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Chris Frankland, John Pickford.



Buses come along in threes, they say – and CD players come along in pairs these days it seems. We have two for you in this issue. People still want to buy a decent CD player – like the now unavailable Oppo BDP-205D we use as a reference, with ESS ES9038 Pro DAC chip inside. Top analogue-to-digital convertor chips like this give superb results with CD but for

them steam-punk digital delivered by lasers on sleds is a side issue. That was yesterday; such

chips are capable of so much more today – but that means they must be connected to outside sources, not an old silver disc, in order to play high resolution 24bit digital. All the same, I suspect many buyers will be more than happy to hear CD from a modern player with a top chip, rather than an old cooker – and in this issue we review two interesting ones. On p32 you will find Rega's Saturn MK3 player that also acts as a hi-res DAC. And on p66 is the Synthesis Roma 14DC+ with a similar list of abilities, supplemented by a valve output stage.

The need to save energy very much influences product design in audio, if not for reasons that are altruistic like saving the planet. But low power consumption equates to the same thing I guess. The primary motive is to improve portability and battery life since portable audio is, these days, a far bigger market than domestic high fidelity. All the major DAC manufacturers have low power/small size versions of their top chips and that very much includes market leader ESS of California. Helm use just such a chip, recently introduced, within their Bolt portable convertor for headphones, that you read about on p38. The spec of the chip within this tiny device clearly shows just how far and fast development has come in modern digital.

Not everyone wants to be furiously modern though, some hark back to sounds of the past, especially when that means loudspeakers with big cabinets and the promise of room moving bass. In the USA horns were popular in the past and Klipsch keep their sound very much alive in the Heresy IV loudspeaker reviewed on p10. I hope you enjoy reading about the old and new in this issue.

Noel Keywood
Editor



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verdicts

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●●● GOOD
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● POOR
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extremely capable
worth auditioning
unremarkable
flawed
keenly priced

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To ensure the upmost 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.

No other UK hi-fi magazine has in-house testing, and none has access to such advanced tests across all types of equipment. That's why you can depend on *Hi-Fi World* reviews.



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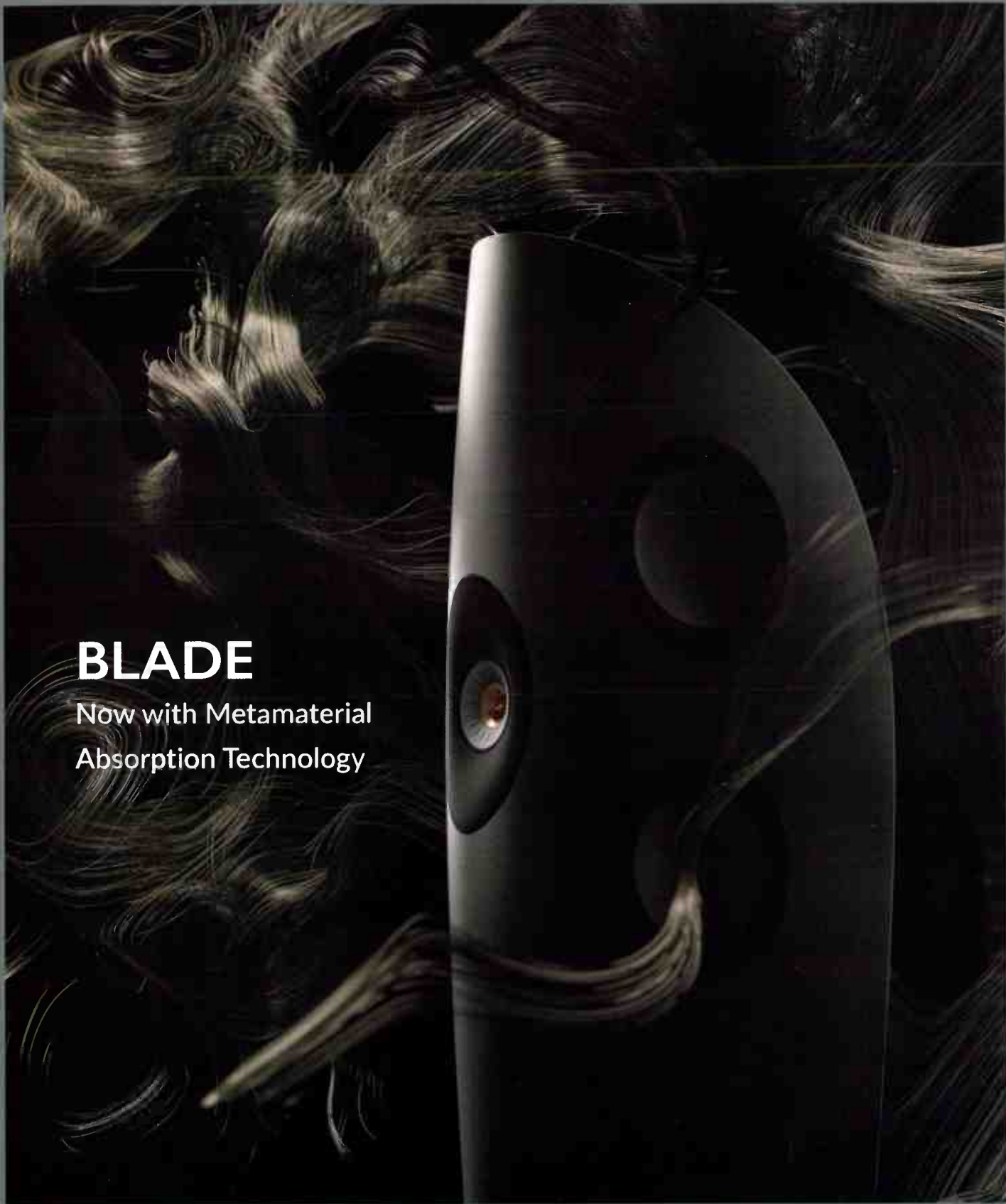
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SEVENS UP

Mission's 770 two-way speaker (1978) was described as a labour of love by founder Farad Azima, who was fond of the lucky number seven (Mission was born on 7/7/77, and many products feature it in their name). Its success and performance – Azima's goals were "BBC-inspired midrange accuracy and transparency, with tighter bass and more propulsion and engagement" – were however down to solid engineering and extensive listening tests rather than luck. Now it's back. The new £3,500 770 will, like the original, be built in the UK.

It features a specially-developed 20cm woofer, the iconic polypropylene cone of which is loaded with minerals to stiffen it for a "fast, tight" low-end. Also fed from the crossover, a more sophisticated design than the original 770's, is an "ultra-smooth" tweeter with lightweight damped-microfibre dome. The real-wood veneered cabinet they're built into features dual-layer construction, and a front-mounted reflex port that's tuned to a very low frequency to avoid "one-note bass".

Further details: bit.ly/3LDQVrj



EXPOSURE LEVELS UP

Putting a mains power supply in the same box as sensitive analogue electronics is not the best of ideas, and with this in mind we're pleased to note that Exposure's new 'reference-level' VXN phono stage (£1,790) relies on an external unit. And not for the Sussex manufacturer a cheap switched-mode 'wall wart' either, the purpose-designed VXN power supply being claimed to be "very low noise...with multiple stages of regulation".

The preamps it powers rely on discrete transistors for gain. There are no 'chips' in the signal path, which does however benefit from high-quality passive components including polypropylene capacitors in the RIAA equalisation network. The aluminium-clad VXN is described as "fully-adjustable" and can accommodate MM or MC cartridges; indeed, each type is allocated separate front-selectable inputs. On the rear, DIP switches configure loading and gain for the individual stereo channels (but not, we note, cartridge types). To prevent warp-induced cone-flap the VXN rolls off below 30Hz.

Further details: bit.ly/3uNCbzN



RINGING THE CHANGES

In the mid-1990s Cambridgeshire-based 'Data Conversion Systems', already responsible for one of the world's first hi-res audio converters, introduced its "Ring DAC". Influenced by established resistive-ladder DAC principles, but enhanced by proprietary cutting-edge digital techniques, the Ring DAC's main claim to fame was a reduction of the low-level non-linearity that could impede finer musical details.

Mostly confined to expensive esoterica, Ring DAC technology did find its way into an affordable Arcam CD player. dCS' latest Apex incarnation of the Ring DAC is however shamelessly high-end, being built into the newest versions of its Vivaldi DAC (£33,000), Rossini DAC (£25,500) and Rossini network/CD player (£28,000); note that previous generations of these products can be upgraded to Apex standard. The changes marry refinements to the Ring DAC's algorithms to (amongst other things) 'extensively-reconfigured' DAC circuitry, power-supply improvements, changes to filters and an all-new analogue output stage. They reduce noise and distortion, while increasing linearity by a claimed 12dB.

Further details: www.absolutesounds.com

ON YOUR MARKS!

Nearly two decades on from the demise of TAG McLaren, the famous racing brand is set to reappear on audio equipment thanks to a collaboration with Klipsch. The Indianapolis-based firm, now celebrating its 75th anniversary, has just introduced a 'McLaren Racing Edition' of its 'The Fives' active two-way stereo speakers.

They are claimed to marry McLaren's "renowned design ethos and use of advanced materials" to Klipsch's extensive audio experience. Selling for £1,349 per pair, The Fives McLaren Edition features high-excursion 4in carbon-fibre woofers and Tractrix horn-loaded 1in. titanium-diaphragm tweeters powered by efficient DSP-driven amplifiers. Input options include HDMI-ARC for TV sound, phono stage, Bluetooth 5, optical digital, analogue phono and USB; there's also a subwoofer output. The hand-painted matt-black finish with papaya flourishes, McLaren 'speedmark' logo and 'stability pad' inspired by F1 tyre-treads leave you in no doubt as to the tie-in.

Further details: bit.ly/3qTAM9F



ON THE TIN...

Time flies, ten years having passed since Naim and Focal decided to merge. A limited-edition system, consisting of Naim electronics and Focal speakers, has been launched to mark this Anglo-French milestone. Described as 'ready to play', the £28,000 'Focal Naim 10th Anniversary Edition' consists of an NDX 2 music-streaming player, NAC 282 pre-amplifier and 2x 80W NAP 250 power amplifier. To ensure the best performance, HiCap DR and NAPSC power supplies also feature.

The Focal speakers chosen to partner this desirable collection of Naim kit are the Focal Sopra N°2s. These distinctive 3-way floorstanders, with their twin 7in. woofers and beryllium tweeter, have themselves been given a complementary finish – including concrete-effect side panels and, to mark that tenth anniversary, a shiny tin-finish baffle. All relevant accessories, including Naim Super Lumina speaker cables, are included.

Further details: bit.ly/3uRQwLA

AN AIR FOR MUSIC

Feeling the squeeze? iFi has announced cost-reduced versions of its distinctive Zen products. All four members of the Zen Air range – the Blue (a Bluetooth HD DAC) and (conventional-input) DAC, to be followed by the CAN (headphone amp) and Phono (stage) – will each sell for under £100. Most visibly, the Zen Air cases are made of plastic rather than aluminium.

There are also internal changes, iFi having simplified the circuitry of existing Zen devices to meet the price point. Some features – notably balanced outputs and fancy DAC clocking systems – have been removed, although iFi assures us "the core elements are retained".

For example the ZEN Air DAC retains its Burr-Brown DAC. Within the Zen Air Blue, meanwhile, you'll find the same ESS Sabre DAC that powers the £159 ZEN Blue V2.

Further details: bit.ly/3uGUaYM (Zen Air DAC); bit.ly/3qYwdep (Zen Air Blue)



HAUS MUSIC

Now there's more to the Chord Company than, well, cords. After nearly forty years, the Wiltshire firm has diversified into mains distribution blocks – which are branded 'PowerHAUS'. Does this mean there's a German connection? No, unless you count an export-friendly version with European socketry. HAUS actually stands for 'Hybrid Array

OLD MEETS (VERY) NEW

With its iconic green-backlit glass front panel and aluminium side caps, McIntosh's £21,995 MX180 is a dead ringer for the vintage 'Macs' we know and love. This upgradable processor for upmarket AV systems is however packed to the gunnels with sophisticated technology.

Its five HDMI 2.1 inputs and two HDMI 2.1 outputs are compatible with 4k sources and various HDR modes, and are ready for 8k. Among the supported surround-sound formats that can be decoded and fed to its sixteen balanced outputs (for power amps that drive 15.1 or 9.1.6 speaker configurations) are Dolby Atmos, DTS: X Pro, and Auro-3D. McIntosh's 'RoomPerfect' calibration system optimises the audio output for prevailing room-acoustics.

Other features include a USB port for PC audio, low latency, bass/treble controls, multiple digital and analogue audio inputs including an MM phono stage, networkability, eARC support, the latest analogue-to-digital converters, the ability to feed different sources to the two HDMI outputs and 'second-zone' audio.

Further details: bit.ly/3r2nsjD



LAYING DOWN YOUR ARMS

So successful were SME's high-end turntables that, in 2019, the West Sussex company announced it would be exiting the 'separate' tonearm business that made its name. If you hanker for an SME tonearm today it will need to be pre-installed on an SME turntable. Of the latter, the latest is the imposing £50,000 Model 60 flagship.

The new deck's chassis consists of two horizontal machined-aluminium slabs, spaced (and decoupled) from each other via belts and polymer cylinders that also form the feet. Belt-driven from an AC motor suspended in a brass housing, the platter is similar to the massive and heavy arrangement that forms a key part of the Model 30. It sits on a hydraulically-damped bearing.

