan's talents – but that never amounted to any suggestion of global domination. Yet the fervent and passionate support continued.

You could, therefore, call Caravan a cult group, but that wouldn't be truly accurate either because the band were more than that, I feel.

This odd position, in the mindset of both the media and the public, gave Caravan a long and steady career because the group's support, well, lasted. Unlike other stars of the moment who's fans became bored and drifted into the night, Caravan's backing was compact and forceful. The group's lifespan as a recurring entity was longer perhaps than if Caravan had hit the No. 1 chart spot and blazed a light across the music industry. Toddling along... steadily... consistently... has given Caravan longevity. A rare state of affairs in music as a whole.

Spawned from the collapse of the Canterbury band, The Wilde Flowers, they featured an amalgam of Brian Hopper, Kevin Ayers, Richard Sinclair, Pye Hastings and Robert Wyatt and a few other luminaries in 1965. In broad terms, half of the band left to form Soft Machine. The rest started Caravan.

Caravan's debut (1968) was a worthy release with plenty of highlights, combining jazz and psyche, but it was the 1970 release of 'If I Could Do It All Over Again, I'd Do It All Over You' that set the tone of innovative prog and – something that was integrated within the group's best work – humour. There was always a lovely, slightly under-stated, a little withdrawn, gentle, rather eccentric, decidedly English

flavour of humour that ran, like a vein of quartz through a large piece of dense basalt, across their prog rock constructions. And those constructions could be impressive indeed.

In fact, in 1971, those constructions would form a starring role as 'In the Land of Grey and Pink' was released. Seen by many observers as the band's peak in terms of artistic innovation, it was also the group's last release with the original classic line-up as Dave Sinclair would leave to join Robert Wyatt in Matching Mole.

'In the Land of Grey and Pink' combined a range of musical genres, sprinkled across the prog template as garnish and taking the form of folk, a little bit of classical here and there, jazz but always that English essence, including the band's now trademark humour. What caught me, though, were the underlying melodies.

Speaking in 2013, band member, Pye Hastings commented on the restored and extended tracks featured on the reissued version of 'In the Land of Grey and Pink', seen also in this box set. "The solos were all recorded on different multi tracks and at the time of mixing, certain ones were deemed better than others and were selected, usually by the featured soloist and used in the final mix".

Now 'In The Land Of Grey And Pink' can be found within a newly released 9CD box set featuring expanded editions of all the studio albums recorded for the Decca/Deram labels. The albums arrive complete with bonus tracks and rare live recordings, while the set also includes 'The Story of Our Lives: Live At The BBC 1970-75' and 1974's 'Live At Fairfield's Halls' concert. The eight gatefold digipacks featuring original album art are enclosed in a rigid slipcase with an accompanying 44-page booklet detailing the history of the band.

The albums in full include 'If I Could Do It All Over Again, I'd Do It All Over You' (1970), 'In The Land Of Grey And Pink' (1971), 'Waterloo Lily' (1972), 'For Girls Who Grow Plump In The Night' (1973), 'Caravan & The New Symphonia: The Complete Concert' (1974), 'Cunning Stunts' (1975), 'Live At The Fairfield Halls, 1974' and 'The Show Of Our Lives: Live At The BBC 1970-1975'.

Note that the debut is not featured in this set, presumably because Universal lost the rights. **PR**

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