As with other SME turntables, the Model 60's variable two-speed motor controller is a separate unit. Also featured is an updated version of the classic SME V tonearm (the VA) with a tapered arm tube made from special 'space age' resin, instead of the original's magnesium.

Further details: sme.co.uk/



ON THE BALL

Paris-based Devialet, best known for its highly-unusual Phantom speaker designs, now has a soundbar. Compared to the Phantom, the £1,990 Dion looks rather conservative – save for a ball-like tweeter (the 'Orb') centrally-mounted on the front panel.

Devialet told us that two new patented technologies, alongside previous developments, enables the Dion to deliver an "immersive sound experience". One, 'Space', upmixes any audio source into 5.1.2 thereby enveloping the user with sound. Related to this is ADE (Advanced Dimensional Experience), a DSP-implemented beamforming system. Within the Dion are seventeen neodymium based drivers, including eight long-throw subwoofers. These work in a "push-push" configuration for decent bass without external help – quite an achievement, given the Dione's slimline TV-friendly enclosure.

Other features include app-controlled room-calibration, four listening modes, adaptive volume level, Bluetooth 5.0, compatibility with Airplay 2 and UPnP, support for Spotify Connect, HDMI 2.1 connectivity (with eARC) and an optical digital input.

Further details: bit.ly/3uOMEey



Unfiltered Supply, and is apparently a development of Chord's proprietary MainsARAY technology.

There are two versions of the six-outlet PowerHAUS – the S6 Studio (£1,000) and the flagship M6 Master (£2,000) – both of which feature aluminium casework to "minimise microphony". Internally-wired with specially-selected heavy-gauge cable, they feature isolated bus-bars for live, neutral and earth. The 13A

sockets were chosen for both reliability and "sound performance", while the 16A IEC inlet facilitates mains-lead choice. "Filters, neons and switches" are absent as, according to Chord, they impact sound quality. Accounting for the M6's £1,000 premium is the inclusion of three parallel-fitted hybrid MainsARAY devices.

Further details: bit.ly/3K40obH (S6); bit.ly/3NFZZ1f (M6)

Past Values

Noel Keywood listens to the Klipsch Heresy IV loudspeaker, a design that harks back to the past.



like it. Klipsch (USA) specifically feature a valve amplifier and old motor-bike in their website pics of this loudspeaker. So we're sort-of talking past values here – but not really. The Heresy IV (£3,999) is in truth a synthesis of old and new.

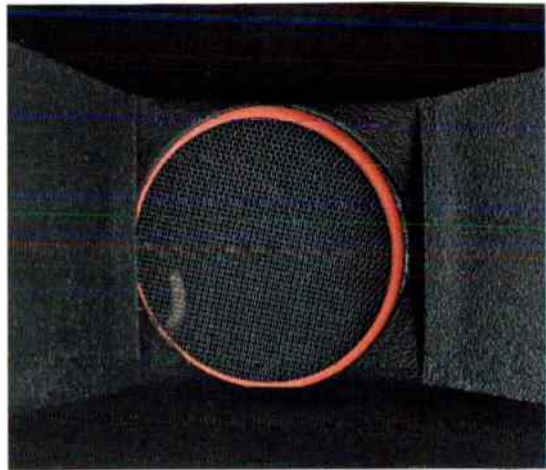
I well remember my Saturday job at a hi-fi shop on London's Edgware Road where, long ago, we used to throw Goodmans Magnum Ks over the counter at eager customers who wished to blow their brains out later, courtesy of its 12in bass unit. The Heresy similarly has a socking great 12in bass unit. Even the cabinet is reminiscent of the Magnum K, meaning big – but not broom cupboard big. Just about liftable at 20.4kg (45lbs). Making both the bass unit and the cabinet it sits in pretty authentic; no mamby-pamby 5in frauds here. This is definitely, genuinely an old-skool loudspeaker that threatens to move brains as they did on Saturday nights in the past.

Around at the back however it is not old. Because here Klipsch use a large port with an

interesting horn shaped mouth exit – most definitely an up-to-date design. It worked very well, our measurements showed. A sneakily modern twist on things placed out of sight on the rear panel. The real reason is that ports are usually placed at rear to best hide cabinet colouration – box boof – they project. But let's not spoil the story!

"Proudly made in the USA" Klipsch say – and this brings me to their heritage, invoking Paul Klipsch and his use of the Tractrix horn profile (1945), patented by Voight in 1927. Horn loudspeakers have a history. Partly explaining the use of midrange and treble horns here. No Magnum K from the UK had anything like this. So here we have focussed invocation to deities of a past era – pity that the horns and front baffle they sit on aren't pretty. Some trim rings around the drivers and a better finished front baffle would have helped highlight the Heresy's unusual features. A traditional grille is supplied to hide the twin horns and big bass unit.

Why fit strange looking horns



Unusual is use of a mid-range horn, running from 800Hz up to 5kHz. This pushes vocals out, from a newly designed polyamide diaphragm compression driver, Klipsch say.

in any case? Put simply, they project acoustic power forward, straight at listeners. This makes them very loud from little input. By moving air efficiently and sending it straight at you they have poke-in-the-face delivery. It's sonically different to the norm and in audio folk-lore more exciting. In practice horns don't measure so well and have strong sonic character, less boring than the norm, but also less accurate. It's like adding salt and pepper to a mild fish dish, to liven things up.

Klipsch say of their K704 Tractrix treble horn that it uses a titanium drive unit (looks like a dome) with front phase plug for "exceptionally even high-frequency dispersion".

The K-702 midrange horn sitting below is a new design with "polyamide diaphragm compression driver".

Together with the 12in bass unit they inhabit a cabinet measuring 630mm high, 394mm wide and 337mm deep, designed to sit on the floor. Horns are vertically directional and Klipsch have aimed them upward toward listener's ears by tilting the cabinet backward.

At rear lies the big horn port and measurement showed this works very effectively, pumping out bass that reaches low. Perhaps other manufacturers need to check out horn port profiles that translate high internal to low external air pressure in better fashion than a tube. That's why horns are described as 'acoustic



The big rear panel carries bi-wire terminals and a large horn-profile port that worked very well, our measurements showed. All the same, strong output from the horns masked its contribution.

Do not underestimate the role of a 'tiny' fuse, a good fuse can restore the potential of your replay system.

Pd Audio's fuses, using metal molecular activation technology, launched 4 series: Element, Innovation, Hyper and Master, to meet the different needs of music enthusiasts.



Fascination Of Technology

Metal molecular activation technology is to increase the electron flow per second thus improving the dynamic range and reducing the background noise.

transformers'. The Heresy IV is very different here and no 1970s throwback. Something measurement clearly revealed.



The large volume floor standing cabinet sits close to the floor to augment bass, helping raise sensitivity. Just a few Watts are needed to go very loud.

The 12in bass unit does a lot of work in this design, reaching right up to 850Hz: it covers a wide range of frequencies, contributing much to the sound.

The rear also carries bi-wire terminals fitted with linking plates for mono-wiring.

SOUND QUALITY

Initially I connected the Heresy IVs to our PrimaLuna EVO 300 Hybrid amplifier but this was a match not made in heaven. The powerful FET output stage of the PrimaLuna was too vivid for the speedy and forceful Heresys – and volume on the amplifier had to be cranked right down. After a few hours I gave up because the Heresy's horns are prominent and need amelioration.

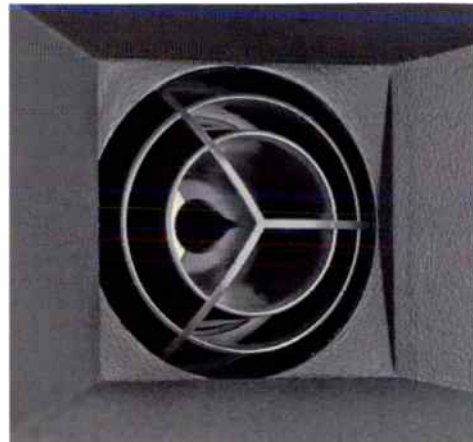
Time for our glorious Icon Audio Stereo 30SE single-ended valve amplifier with all its 30 Watts of sonic purity. This changed matters, bringing in a deeper, fuller sound with less sheen and bite. But, you may be

surprised to hear, it still wasn't quite right (I was surprised too). Where the Stereo 30SE usually opens up the sound stage it did not do so here.

Salvation finally came from our Creek Voyage i20 amplifier. It suited in terms of tonality and also worked best at extremely low output due to its quiet output stage. Even the Icon's KT150s weren't meant to work at milliWatts.

Sources were our Oppo BDP-205D silver disc player connected digitally via QED Quartz glass optical cable to the Creek, with its internal AKM Velvet Sound DAC. Also used was an iPhone 11 Pro Max playing hi-res music files via Bluetooth 5.1.

Even with the mild mannered Creek amplifier the Heresy's remained forward in the midrange, throwing vocals at me. Sinead O'Connor was loud and clear singing Foggy Dew (CD), but the Chieftain's



The treble horn has concentric diffusers in front of its titanium dome pressure driver. Such assemblies are very efficient.

bodrans by way of contrast fell back from the perspective I am used to, lessening any sense of bass heft.

Plucked bass in the Pink Panther theme (CD) was similarly reticent. The Heresy's were not bass heavy or warm, coming across as dry and controlled. I moved the cabinets against the rear wall to maximise room gain (17ft long room) and bass, which helped a little.

With bass heavy tracks the big bass units showed their

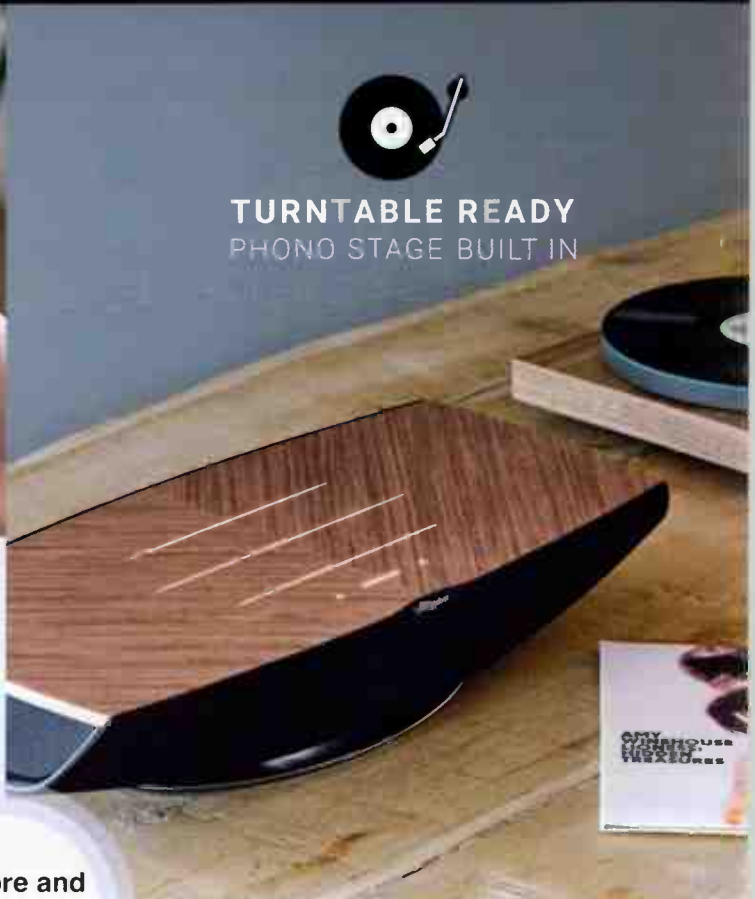


The front baffle has a black spray painted finish and the drive units lack trim rings, exposing the fixing screws. Looks better with the grille in place.



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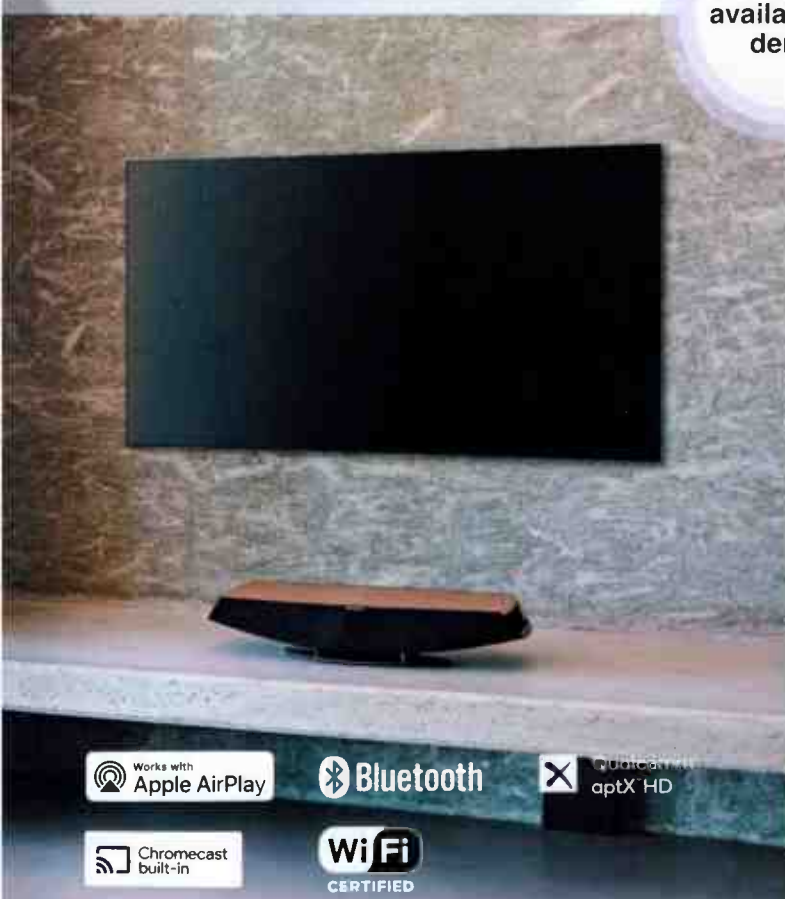


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demo.



WHAT HI-FI?



Sonus Faber Omnia, 02/2022



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reddot winner 2022
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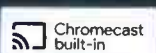


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World Radio History

mettle, bringing lovely insight and control to drum strikes in Dadawa's Canton Story (CD). Equally, her whispered vocals were thrown out clearly where I sometimes struggle to hear them. Daft Punk's Giorgio by Moroder (24/88.2) with its insistent bass line also came over well, as did the prominent synth kick drum behind Safri Duo's Samb Adagio (CD). However, there was boxiness in the sound, a rap by knuckles on the cabinet rear panel showing where this was coming from.

Extended treble from the close-miked guitar strings of Neils Lofgren's Keith Don't Go (CD) brought the treble horn into play big time, showing just how strenuous it can be – and this is sort-of the point with horns: they come at you. Especially when used enthusiastically in the design process – as here. The high treble of this track was sharp – sending

"Their big 12in bass units give expressive bass but the midrange and treble horns dominate – in keeping with modern trends"

out Lofgren's tortured strings with a power I've not heard before.

Johannette Zomer, singing Handel's Lascia ch'io Pianga (DSD), certainly soared – as she is meant to in this lovely piece. Forward and clear, there was however some unevenness of contrast that I suspect was caused by the midrange horn. Seemingly a modulation, due to its uneven output (see Measured Performance).

Via Creek's high resolution Bluetooth receiver, music from my iPhone 11 Pro Max running 24bit files courtesy of Onkyo's HF Player (paid-for version, £9) I could bring into play Onkyo's equaliser to reduce upper treble and boost bass slightly, this giving a smoother and more credible balance. This made my classic-Rock test tracks like Busy Being Fabulous from The Eagles (CD) pass through without top-end shimmer.

Horns image well, especially when there are strong highs – and that was the case here. However, the low cabinets produced an arc of sound that seemingly reached about ear height when seated, plausible for vocalists if not as ethereal as that from taller loudspeakers, like our reference X-Stat electrostatic panels in Martin Logan's ESL-X that image celestially.

CONCLUSION

The massive sensitivity of these loudspeakers, plus their prominent treble, combine to make them unusually amplifier sensitive I found. Their big 12in bass units give expressive bass but the midrange and treble horns



Treble (high frequency) horn at top, mid-range horn at centre, scalloped for closer proximity to the 12in bass unit. Horns like this project acoustic power forward to listeners.

dominate – more in keeping with modern trends than past values. These are past values as set by the BBC in the UK I must note; in the USA it was perhaps different.

With a big but slightly boxy sound the Heresy's did strike me as similar to 'speakers of the past. They were an idiosyncratic combination of old and new that is characterful and best heard first. Horns have merit with their forceful approach: think lively. Best mated with a sweet sounding EL84 valve amplifier like Audionote's Oto I suspect. Or any specialised low power amplifier.

MEASURED PERFORMANCE

The Heresy IV was extremely sensitive, if not up to the near-impossible 99dB quoted: we measured 96dB from 2.8V input, 6dB higher than even big floor standers – so quite a feat. This is hugely loud from one Watt, making valve (tube) amplifiers of 20W or less usable, and even 3W will go decently loud.

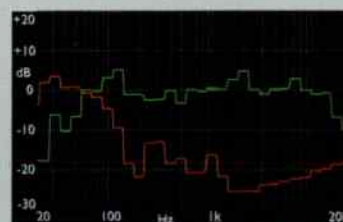
Frequency response was uneven right across the audio band, especially in the working region of the midrange horn (800Hz-5kHz). The treble horn was smoother extending up to 16kHz. The 12in bass unit peaks at 120Hz before rolling down to 50Hz, but the big rear port (red trace) contributes to low bass, extending down to 25Hz. It is tuned to 40Hz and applies broad damping, the impedance trace shows. Overall impedance measured 7 Ohms, meaning this is nominally an 8 Ohm load, although it does dip down 4 Ohms.

The uneven response means this loudspeaker will be characterful, but

it maintains reasonably even balance across the audio band and bass is well controlled. **NK**

FREQUENCY RESPONSE

Green - driver output
Red - port output



IMPEDANCE



KLIPSCH HERESY IV £3999



EXCELLENT - extremely capable

VERDICT

Bright, projective sound from an unusual horn loudspeaker. Idiosyncratic – listen first.

FOR

- expressive bass when driven hard
- forcefully vivid dynamics
- wall placement

AGAINST

- sharply bright sound
- uneven midrange
- slightly boxy

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'X' Marks The Spot

Martin Pipe wades through the acronyms to sound out Teac's UD-505-X headphone DAC.

The £1,399 UD-505-X featured here is an update of the earlier UD-505 hi-res USB headphone DAC, launched in early 2018. A midi-sized unit, the UD-505 featured DSD/PCM decoding via an AK4497 DAC chip for each

stereo channel, followed by Teac-developed HCLD analogue electronics and the ability to drive balanced or unbalanced headphones. Both physically and in terms of basic functionality, there's nothing to tell apart old from new - the two are like (DS)Ps from the same

pod. Indeed, the similarly-priced 'X' is identified as 'UD-505' on both the front panel, and a label beneath the unit. Only the accompanying manual - and the USB connection, as identified by Windows - provides any indication that what we have here is a UD-505-X.



As an alternative to USB, the UD-505-X can - like its predecessor - be fed from coaxial and optical S/PDIF digital sources, or Bluetooth. There are analogue inputs (phono sockets), for a phono stage or tape machine, to be enjoyed through headphones - or, for that matter, speakers. I was hoping that, with the analogue input selected, the UD-505-X was going to be capable of acting as a USB analogue-to-digital converter. Alas not - there is no analogue-to-digital converter in the unit.

Also at rear are phono (unbalanced) and XLR (balanced) output sockets, to drive power amplifiers or active speakers. From the menus, you can - for such purposes - make these analogue outputs subject to the actions of the volume control. If you want to use the UD-505-X as a source with existing gear, there are fixed (0 and +6dB) modes. These are selected using an intuitive and friendly menu system that relies on an excellent dimmable/extinguishable

OLED screen set into the front-panel. Regardless of such settings, the volume control is always active during headphone listening. Oddly, the 'in-phase' output to either Pin 2 (standard) or Pin 3 of the XLRs. A third position switches in the unbalanced output; the XLRs can't also be used at the same time.

Other settings configure the headphone outputs. There's a 4.4mm 5-pole Pentaconn ('JEITA RC-8141C') socket for balanced 'phones; what a pity Teac hasn't also specified a 4-pin XLR of the sort that you'll find on the recently-reviewed UD-701N. You do however get two 6.3mm sockets, in a system redolent of the one fitted to iFi's excellent Pro iCan headphone amplifier. These can be operated in 'unbalanced' mode, meaning that two pairs of such headphones can be simultaneously-driven. However, an alternative balanced mode allows them to independently-drive the left and right transducers. This needs special wiring of the 'phones

signal lead. Teac goes one step further, as these outputs can be configured to work in either 'active ground' mode (the transducer's input is relative to ground) or 'true' balanced differential (in-phase and inverted-phase outputs from the amplifier drive your headphones).

The nicely-designed remote accompanying the unit gives the impression of numerous inputs. However, two of them ('Optical 2' and 'Coaxial 2') actually use the same 3.5mm front-panel connector! You cannot thus have a (Minidisc-style) optical and coaxial cable plugged in at the same time. Although this input is intended for portable gear, Teac supplies a phono adaptor that allows it to be connected with ease to a 'regular' S/PDIF source.

In terms of Bluetooth, LDAC and aptX/aptX HD are supported in addition to 'bread-and-butter' AAC and SBC - however, LE2 (as found on the latest Apple smart devices) isn't catered for. If you're listening to PCM, upsampling up





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to 384kHz/32bit - or conversion to DSD256 or DSD512 - can be applied. Teac, never short of an acronym, tells us that its 'RDOT-NEO' (Refined Digital Output Technology NEO) 'fluency algorithm' lies at the heart of the upscaling process. You can, at the touch of a button, display the input and output sampling rates on the front-panel OLED.

A slew of digital filters are available when playing PCM content - fast/slow linear-phase, fast/slow minimum-phase, fast apodizing, fast correct minimum-phase and brickwall. There are no DSD filter options.

For the dual-mono DAC circuitry, Teac has switched from its predecessor's AK4497s to a pair of ESS Technology ES9038Q2M SABRE32 Reference converters. These can be clocked internally (there are separate timing chains for 44.1kHz, 48kHz and multiples thereof) or from an external 10MHz source fed into the unit via a rear-panel BNC socket. DSD playback to 22.58MHz (DSD512) is supported, the upper limit for PCM-derived sources being 768kHz/32bit. The DAC signals are processed in the analogue domain by HCLD2 "enhanced-current" buffering, a development of the original UD-505's HCLD, and then fed to the output circuitry. The headphone amps, designed specifically for the 'X', are of push-pull 'diamond follower' topography. Teac claims that the digital and analogue sections are isolated from each other, and I suspect that they're served by independent power supplies built around the UD-505-X's two toroidal power transformers.

PERFORMANCE

Much of my listening was - after upgrading the unit's firmware from v1.03 to v1.13 - done with the Windows 7 & 10 PCs and headphones. Also a Cambridge V power amp and Quadral Aurum Wotan VIII floorstanders. The



Much use of surface-mounted components is made in the UD-505-X, although audiophile-grade 'through-hole' electrolytic capacitors have been strategically-placed in the circuitry. Note too the pair of toroidal mains transformers.

Empyreans, being planar magnetics, aren't particularly easy to drive. Yet the Teac took them in its stride, ample listening levels being achieved without muddiness or other nasties even with bass-heavy electronic music.

With my Windows 7 PC Teac's HR Player software didn't seem to handle gapless files properly. I found that with high-res files, the gap was longer because more data has to be accommodated, whilst no such problem was encountered with Foobar2000. With the Windows 10 machine, no gaps were noted and so albums with tracks that run into each other played as they should. HR Player has various settings that might solve these issues.

Also there are menus referring to "Bulk Pet", which has nothing to do with overweight budgies or discounted dog dinners. It instead refers to the four proprietary 'Bulk Pure Enhanced Technology' USB 'transmission modes' that the UD-505-X supports as an alternative to the standard (isochronous) USB2 audio mode. Those four settings allow a balance to be struck between the load placed on the host device (i.e. computer) and the USB interface within the UD-505-X. Good tweekers' fun!

HR Player, as a 'freebie', is well worth a punt. It's compatible with DSD/DFF, FLAC/ALAC, WAV/AIFF

and MP3. Versions are available for MacOS, as well as Windows.

Across a wide range of music, the UD-505-X acquitted itself. The Changingman, from Paul Weller's Stanley Road (CD), was distinguished by deep, clean bass and percussive 'snap'; it's free of the 'murkiness' that some might put down to the recording. A simpler affair is the light jazz of Take One, as recorded by David Piltch and Aaron Davis. An audiophile analogue recording, transferred to DSD64, Take One is rich in the subtleties that a decent playback system will convey. Examples are the natural decay of Davis's Steinway piano and string noises on Piltch's AKG-pickuped double-bass. These emerge convincingly, with appropriate soundstage width and in proportion to the other elements as and when they're brought in. I then switched to a recording of John Foxx's Quiet



The UD-505-X's remote handset is better than many, but then again there's no app alternative. Most of its functions can also be driven from the front-panel controls.

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Teac fit digital inputs optical, coaxial and USB digital inputs at rear (plus combination optical/coaxial at front). The lump near bottom-centre hides a Bluetooth aerial. Phono-socket and XLR outputs enable the UD-505-X to be used as a preamp. Unusual is Teac's provision for a 10MHz external clock.

Man stories. Foxx contributes atmospheric echo-drenched piano. This was in perfect step with the narration of Justin Barton, which was locked dead-centre. The UD-505-X/Empyrean combination revealed the occasional sibilant and plosive 'pop', but overall these did not detract from the evocative overgrown cityscapes conjured up by Foxx.

Another hi-res (24/48) recording, the LSO/Noseda performance of Britten's War Requiem, allowed the detail-resolving and imaging qualities of the UD-505-X to shine - the complex orchestral and choral layers give the attentive listener

plenty to discover. So too do the various upscaling modes and digital filtering, which add up to even more fun for tweekers!

The effects of the various filters I found were subtle – headphones of the Utopia/Empyrean class definitely help here. I found myself favouring the linear-phase filters. PCM upscaling could add more 'space' to a recording, but DSD conversion seemed a tad grainy to me. So too at times did Bluetooth, which is here more for convenience than critical listening.

CONCLUSION

I found the UD-505-X to be a worthwhile performer with neutral,

musical character. The numerous features available make this unit highly versatile and worthy of a place at the heart of an unconventional (but good-sounding!) hi-fi system; many of the virtues noted with headphones were audible through the Adam active speakers and the Cambridge/Quadral combo.

Also inspiring confidence were build quality and the controls, which had a reassuringly-precise feel. A balanced analogue audio input and 4-pin XLR for headphones would have been nice, but even as it stands the package (including free player software) deserves a place on your shortlist.

MEASURED PERFORMANCE

Digital conversion to analogue through the ESS internal DAC gave a ruler flat response to 82kHz at widest, with 'brick wall' filter selected (192kHz sample rate). The UD-505-X has seven filters and an 'off' position, so eight options. Frequency response changed little with all other options except 'filter off' where there was substantial change in response, unexpectedly reducing bandwidth to 42kHz with a slow, well damped roll off to the 96kHz upper limit. CD (44.1kHz sample rate) gave a similar result, all filter options giving flat response to 18kHz with minor differences, whilst 'filter off' imposed a low roll down above 10kHz, sufficient to give a softer sound.

Distortion at -60dB was low at 0.03% from 24bit hi-res PCM, rising to 0.21% with 16bit CD – a relatively low figure. This is actually quantisation noise associated with 16bit, not DAC distortion. With low distortion and noise EIAJ Dynamic Range measured a high 119dB, these results being identical over

USB as well as S/PDIF inputs.

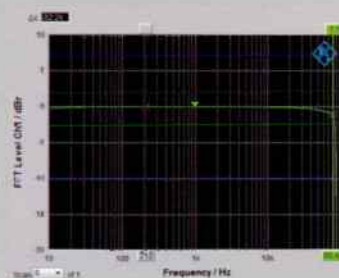
Acting as a preamplifier from Line in to Line out, x15 (23dB) gain was available through RCA or XLR out, with 8V / 16V output overload values, so plenty of gain here for preamp purposes. With a full scale digital input both Line (RCA) and XLR outputs could be driven to full level (8/16V) so plenty of leeway to drive power amplifiers that need 1V–2V.

The balanced 4.4mm Pentacon headphone output swung up to 13V from a full scale (0dB FS) digital input and the 6.3mm socket 7, plenty enough to cope with all headphones.

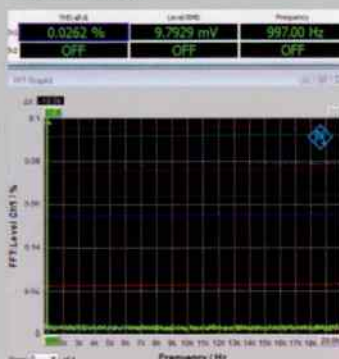
The Teac UD 505-X measured very well all round. It has massive dynamic range and great ability. **NK**

DIGITAL	
Frequency response	4Hz-82kHz
Distortion (-60dB, 24bit)	0.03%
Dynamic range (EIAJ)	118dB
Output (RCA / XLR)	8V / 16V
Gain	x15 (23dB)

FREQUENCY RESPONSE



DISTORTION



TEAC UD-505-X
£1,399



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

A musically-satisfying and extremely configurable DAC, with capable headphone amp and preamp capabilities thrown into the bargain

FOR

- excellent build quality
- balanced and detailed sound
- versatile configurations and essential input connections

AGAINST

- gapless playback problems with Windows 7 PC
- no 4-pin XLR headphone output
- two inputs rely on the same connector!

Teac
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June 2021



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Here's your chance to win the superb JBL HDI-1600 loudspeakers we reviewed in the November 2021 issue. Read the review excerpt below and answer the questions.

"In the USA there's emphasis on accuracy. And that's what I bumped into here, albeit with JBL's own way of achieving it. Dominating the front panel is the acoustic horn of the treble unit, that they say uses "patented High-Definition Imaging (HDI™)

waveguide technology". Behind lies a 1-inch (25mm) compression driver, also patented. It has a "lightweight polymer diaphragm with improved high frequency extension due to reduced mass". A V-shaped geometry reduces breakup modes, time smear and distortion". Acoustically, such a horn couples the dome of the driver into a bigger air load, placing more stress on it. But it also does more work, here running down to 1.9kHz they say, and our measurements confirmed this. The importance being this lower crossover frequency improves

phase matching, making the two drive units sound better integrated.

Below the visually prominent horn lies a 6.5in (165mm) bass/midrange drive unit with "aluminium matrix cone" able to reach smoothly up to the 1.9kHz crossover frequency. The rigid diaphragm avoids breakup modes, providing "true piston motion", JBL tell us. It is acoustically loaded by a rear port to extend bass downwards.

The drivers and crossover sit in a sturdy braced cabinet weighing 10kgs – heavy for the size".

For a chance to win this great prize, just answer the four easy questions at right. Send your entries on a postcard only, by 10th June 2022 to:

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QUESTIONS

[1] What dominates the front?

- [a] piezo tweeter
- [b] acoustic horn
- [c] brand badge
- [d] fixing screws

[2] The compression driver has -

- [a] a copper cone
- [b] an aluminium dome
- [c] polymer diaphragm
- [d] deep bass

[3] Crossover at 1.9kHz improves -

- [a] appearance
- [b] cabinet strength
- [c] weight
- [d] phase matching

[4] The bass cone is -

- [a] aluminium matrix
- [b] lacquered wood
- [c] paper fibre
- [d] hardened steel

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 DAVID BOND, Letter of the Month winner in our May 2022 issue.**

Letter of the Month

CONVERSION

Noel Keywood's "Opinion" (May, p51) on the inadequacies of ADCs and DACs, reminds me that some of the best-sounding early (full price) EMI classical CDs (e.g. Klemperer's Mahler "Das Lied von der Erde", Barbirolli's Elgar Cello Concerto "Sea Pictures"), which dated from the early '60s but had remained at full price on LP, were AAD. Classic recordings from the '70s (e.g. some of Previn's Rachmaninov) were digitally remastered towards the end of the LP era; their (mid-price) LP reissues, and subsequent CDs, were criticised for their poor sound compared with the original LPs.

Many CD reissues of analogue recordings were made from copy masters previously used for mid/budget price LP reissues; mainly to save money no doubt, but I particularly recall being disappointed with the first RCA "Living Stereo" CD of Saint-Saens' "Organ" Symphony (Munch/Boston Symphony, 1959), with obvious distortion on the organ's entries. Turns out that in this case (but not others), there was an excuse; the "lost" original master was only



The RCA re-release SACD (Amazon £26) of Saint-Saens' "Organ" Symphony, recorded 1956. On CD it was distorted Mark Hodgson says, but the later re-mastered SACD lacks the distortion that plagued early CDs. "A Hi-Fi Spectacular!" they say, one worth hearing.



The original recording of Saint-Saens' "Organ" Symphony was released on LP. Then it was digitised and put out on CD, stained by digital distortion Mark Hodgson tells us. So RCA released it yet again on SACD where later and better conversion to digital removed this issue.

rediscovered in 1999, and used for the 2005 SACD, which sounds fine. Kind regards,

Mark Hodgson

Hi Mark. As you note, digital issues in the early days of CD will have been mangled in the conversion process to digital, such as the crude state of early ADCs. I was very aware of this at the time, remembering well my shock at hearing violins swimming in a sea of distortion. This was common in the early days when recording engineers believed that with the quoted 96dB dynamic range of CD's 16bit they could lower recording levels. They soon found out they could not – quite the reverse, recording at close to full level was necessary to avoid severe digital distortion.

Conversion to digital obviously

affected that early RCA CD, giving us a useful example. Fascinating that they should find the original analogue master and put it on SACD, allowing the two to be compared. Thanks for the insight.

NK

BACK TO VINYL

Recently, I thought I would invest in a Chord Poly to go with my Mojo as advised by Noel in the Nov 2021 issue. Alas I found the setting up just a little bit too tricky for me, I just could not configure it for some reason. I'm not really a very Techy person when it comes to hi-fi to be honest.

Meanwhile, last year, Martin had a Technics SL7 in the Olde World section (April 2021) and I have invested in a SLDQ1 for the princely sum of £130. I have even requisitioned my LPs from my brother's home who had recently deceased so I have a reasonable selection to give it a work out and I am pleased with the result. I even come across a SQ LP – whatever happened to quadraphonic sound?

The stylus is in good condition but I worry when I have to maybe replace it, do you have any recommendations on this? I still mostly listen to music on Spotify but it is nice to have an alternative option, and what happens when the day comes when a monthly subscription becomes out of reach, at least I will have something to fall back on.

On the subject of fillers that Paul Rigby brought up in April 2022. I remember a friend of mine who had the album Second Winter by Johnny Winter where he had one whole side completely empty, no fillers for Johnny.
Kevin Youde



How-to set up Poly for the first time | Chord Electronics - Tutorial

To set up a Chord Electronics Poly go to their tutorial on YouTube. It's clear and simple.

Hi Kevin. Sorry to hear you bumped into a wall setting up Poly. If you go to YouTube, Chord Electronics have a set-up video that goes into this topic: type in

Technics

QUARTZ
Direct Drive Automatic
Turntable System

SL-QL1

Operating Instructions



Technics SL-QL1 linear tracking Direct Drive turntable. It used a P-mount plug-in MM cartridge. They are still available today.



Chord Electronics Poly – a streamer for Mojo. "I just could not configure it for some reason."

'How To Set Up Poly for the First Time'. After getting it connected into your wi-fi you must download their GoConfigure app. to your 'phone, as they explain. Because Poly and your phone are both wi-fi connected the app. can then communicate with Poly. That's how it works at a basic level.

Once you find this video you will see a lot more on the subject, so many that I feel certain all will become clear after a bit of experimenting and perhaps head scratching! Sitting through these videos can be a bit time consuming but it's definitely worthwhile.

One small point is that GoConfigure is a set-up app. – it does not have a music player. There are many free players, like mconnect for example that Chord Electronics mention. I recommend Onkyo's HF music player, especially the hi-res paid-for version (£10). The only difficulty here is that to play hi-res files you must set-up a hi-res folder on your 'phone and this is a faff. I strongly suggest you don't try and sort it out by trial-and-error: carefully read and follow the instructions and I'm sure you will get there in the end. It's a great software player, dedicated to audiophile sound quality rather than basic music playing functionality.

Technics SL-QL1 quartz-locked Direct Drive turntable has a convenient plug-in P-mount cartridge (T4P) cartridge (Technics EP22 I believe). There are plenty of P-mounts available, from Ortofon, Audio Technica and others: just do a 'net search. You should have no trouble here: read the forums for owners' experiences. **NK**

DEAD DENONS

As I read Paul Toppings letter in the May edition of HFW, I wondered how does he get through two Denon DL 304 cartridges, the last one had significant wear!

I have been using a Denon DL304 for a number of years now, and to my ears, it's as good as when it was new. I never feel as though I want to change it. The Denon DL304 is much sought after by enthusiasts. If I were Paul and he was happy with the Denon, I would investigate having the Denon re tipped, this usually includes a full MOT of the cartridge as well. Regards

Mike Bickley.



Denon DL304 MC cartridge. A loved classic used by Mike Bickley.

TEST TRACKS

I am now a Senior and I have been reading hi-fi mags and reviews since I was in my twenties and thirties. I have no problem with the reviews in general but I do have a problem with the test tracks these reviewers use. To date I have never come across the title of any of the test music used. The reviewers do a very good job but can they come down from their planet in the sky and review equipment with music the ordinary guy like myself knows and enjoys such as Neil Diamond, Nana Mouskouri, Earle Klugh, Acker Bilk, Richard Clayderman and various others. I do not doubt the tracks these guys use have a quality of their own but that does not mean a thing to us ordinary folk.

Kind Regards

**Peter Stovoid
Gold Coast,
Australia.**

Hi Peter. I think we have an age issue here. The names you quote hark back to a time when dinosaurs roamed the earth as

far as most reviewers would see it from their age perspective. Reviewers use music they know and enjoy, I find from dealing with them as an editor – and that usually means artists from the 1980s onward. Which is just as well, because I have racks of music going way back and most of the old stuff (that I loved) doesn't sound so good anymore.

A revealing hi-fi system makes the limitations of old recordings obvious. Hearing distortion and noise more plainly is no way to judge a system's potential; quite the reverse it is misleading. Easy to blame the system, not the recording for faults – and this potentially is not just misleading but troublesome if a product is misjudged. It's actually quite a big issue, bigger than most people realise I suspect – including reviewers.

For example, when did you read about the recorded dynamic range of music being used in reviews and whether a system can track range changes? This is a known issue (see Loudness War, Wikipedia) and should be factored into choice of review tracks by use of dynamic range analysis but it is conveniently passed over. Sorry to say but this does count out many, even most old recordings. Professional tape machines of the 1970s could capture huge range, but these were large and very expensive studio recorders, used mainly by top acts such as Elvis Presley or, later, Fleetwood Mac. This is the best material from the past, not much else being validly usable for assessing sound quality of modern products I'd suggest.



If you want to hear Acker Bilk, an old classic quoted by Peter Stovoid, then try Amazon Music.



The Seekers - I'll Never Find Another You (HQ Stereo, 1964/68)

Australia's Judith Durham and The Seekers, recording at Abbey Road Studios, London, 1964. A classic '60s recording rescued and revived – go to 'rich963' on YouTube for details.

That brings us on to today and in my experience good recordings are very good but you would need to find cover versions of the music you love to better hear the artist and instrumental backing, hoping the original flavour was still there. This is easier with classical than Rock, which is more artist-specific. Not sure Neil Diamond or Nana Mouskouri are going to figure here – and why did you not mention Australia's Judith Durham and The Seekers? Check out their recording session at Abbey Road Studios in 1964 (YouTube) to see the tape machines running, the control desk and a lovely live performance. What's better, a hi-res version from an Abbey Road tape is available we are told. Not sure many of today's reviewers would use such material all the same, as lovely as it is/was. But you will like it I'm sure – and I do in a wistful moment.

Finally, in 2020, after forty years of digital music, we are starting to see top quality 24bit audiophile grade ADCs coming to market like the ESS9822 PRO. Keep your fingers crossed that all those lovely old performances may in due course re-appear as high quality downloads though modern silicon; digital may at last fulfil its promise.

In the meantime I see Amazon now have a free music service (with ads) where you can listen to those golden oldies. Enjoy **NK**

MAINS HUM

Ted Martin's experience with hum reminded me of my own experience somewhat. For years I used a Big Bertha isolating transformer, which was marketed through the Hi-Fi News Accessories Club. This device hummed

for short periods, it was quite loud in spite of being placed in a cupboard! I now use a conditioning balanced power supply by Airlink Transformers, <https://airlinktransformers.com>. I can honestly say that mains hum is now a thing of the past. Their technical support is very good, a company I would certainly recommend. Worth a try.

Mike Bickley.

Hi Mike. Thanks for the reminder about Airlink and their range of balanced mains transformers dedicated to audio. In their interesting Technical Notes they explain that lamination material and impregnation of varnish affect the potential for mechanical hum, which does still seem to be an issue. Airlink are aware of this

and honest about it, explaining there may be start up noise – but otherwise total silence with their transformers.

For readers wondering what all this is about, it is feeding an isolated, balanced mains supply to the hi-fi system from a centre-tapped secondary. What you get is two 120V lines relative to ground (earth). It's safer than a single 240V line, which is why such transformers are used on building sites (i.e. outdoors), seen as big orange or red plastic encased waterproofed power outlets.

Balanced transformers can be used in the home, with distinct benefits for audio, where ground line noise currents are cancelled. Airlink have a lot to say about all this in their Technical Notes, all of which are fascinating and technically correct in nice, simple manner (free of eulogising). They have versions with input noise filters that cut out high frequency rubbish.

I have used a huge balanced transformer (barely liftable) with filtering for my system for thirty years now and would not go back to "raw mains". Our transformer supply company (World Audio Design) suggested I do this back in the 1990s and it was an eye-opener. A suitably large transformer could feed a house, running it at 120V – a lot safer than 240V. So a very interesting and effective idea: you get safer mains without rubbish.



An Airlink balanced mains supply. "I can honestly say that mains hum is now a thing of the past. Worth a try" says Mike Bickley.



Teac UD-701N, reviewed in our May 2022 issue. A unique and complex DAC that did not measure well but gave a sound unlike all else: fast and punchy.

Some caveats here: around 90V across the heart is considered as a maximum safe limit for humans; 120V will give a shock but mostly non-lethal. And a clipped (distorted) mains waveform is not improved, although its d.c. component will be removed. Better to use an Audiolab DC Blocker for this, put in front of an Airlink transformer. Reason being, a d.c. mains offset due to asymmetric clipping can saturate a transformer, especially a toroidal that is run close to its saturation limit. Big E/Is are better but Airlink don't offer an E/I option. Still a very good way to go and "worth a try" as you say. **NK**

WORLD BOOK

My first port of call each month when *Hi-Fi World* drops through the door are the Opinion pages. But I often sense that they are somewhat constrained by word-count and a single A4 side.

Then, of course, there are the letters pages. These often have a doctor-patient feel e.g. "What streamer/speaker/etc should I buy for my system". The answer, essential to the patient can seem a tad repetitious to the regular reader as exactly the same questions come up time and again.

Then there are the "I did this..."

letters from readers which are hard to evaluate: is the writer "a Doctor" or just the man in a pub. But the letters page is fun and the way that Noel and the team respond, straight faced, to some of the more outlandish letters is a joy to behold.

But [IMHO] there is a huge hole in the canon of Hi-Fi information that Noel & Team are perfectly placed to fill. We Need A Book: "The Hi-Fi World Guide to High-End Audio". This could include all the sage advice and opinions that appear year after year in the magazine. For example: (a) turntables, different types, tone-arms, cartridges (b) digital, DACs, streamers etc. (c) Cables silver, copper, plated, different types; power chords... (d) speakers - design, crossovers (e) room treatments (f) how to set up a turntable... and so on. Each topic a separate detailed chapter.

And even include a set of technical chapters for those who want a deeper understanding of the technical and mathematics of the subject. For example, a chapter on Valves v Transistors - why do valves, which have higher levels of distortion, often sound more musical than solid-state amplifiers? Low odd-order harmonics (3rds / 5ths) from valves against the lower amplitude but higher order harmonics (9ths, 11ths) produced from transistors. And why is up-sampling essential for a Delta-

sigma DAC but not for r2r ?

The book would become the reference source for Hi-Fi. Keep the magazine unchanged with reviews etc. but give us the information to really understand and interpret the reviews.

We see a review of say, turntable-A (£500) which is "Outstanding" at this price point then turntable-B (£1000) also "Outstanding" at this price point. But how do we make an informed decision about whether to buy "A" now or maybe save for another 6 months and buy "B"; and how do we know if we could hear any difference in our own system?

A Book would give us the tools to really get a lot more from the reviews and help us make more informed decisions.

The maxim "Buy cheap, buy twice" says it all. How many of us have bought to a price, based on a "good" magazine review & then regretted it. Only to be accused of "upgrade-itis" when we spring for the next item just slightly higher up the chain. I know I have. And my attic attests to the result. But then, 10 years ago I started again from scratch & bought what I should have bought in the first place and was cured.

How do we judge if our system is "balanced" and components complement one another - there's no point in putting high-end speakers on a cheap power-amp connected with

bell-wire.

And, finally, how should we listen? A reviewer, a musician, an audiophile in a dedicated room, a car driver, a worker with background music – all listen in different ways. How do you judge what is the right system for you?

And there you have it. The perfect Xmas present that Hi-Fi World readers are queuing up to buy. So Noel, please, start writing!

Zap.

Hi Zap. Er – yes, I am writing – for this magazine monthly. The monster book you envisage I promise I will write from the grave, when it is all over. There are some interesting topics you bring up here, however, that I will cover quickly.

Much of what you list, such as turntable set up, is covered by every man and his dog on the internet, which is a good thing but also confusing perhaps, as some of it is questionable, articles of faith rather than objective reality.

Questionable in my view is that arms need to be vertically adjusted to tweak Vertical Tracking Angle (VTA) and/or Stylus Rake Angle (SRA), the two being in a fixed relationship with each other. With a 228mm arm (as most are) raising or lowering the pillar 1mm produces a miniscule 0.25 degree change, so for just 1 degree angular change of VTA/SRA the arm must be moved up or down (always down for VTA) by 4mm.

You will see little mention of this on the 'net but it has a big impact on what you really can achieve. I suspect sound quality changes come from stylus contact face misalignment with the groove's modulation slant angle that is set in the cutting process, varying

between LPs.

Valves have a very specific sound alright, one that can be detected when they are used, for example in the line drive output stages of CD players where everything that has gone before is transistor. These 'small signal' amplifiers, usually cathode followers, produce minimal distortion, so the sound of valves – commonly attributed to distortion – is not due to distortion.

Is the valve sound due to microphony? Move the amplifier into another room or use headphones and you will find no change – so the answer is "no". My suspicion: it is down to a phenomenon called secondary emission from the glass envelope. Difficult to prove however.

Slightly easier to cover in a book (just) is the topic of distortion and what it sounds like. This is a multidimensional problem that involves changing harmonic patterns and how the ear/brain perceives them. Changes of sound that don't correlate with a source are heard as separate from it. The harmonics produced by a violin may well be made (slightly) stronger by distortion in a valve amplifier, but they remain linked (correlated) to the violin, not heard as discordant noise, as produced by 16bit digital (quantisation noise) for example. This is best explained in a video showing a spectrum analyser, to illustrate time-domain variance.

I spend much of my waking life in front of such an analyser and get a good feel for correlation (or lack of) to sound quality. "Lack of" is both important and challenging. Sometimes I see high distortion values but don't hear them as nasty in listening tests

(Teac UD-701N). I call this "the Decca London problem" where high distortion (9% third-harmonic) can apparently enhance the sound. Very difficult and contentious topic here, one where it is necessary to listen intently using electrostatic loudspeakers, since they produce one-third the distortion of conventional types, better revealing distortion elsewhere.

The subject of "good at the price" many people complain about. Were we to use an absolute standard of goodness – whatever that might be – nothing would get recommendation. This would be unrealistic, condemning inexpensive items like Goldring's 1042 (£300) cartridge for example when compared to – say – Ortofon's extraordinary Verismo (£5349).

What we try to do at Hi-Fi World is clearly pick out a product's strengths and weaknesses, something measurement makes unequivocally possible. You have to read the reviews closely for this, where in particular our ability to measure the dynamic range of digital products (for example) clearly shows how Bluetooth is developing from MP3 quality into a fully fledged hi-res transmission system. This turns the 'phone in your pocket into a hi-res digital source – powerful stuff.

But what if you don't want to use Bluetooth? Then irrelevant to you as a reader. This is not a value judgement we can make, as it depends on your requirements.

It is best to read the reviews and decide for yourself whether a product will suit your purposes. They clearly and correctly identify strengths and weaknesses; it has to be a personal decision as to what is important to you. **NK**



To see what today's products are really achieving our Rohde & Schwarz UPV audio analyser gives unique insight.

Out Of This World

Rega has revised and repackaged its Saturn CD player/DAC. Now in Mk3 guise, can this quirky top-loader win Chris Frankland over?



While it is common for CD players to offer a digital output, it is not so usual to provide separate inputs to the DAC to decode other digital devices, such as streamers and computers. The Mk3 iteration of Rega's Saturn, originally launched in 2013, is therefore, more of a CD transport and DAC in one box.

It has been rehoused in a new case to match the updated styling of the rest of the amplifier range, such as the Aethos and the forthcoming new Elicit Mk5 integrated amplifier. And the striking styling of this top-loader

with its lift-up cover on the CD mechanism would not look out of place on a Klingon war bird!

Its metal case though is sturdy, well made and the player is a weighty 9.5kg, with build quality to the high standards we have come over the years to expect from this well-respected British manufacturer.

While Rega tells me much of the Mk3 is unchanged from the previous version, the Mk3 Saturn does feature an improved USB DAC input, an enhanced output amplifier circuit, enhanced digital power supplies and redeveloped analogue and digital outputs. The DAC uses dual Wolfson WM8472

chips and benefits from the same galvanic isolation as used in Rega's DAC-R.

The USB input of the DAC has been improved with asynchronous operation at sample rates of 44.1kHz to 192kHz, while dedicated drivers for Windows computers are said to eliminate degradation caused by Windows native drivers. A driver is not needed for MacOS.

The CD player section has its own high-capacity power supply, which was a result of the R&D on the company's reference CD player, along with an improved micro-controller and display drivers. It also features a





This top loader uses Wolfson WM8472 digital converter (DAC) chips and is driven by a linear power supply fed by a toroidal transformer (left rear).

high-stability master clock, high-performance PLL digital interface receiver, isolated digital inputs, while the signal path of the CD player in CD mode is kept to a minimum.

The Saturn Mk3 rear panel has digital inputs via USB, two optical and two coax. There are also digital CD outputs via coax and optical. One analogue output is provided and that works for both the CD player and the DAC.

Anyone familiar with the Aethos will recognise the styling of the Saturn Mk3's front panel, where to the right of the display are push buttons for play, stop and skip. More comprehensive functionality is provided on the remote control where on the CD player you can select shuffle and

repeat and also create an 'album' of up to 99 tracks from a disc. The remote also allows you to switch the between CD and DAC mode, with the further option to select the DAC input and filter settings. Five filters are provided, but Rega suggests using Filter 1, which is 'linear phase half-band'. I briefly listened to the other four, but to be honest, cannot say I heard much difference. Experiment if you feel so inclined.

SOUND QUALITY

For my listening tests, the Saturn Mk3 was hooked up to an Audio Note Cobra integrated amplifier and Russell K Red 120SE speakers.

Being a top-loader, if you are going to use it in a rack, you need to allow room for the CD flap to

open and for you to have enough room to load and retrieve a CD. Apart from that, all other functions are easily accessible from the comprehensive remote control.

While on the subject of loading and retrieving discs, here I must voice the only real gripe I have about the Saturn Mk3. Loading the CD is easy, but I did find retrieving the CD a bit more awkward. There is a finger cutout to enable users to pop the disc out, but I found it a bit fiddly. The flap itself though is well made and has a lovely slow-motion closing action. Just nudge it on its way and it will close by itself.

I started my listening with the great Groovin' CD from one of my favourite guitarists, Peter White. On his cover of the Johnny Nash classic, I Can See Clearly Now, the Rega immediately struck me with its bite and subtlety on White's guitar, conveying well just how each note was played. Drums and percussion were also crisp and articulate, while the synth backing was nicely detailed and separate. The rhythmic lilt of the track with its gorgeous bass line was also



As well as the usual play and search/skip controls, the remote also gives the user access to the DAC filters and DAC input selection



The transport holds a CD in place on the spindle-hub with three spring-loaded clips. Also seen here is the sled holding the upward firing laser that moves from centre outward.



The rear panel has the usual CD unbalanced analogue outputs (RCA phono sockets) as well as coax, optical and USB digital inputs for the DAC.

beautifully handled and all in all the track moved and grooved as it ought to.

Some vocals next and who better than one of my favourite jazzers, Ben Sidran. On Sunny Side of the Street from his Enivr  d'Amour CD, the Mk3 captured the emotion and expressiveness of his vocals well, while the DX7 synth had lots of sparkle and presence and the bass line moved fluidly. Finally, on Honey Dipped from sax player Dave Koz's Saxophonic, the Rega impressed with the impetus, drive and dynamics it conveyed on this track, voicing his sax very nicely and handling the rhythm of the track well. Percussion was snappy and detailed and it all just hung together.

Using the built-in DAC with a

Project Stream Box S2 Ultra streamer, the Saturn Mk3 put in a strong performance compared with similarly price contenders. Its sound was full-bodied, dynamic and detailed and more than held its own against some standalone rivals.

CONCLUSION

The Saturn Mk3 put in a great performance for the price. It was detailed, well balanced, dynamic and tuneful with no harshness or unpleasant edges. At the price, it ranks among the best,



The top flap has a lovely slow-close mechanism but removing discs was fiddly.

and you get a fully functional DAC into the bargain.

MEASURED PERFORMANCE

Frequency response of the Saturn MK3 measured flat from 4Hz to 48kHz our analysis shows, with a 192kHz sample rate signal and widest Filter 3 selected. The other four filters narrowed bandwidth slightly and will provide better impulse response, but audible differences will be slight.

Surprisingly, the five filter options made almost no difference at 44.1kHz sample rate (CD), where it is common to provide at least one filter that rolls down level above 10kHz, for a softer sound from CD.

Distortion measured 0.05% with 24bit at -60dB around 0.03% being common nowadays. There were no distortion harmonics as such from the Wolfson converter, just some noise from the output amplifiers I'd guess, resulting in a mediocre EIAJ Dynamic Range value of 109dB, where 117dB or more is common nowadays.

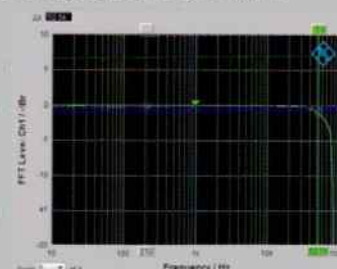
With CD, distortion measured 0.22%, but this is caused by 16bit quantisation noise, not the player. No CD player manages better than this due to 16bit's limitation.

Output measured a standard 2.2V from the phono sockets and was not variable. There is no balanced XLR output nor headphone jack.

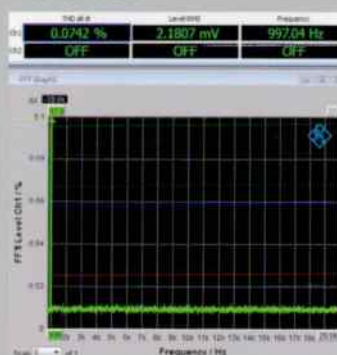
The crucial dynamic range figure was mediocre, due mainly to some noise – likely in the output amplifiers. The filters had little impact too. A satisfactory but not especially competitive set of figures when it comes to hi-res inputs. **NK**

Frequency response	4Hz- 53kHz
Distortion (-60dB)	0.07%
Separation	96dB
Dynamic range	109dB
Noise	-106dB
Output	2.2V

FREQUENCY RESPONSE



DISTORTION



REGA SATURN MK3 £2,000



OUTSTANDING - amongst the best.

VALUE - keenly priced.

VERDICT

CD and DAC had a great sound – detailed and tuneful. Impressive at the price.

FDR

- Dynamic, detailed and articulate sound
- DAC can be used separately
- well made

AGAINST

- CD fiddly to retrieve

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World Radio History

Bolt From The Blue

Sudden appearance of this portable headphone DAC takes Noel Keywood by surprise.

This little digital converter is so small it's easy to miss or dismiss. Measuring 115mm long and weighing just 8gms – flyweight – it could get lost amongst pocket detritus, like crisp packets. Yes, it would be possible to reach into pocket, throw packets out and never see the Helm Bolt DAC again! You'd curse this mistake though because that would be £100 out of the window, or pocket should I say.

To be specific, the little Bolt is a USB powered digital-to-analogue converter for headphones, although it has the same output as a CD player measurement showed, so it could drive a hi-fi also – but I'm not sure this is a good idea, as I'll explain later.

And now to complexities unseen, or barely seen. The digital input is a USB C cable plug and immediately this raises issues: it can only be used with devices having an active USB C connector (not a charger) and there aren't so many around as yet. Android 'phones are moving from USB micro-B to USB C and Samsung use this connector, but Apple use their own Lightning connector, restricting USB C to use as a charging connector on iPads, to meet EU requirements.

To use the Bolt with an iPhone an adaptor is needed, which is a faff. There's a Helm video on YouTube showing an Apple Lightning camera adaptor pressed into service, its USB A socket accepting a USB A – USB C adaptor supplied with the Bolt. This lot won't get lost amongst the crisp packets. So the Bolt is for recent devices only and not best suited to an iPhone.

At the other end is a 3.5mm stereo headphone jack with

connection sensing: plug in headphones and it will be seen – well, at least by the FiiO M17 player I used that only swung into action when my Oppo PM1 planar magnetic headphones were plugged into the Bolt, not when the Bolt was plugged into the player. Odd. But this shows the Bolt has headphone sensing, able to trigger logic upstream – a level of sophistication I didn't expect. I see Helm say plug headphones into Bolt before anything else, so upstream sees conditions downstream.

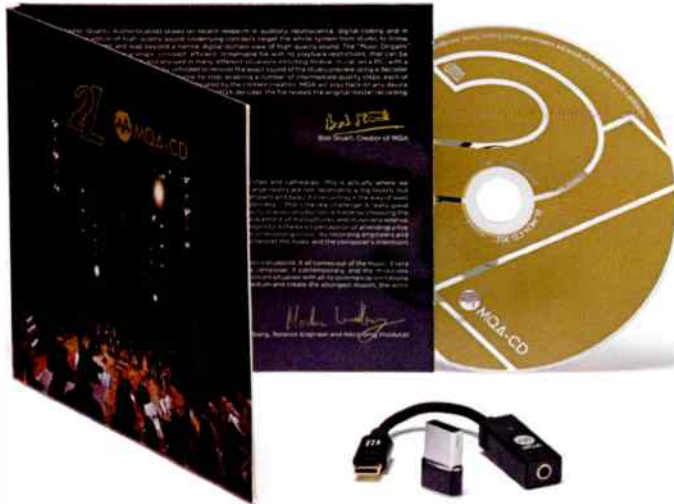
The small black box houses a "SABRE" DAC they say, but nothing more on this topic. The implication is it's from the ESS Sabre series, a perfect candidate being the comparatively recent (2020) ES9281A/80A PRO with headphone jack sensing and MQA – both unusual features present here. Unlikely any other device with these features exists, because this is dedicated audiophile territory that ESS have come to dominate worldwide. And what Helm claim for the Bolt matches in to ESS specs, if with some discrepancy

(see Measured Performance). It will process digital (PCM) up to 384kHz and DSD up to 1026 (x16), both being far above anything that currently exists. I ran it to 192kHz with PCM and to double-rate DSD (128) from a Mac computer and it didn't blink. This was from a USB-C socket capable of USB3 speed, but the ESS data sheet says it is a USB2 device.

Controls? There are none. Volume must be changed externally by a software volume control, not something that will be a problem with most sources, but there may be exceptions. As luck would have it, I bumped into one immediately when running the Bolt from the USB-C output of FiiO's massively complex and capable M17 portable digital player. Volume was locked to maximum; FiiO's selectable volume control refused to engage. Interestingly, Audirvana+ warned the Bolt has a volume control (the chip does) so upstream volume had been disengaged, suggesting status had not been transmitted correctly from the Bolt. However, running from a Mac computer there was no



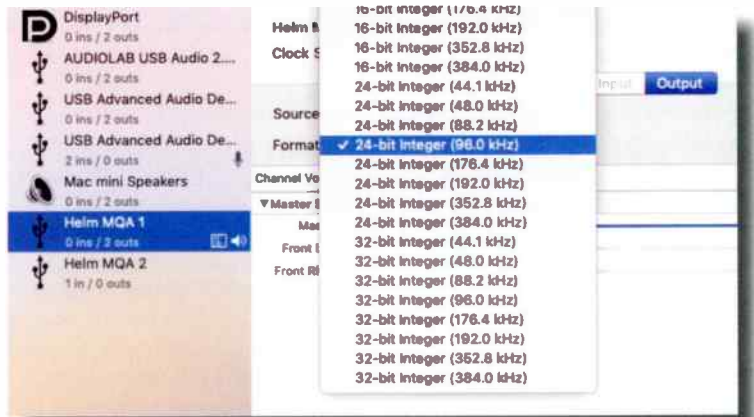
At right the Bolt's USB C plug and at left the USB-A to USB-C adaptor that comes supplied, necessary where to mate with equipment lacking a USB-C socket output. The Bolt's DAC is specified by ESS as a USB2 device, so the adaptor works.



MQA music files are available on CD from 2L of Norway, for anyone interested in the quality potential of such files. They will replay through non-MQA product, but at what is said to be 13bit resolution.

such difficulty. Audirvana+ read and listed the player's sample rate and format capabilities correctly and its volume control worked. Don't you just love digital!

Good news was that whatever I chose to play in a music library stuffed with 'difficult' files, the Bolt just got on with the job. No frustrating silences nor the rush of white noise that sometimes greets unrecognised DSD files. Helm fit tiny red and blue indicator LEDs, blue indicating CD quality and red hi-res, both together confirming MQA lock. This they call 'magenta' colour-wise but in practice I saw two discrete LEDs rather than magenta. It was sort-of magenta!



Without headphone plugged in the Bolt came up with this compatible file format list with 32/384kHz maximum for PCM digital. With headphones plugged in up to 24/96 is available, as stated by Helm. Strange.



A single small LED indicates 48kHz sample rate or lower (CD) when Blue (left). For sample rates above 48kHz, meaning hi-res including DSD, a red LED lights up. With MQA both LEDs light to give the appearance of Magenta (right).

SOUND QUALITY

Usually, I can read the specs, look at our measurements, understand the design ethos and know what sort of sound to expect. It works – but not here. Quite the reverse, once I started listening the sonic properties of Helm's Bolt took over. Since it is distinctive.

I used Oppo PMI planar magnetics that are softly smooth and with bass that is always there, but flat and even. I say this to explain the Bolt was light, but supremely clear and concise. Driven by a Mac connected Thunderbolt hub I compared it to my Audiolab M-DAC+ with its ESS ES90i8 convertor connected direct to the Mac.

This was interesting. With MQA track When I Go (24/88.2)

Judy Collins and Willie Nelson were surrounded by a warm space from the Audiolab, with fulsome deep bass. The Bolt played it differently, with vocals forward and better defined, superb clarity but less warmth and bass strength. Which to choose? For insight and definition the Bolt had it with this MQA track. As it did with many other MQA rendered tracks where insight and definition were superb. Marianne Thorsen's gorgeous violin work in Mozart's Violin Concerto No4 was smoothly clear and concise, the Trondheim Soloists behind her equally well defined and tight in timing. The Audiolab made this a bigger and warmer performance, but was less concise. However, MQA suffers through non-MQA devices, reduced to 13bit according to Wikipedia, so



The Bolt alongside a £1 coin to give some idea of its small size. The only output is a 3.5mm stereo headphone socket (3-pole unbalanced). Unusually, it has headphone sensing and is able to detect load impedance ESS say. Headphones should be plugged in before the device is plugged into a player, so the player knows what it is dealing with. Furiously clever!

poorer sound is to be expected and, in my experience, is delivered.

Differences were similar with non-MQA PCM and DSD, but here the Audiolab better fleshed out both Rock and Classical, bringing power to drums and bass – except.

Except with DSD where the Bolt was engagingly clear, more analogue in nature (as DSD always is) and had more low end presence. I heard all this with Imogen Cooper playing Beethoven's Diabelli Variations (DSD64) at lightning speed with glorious composure and insight of piano; there was less weight than the Audiolab but for sheer resolution the Bolt was superb.

Playing through a wide range of Rock and Classical from CD (16/44.1) the Bolt came across as clear and revealing, if with less warmth and weight than the mains powered Audiolab DAC – but this is always the case. It's powered from a 5V USB line and is intended for mobile headphone use – way different from the larger, necessarily mains powered current chewing ES9018 (2013). This is why a 5V powered DAC for portables is not ideal for a hi-fi system.

CONCLUSION

The little Bolt was fascinating. It has a latest-technology DAC from ESS and this I could hear in its

cleanliness and composure. It wasn't ESS sound as I know it, having less stage depth and warmth, but with standard PCM and DSD the Bolt delivered fine sound, right up to latest standards, all the same – if without the fuller bodied sound of a good mains powered hi-fi DAC.

Since MQA files are uncommon at present but are being used to (controversially) improve streaming quality (Tidal Masters) just how important this is to potential purchasers I don't know.

At the price, what Helm's little Bolt headphone DAC offers is impressive – providing you have a spare USB C socket of course. A nice little Bolt from the blue.

MEASURED PERFORMANCE

Frequency response of the Helm Bolt measured flat from 4Hz to 40kHz our analysis shows, with a 96kHz sample rate signal that is the quoted limit. This appears to be the limit in a declared device list set by Helm. Connecting the DAC to a Mac without headphone plugged in (no headphone sensing) brought up a different and more extensive declared list that looked like that from the ESS DAC itself, with a 24/384 PCM limit that the Bolt was able to process I found. With a 24/192 test file frequency response extended to 80kHz.

It was all a bit strange – and headphone sensing favoured around 100-300 Ohm load, asymmetrically clipping a full scale signal into 40 Ohms, which many headphones are.

I got the impression that there was something not quite right in the headphone sensing system and what this DAC was declaring as its capabilities.

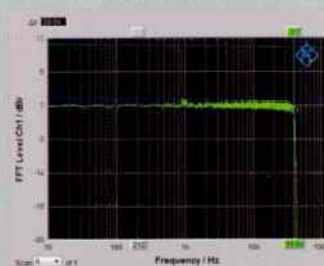
However, this should not affect normal usage. It did what was claimed it should do by Helm. Curious that it could do more.

The hand of ESS appeared in a measured distortion value of just 0.03% at -60dB (24bit), putting the Bolt up with the best. EIAJ Dynamic Range was very high at 117dB, again up into audiophile territory. Output was a standard 2V but this is plenty enough for most headphones.

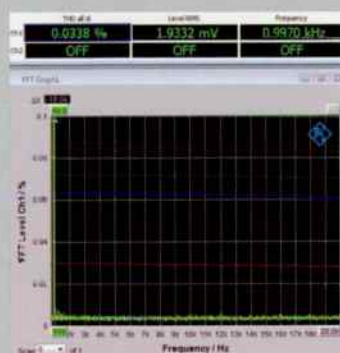
The Bolt turned in a superb measured result, up with the best hi-fi DACs. **NK**

Frequency response	4Hz- 40kHz
Distortion (-60dB)	0.03%
Separation	98dB
Dynamic range	117dB
Noise	-114dB
Output	2V

FREQUENCY RESPONSE



DISTORTION



HELM BOLT DAC/AMP £100



OUTSTANDING - amongst the best

VALUE - keenly priced

VERDICT

Clean, composed sound from all music formats including MQA. Impressive, especially at the price.

FOR

- clear, concise sound
- small and light
- MQA

AGAINST

- USB-C only
- not a warm sound
- needs adaptors for iPhone

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Make The Grade

**Grado RS1X headphones reviewed by
Noel Keywood.**

The market for headphones is huge – and wired over-ears are the only way to go for quality in this arena. All the big brands like Sony, Sennheiser, AKG are in there, as well as my own favourite Audeze with their magnetic-planars.

Grado join the battle for market share with their latest RS1x headphones priced at £799. That's a high price so there's a lot of competition to be considered here.

The RS1x is a conventional dynamic headphone, meaning it has a mini-loudspeaker drive unit inside each ear piece, with conventional magnet+coil motor assembly – not a planar-magnetic then. Grado say only that the driver has a 50cm diameter and when I first heard it I thought “titanium dome”, meaning there was a cool, fast delivery. But as it was run in this softened to the sound I’ll talk about later and I suspected aluminium dome.

RS1x is a simple open-backed ‘phone where the rear of the drive unit fires out through a coarse protective mesh. Open-backs give very clear sound and are my preference, but they have lighter bass than closed-backs and transmit more noise outward into the room or – more disturbingly – at people on train or ‘plane. Not a commuter’s headphone then, even though light at 320g including the cable.

The rear of the drive unit is clearly visible from outside: it sits in a simple chamber made of spun Maple, Hemp and Cocobolo wood surround that, Grado say, impose a specific sound. I’ll say here that I heard no contribution that I would attribute to wood; on the contrary they were coolly clear. But whatever, the woods look good as our pics show.

On the spun woods that form the basic cylindrical frame sit simple foam ear pads of 80mm outer diameter and 40mm inner diameter for the ear – small. They sit on the ear rather than over it, and were fairly comfortable because of light pressure, but the foam didn’t feel luxurious; quite the reverse it had a rough surface. A larger over-ear assembly would have been more comfortable, but Grado’s minimalist approach does avoid sweaty-ears. Air gets to circulate around the bits and with these ‘phones I didn’t feel so encumbered as I do with my larger Oppo PM1s. The trade off is lighter bass, as the seal between headphone and ear isn’t so effective, leading to a degree of front-back sound cancellation.

Unlike most headphones we review, the Grados come with captive cables permanently attached to the earpieces. Meaning the cable cannot be changed, and only lengthened by use of an adaptor. The cable is 70cm (nearly

5ft) long, terminated in a 3.5mm stereo jack plug, so it has good reach, but at the price inability to change the cable or employ balanced connection is a distinct drawback. The cables were not clamped either it appeared, moving in and out of the chamber freely. I worry that a yank on the cable may break an internal connection.

The head strap of stitched leather is a nice touch and I was slightly amused at the simple rod connecting earpiece to strap as this reminded me of my radio headphones from long ago – a simple mechanical system that works well. They swivelled easily and all was happiness here. Grado supply an adaptor to connect into 1/4in (6.3mm) sockets.

With a cylindrical body just

60mm diameter these ‘phones look compact – they’re visibly smaller than most. Grado don’t supply a carrying case or even cloth pouch for on-the-go use, so something like a freezer bag may be needed for protection.

SOUND QUALITY

These are what I’d describe as very revealing ‘phones. That was my over-riding impression: vocals were projected strongly, there was clarity and detail. Initially, before running in, there was also some slight edginess but this faded away as they were used. The spoken intro to Daft Punk’s Giorgio by Moroder (24/88.2) was supremely clear and nicely balanced too: I heard no edginess or top-end spitch. Backing drums were fast



The foam ear pads can be removed for cleaning and they appear to hold the drive unit in place, which is loose in its cavity. This may make repair easy if a lead is yanked out by accident, since there was no cable clamp.

Klipsch®

REFERENCE

NEXT GENERATION

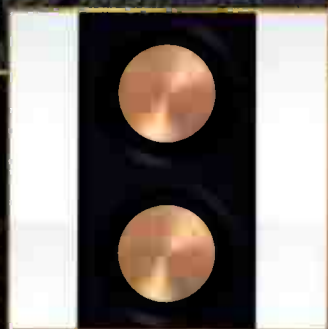
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Behind each drive unit sits an open mesh backing, allowing rear sound to escape. By avoiding rear reflections this gives an open sound, generally considered superior to closed-backs, but sound leakage can annoy others when commuting.

"With Beck's *The Golden Age* (DSD) the stage was wide and images had smoothly clear shape and form"

and clear as well. But I use this track as a judge of bass presence and here the insistent synth bass line was on the light side.

And so it was with much else in terms of basic balance: these are not bass heavy 'phones – as Beats infamously are for example. They were far away from my Oppo PM1 magnetic planar magnetics that have big-bodied bass and warmth.

However, the Grados were considerably more insightful

and revealing, not just of the warm Oppos, but most other headphones. They are also sensitive: I listened 10dB lower on my Audiolab M-DAC+ compared to magnetic planars.

Where the Grado's excelled was with well recorded material like Beck's *The Golden Age* (DSD) where the stage was wide and images had smoothly clear shape and form: it was all slickly beautiful, but then DSD via an ES9018 DAC

in a mains powered Audiolab is like this, the RS1x 'phones making it clearly so. They are very revealing that's for sure.

With David Bowie's *Suffragette City* (DSD), a track that often sounds congested, these 'phones not only sent Bowie forward to make his vocals and the multi-track backing crystal clear, guitars and horns pounded along at left and right with all the pace and energy this track is meant to have. A great rendition of a great song.

The Persuasions' *Angel of Harlem* (24/96) slid by impressively, with doo-wops at left and right as the lead vocal tracked through, on occasion jumping into my ears as if given a firm push; there was at times some shout. Happily no sting in the high treble though.

Looking for a few scuzzy tracks to see how listenable these phones would be I turned to The Eagles as an example of classic Rock and was surprised that *Life in the Fast Lane* (DSD) was heavy in the bass end and reasonably clear, even if the vocals were congealed and coarse – but this is in the recording I believe. On to *Somebody*, with its soaring Hammond organ, and it too came over well, although drums were lacking low end oomph. A snappy sense of pace though, if again edginess to vocals at times, something my Oppos would smooth over. But that's the price to be paid for 'phones like this that see things better not seen (or heard).

CONCLUSION

Grado's RSX1s are high on insight and clarity, even being a bit mid-band pushy at times, but you get to hear it all clearly. There is no top-end sting either – a problem with some high quality 'phones that try too hard. At times they made me painfully aware of recording limitations, typically from harsh CDs. Whilst I was listening to DSD all was sweetness and light. What they do not have is heavy or especially deep bass, the obverse being this keeps the sound speedy.

At the price though, use of unsecured captive headphone leads is going to be a deal breaker for many people I suspect and the foam ear pads were functional rather than luxurious. Less than impressive here.

GRADO RS1X £799



EXCELLENT - extremely capable.

VERDICT

High resolution sound but so-so build and finish.

FOR

- appearance
- sonic insight
- easy highs

AGAINST

- captive leads
- no balanced option
- leads unsecured

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Changing one's tune(r)

Martin Pipe revisits a classic FM tuner, which won every award going in the mid-eighties.

By the 1980s the Japanese had conquered amateur radio, as well as more traditional consumer electronics markets like hi-fi and video. A hobby that had at one time a strong home-construction element was fast becoming reliant on ready-built feature-packed 'black boxes', the sort of thing that Japanese industry excelled at.

Japanese expertise with radio crossed over into other areas of the electronics industry. The 2m (144-148MHz) band isn't that distant from the VHF broadcast band (76 to 108MHz, depending on which part of the world you're in) and that brings us FM radio. On busy ham bands, it's important to have radio receivers that are both sensitive (ability to pick up weak signals) and selective (ability to pick up a weak signal next to a strong one).

Such qualities are important when it comes to radio listening – and remember if the radio in question is a tuner, feeding a decent hi-fi system, any problems will be laid bare. Lack of sensitivity manifests itself as 'mush' with distant or low-powered broadcasts, especially in stereo. Low selectivity results in a station being swamped by adjacent unwanted ones. Reception will be pulled towards the stronger one, or audible 'crackle' from the unwanted transmission will break through. Such performance criteria became important as the VHF bands became more crowded.

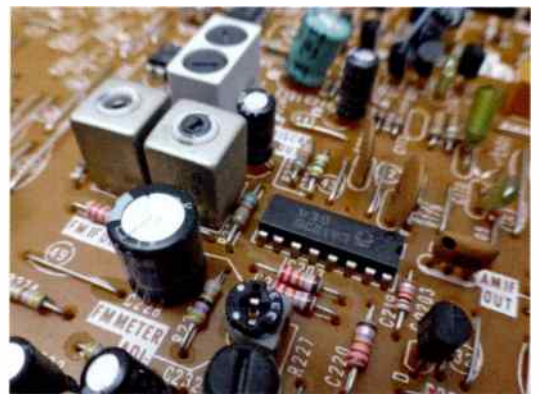
Here, the 1970s and 1980s saw the introduction and expansion

of commercial 'independent local radio' (ILR) – until then, the BBC had the field to itself. Commercial radio began in 1973, with the likes of Capital and LBC, and grew steadily. BBC local radio began as an experiment in the 1960s, but spread around the country as soon as its value was recognised. Here in Southend, we got Essex Radio (ILR) in 1981; BBC Essex came along five years later. Thrown into this increasingly-busy mix, especially if you lived in areas of high population density, were illegal pirate stations – a well-designed tuner would reject or receive these, depending on your listening preferences – and, at the end of the 1980s, the roll-out of an FM service for the Beeb's Radio 1.

The sizeable pool of RF (radio-frequency) engineering talent in Japan meant that high performing tuners were numerous. Doing good business in this field were Pioneer, Sansui, JVC, Technics, Sony, Luxman, Mitsubishi, Toshiba, Yamaha, Rotel... and Hitachi. The latter was very active in the hi-fi field, during its 1960s-1980s heyday. One of its best known and most enduring products was however the FT-5500 tuner and its Mk. II successor, as featured here.

Although not particularly cheap (the Mk. II sold for £200 in

1986), the FT-5500 trounced the competition. If you wanted to go better, it was necessary to spend considerably more on, say, a Revox model. No wonder that FT-5500s, which used some clever technology, were frequently-recommended by the hi-fi press! The winners of numerous industry awards, they sold very well. The best part of 40 years since its introduction, Hi-Fi World retains one of these tuners as a 'reference'.



Hitachi specified a Sanyo LA1235 FM IF/ demodulator chip. Most tuner manufacturers would have used these or similar chips.

The front panel boasts a fluorescent frequency display, and buttons that switch the unit's coverage between low-fi AM (medium-wave only – no long-wave here) and FM (VHF). Also present are up/down pads for manual (50kHz step) and auto-seek tuning, and a button that allows the current frequency to be assigned to one of sixteen easily-accessible 'presets'. Look a little closer at this FT-5500 MkII's frontage though



and you'll notice controls that aren't on the average digital tuner. Let's however start with the ones that are - certainly on more advanced hardware.

The '5500 is able to improve selectivity at the expense of distortion - a mode that's very useful in regions with a crowded VHF band, where it's not uncommon to discover that the wanted station is adjacent to a stronger one carried on a frequency nearby. How does it work? In 'superheterodyne' radios and tuners produced since the 1950s (which most were) the incoming radio-frequency (RF) signals are converted by the 'front end' to a fixed intermediate frequency (IF, commonly 10.7MHz) before being demodulated to recover the composite audio signal. Because the IF is fixed, it can

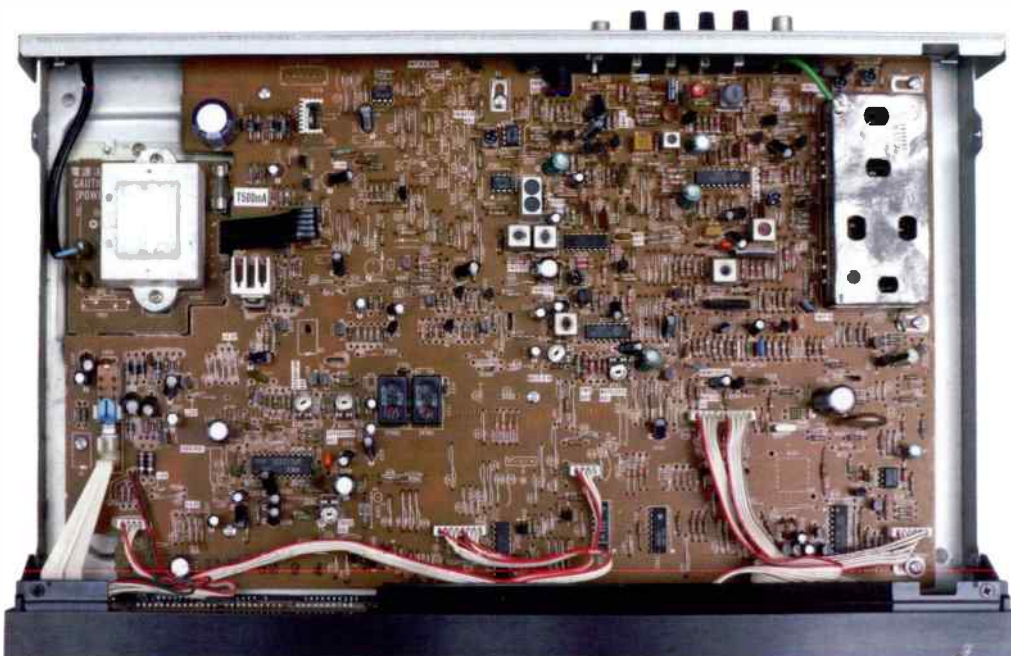
be carefully-filtered to reject unwanted signals. Like some other quality tuners, the '5500 allows you to select an alternative IF filter with a narrower bandwidth - which works well for stations that are weaker or near powerful ones. Under better conditions, though, the '5500's 'wide' (normal) filter would be chosen for the best possible performance.

Where the '5500 deviates from the competition is its provision for changing what seems to be the bandwidth of the front end's RF circuitry - there are two settings, merely labelled 'single or double'. In reality, it seems to be an attenuator to prevent really strong local stations from 'swamping' the first stages (see Noel's notes at end). The Mk II's front-end, incidentally, uses gallium arsenide field-

effect transistors (GaAsFETs) for some reason (the other significant change is a different stereo decoder design). These low-noise devices, advanced



Press the FCCS (Field Condition Computer System) button after tuning to the desired station, and the tuner optimises RF and IF bandwidth for the best results from that station. Manual override is possible, but they're seldom needed as FCCS works very well - even now.



Lots of circuitry in the FT5500 Mk II - some of it is in 'surface mount' form and lives under the circuit board. Today, most of this stuff would be done digitally using SDR (software-defined radio) techniques.



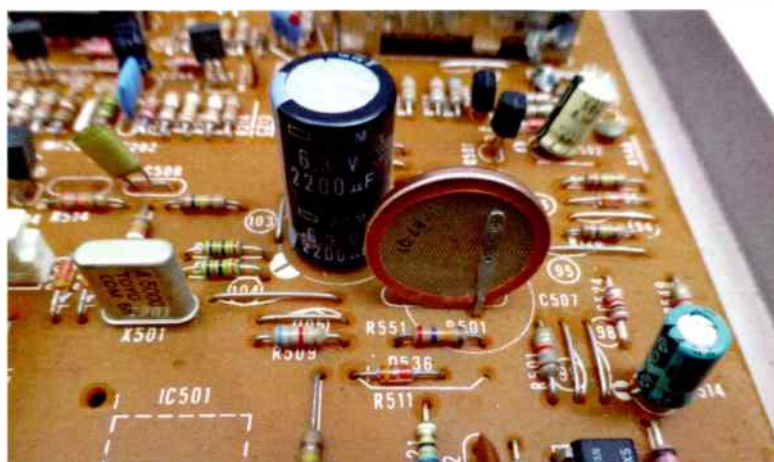
These controls give you some idea as to this tuner's flexibility. Note that sixteen favourite stations can be stored for instant access (a 'shift' button allows eight buttons to do the work of double that number!).

technology in the mid-1980s, were developed specifically for use at the super-high (GHz-magnitude) frequencies associated with satellite communication; you'll find them on the LNBs (low-noise block down-converters) that sit at the focal point of your Sky dishes. The virtues of GaAsFET technology at VHF are however dubious.

If all of this tech sounds too complex, Hitachi had a clever trick up its sleeve - and it's one that makes the FT-5500 models unique. Press the FCCS (Field Condition Computer System) button after tuning to the desired station, and the tuner scans a couple of MHz on either side. Said computer then measures various parameters, and optimises RF and IF bandwidth for the best results from that station. It works very well, but its decisions can be manual-overridden.

Some of the more eagle-eyed among you will have noticed the lack of a signal-strength indicator - traditionally a meter, but more often a row of LEDs on digital tuners. The '5500 was far

superior here, a button switching the fluorescent display to show signal strength in dB, relative to 1 microvolt. This was far more accurate than the average low-resolution 'bargraphs'.



If presets aren't stored, the likely cause is a dead lithium battery. It's a commonly-available CR2032 type, as used in PCs and 'credit card' remote handsets, albeit in solder-tagged form here.

Manual switching between mono and stereo is, with other tuners, combined with a 'muting'

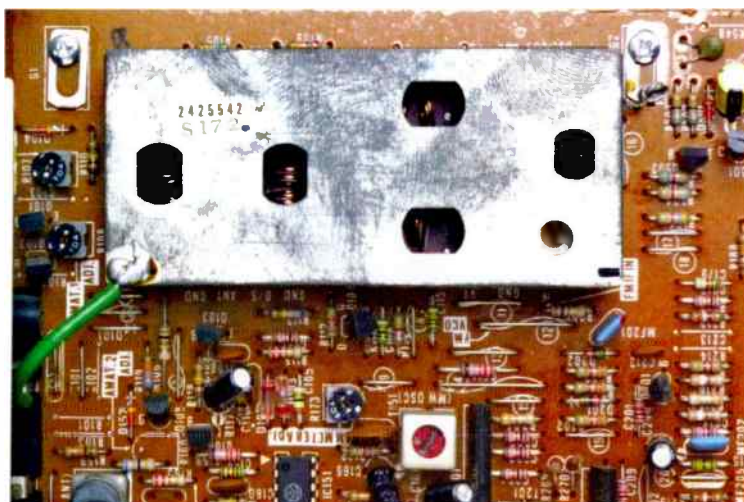
function that silences the output if the incoming signal is below a certain (fixed) threshold; on communications gear, this threshold is variable - courtesy of the oddly-named 'squellch' control. Hitachi has determined the '5500's muting threshold so that stations too weak for noise-free stereo are rejected. Press the button, though, and they can be heard in mono.

Reviewers praised the FT-5500 Mk II and its predecessor for their formidable radio performance. Selectivity in particular is fantastic. At my location, the local Heart clone (97.5MHz) is dangerously-close to LBC (97.3MHz). The latter is received here with considerably-lower signal strength, and you wouldn't know it was there with most tuners. Switch the '5500

to narrow, and LBC 97.3 comes through loud and clear - albeit only in mono!

Over recent years, property developers and builders have radically changed my skyline - with an inevitable impact on radio and terrestrial TV reception. Compounding this were February's gales, which 'took out' a directional rooftop beam aerial thereby forcing me to rely on an inferior omnidirectional aerial lower down the mast. Thankfully, the 5500 made the most of this situation, Hitachi's FCCS giving me noise-free stereo when tuned to the very revealing Radio 3; with another tuner, fed from the same aerial, an annoying background 'mush' intruded on weaker passages.

The FT-5500 has been described in the past, not least by this magazine, as brilliant in RF



Inside this screened box is the FT-5500 Mk II's RF 'front end'. For some reason, it uses gallium arsenide field-effect transistors (GaAsFETs) as developed for satellite communication.

terms - but not so strong on the sound-quality front, on account of "mediocre analogue stages". Most mass-produced consumer audio equipment of that time can be thusly criticised. Core components within the FT-5500, certainly in its Mk II guise, include two highly-specialised specialised chips - a Sanyo LA1235 FM IF/demodulator and a NEC uPC1223C stereo decoder. All tuner manufacturers, unless they were prepared to build circuits from scratch using discrete components, would have used these (or similar) chips. Low-grade op-amps and cheap passive components were common at that time.

Some enthusiasts have modified FT-5500s by substituting components and making other changes, with claims of improved sonics. The excellent FM Tuner Info website has published some of these (bit.ly/3jjtHB0e). Even as it stands, the FT-5500 Mk II can sound very good - Hi-Fi World's original verdict is perhaps a little harsh, in my view. The lack of noise is instrumental in ensuring a strong dynamic range and clarity, and I found the bass to be amongst the best I've heard from a FM tuner thanks to its tautness and depth. One wag on FM Tuner Info, who carried out listening tests, describes the Mk II as being "closer to...that McIntosh 'house' sound than any non-McIntosh tuner we've listened to here"!

The biggest limitation nowadays is of course the programme material. Since the heyday of the FT5500s, most FM radio became over-processed to make it sound 'punchier' in cars and on portable radios. Unfortunately, it sounds awful on decent hi-fi systems! Radio 3 doesn't use quite so much processing, and Radios 2 (music) and 4 (mostly speech) are tolerable. Radio 1, and most commercial stations (a possible exception being Classic FM), alas aren't for much of the time. A lab stereo FM generator, fed from a hi-

res digital source, does show what this tuner is capable of; it's amazing how much of the music is retained. And AM? The FT-5500's medium-wave reception is acceptable, but many old 'scale and pointer' tuners (my Pioneer TX-9500, for example) are audibly superior.

It is ironic that FM radio in this country has been described as "close to that of CD", because arguably the best-sounding example of it - the aforementioned Radio 3 - relies on a BBC-developed system, known as NICAM (Near Instantaneously Companded Audio Multiplex), to distribute audio from BBC studios to the UK's network of transmitters. With NICAM conversion of analogue audio is at 14-bit resolution. The sampling rate is 32kHz, limiting upper frequency response to under 16kHz. Even today, some audiophiles prefer listening to Radio 3 via NICAM-distributed FM radio to, say, the 'HD' (320kbps) stream. Maybe the analogue elements of the chain 'round the digital edges'. Despite the primitive spec of NICAM it sounds good to me - especially with those immersive Radio 3 live concerts.

FM radio has been given a reprieve in the UK, but it seems likely to be replaced entirely by streaming technology in the not-to-distant future. Decent tuners like the complex and capable Hitachi will then become door-stops, unless you're able to bring in signals from nearby European countries that haven't yet 'switched off'.

FM's impending doom has impacted the cost of tuners; this particular FT-5500 Mk II, in perfect working order (Hitachi's advertising slogan used to be 'in a word, reliability') had been left out in the street for the dustman. Even if you're not as lucky as I was, these once-prized tuners don't usually fetch more than £20 on eBay. The only problem you're likely to encounter is a dead lithium battery, which means stations aren't stored.



The FT-5500 Mk II uses an NEC uPC1223C stereo multiplex decoder - one of the changes relative to the original model.

It's a CR2032 'coin', as used on PC motherboards nowadays, but soldered to the circuit board. I fitted my tuner with the battery holder from a redundant motherboard and, with a fresh cell, restored my tuner's memory - the result should, alas, outlast FM services in this country.

NOEL NOTES -

The Single/Double RF selector most likely refers to use of one or two tuned RF stages between aerial and local oscillator. Consumer radios of the time commonly used a single-tuned RF stage, whilst communications receivers used two RF stages for better selectivity - commonly referred to as a double-tuned 'front end' - a switchable option on the Hitachi. For best quality, best to use Single and Wide in the IF section. It's likely Hitachi were concerned about more difficult radio conditions in America and perhaps Japan than the planned and regulated airwaves of the UK where such options were rarely needed I found, providing a high-gain directional aerial is used.

The FT-5500 MkII was one of the best performing tuners ever under measurement, being super-quiet (when fed a decent signal). It sounded a tad dull, probably due to mediocre component quality in the audio stages. A classic tuner all the same.



Like most digital tuners of its time, the FT5500 Mk II has VHF/FM (both 75 and 300-ohm) and AM aerial inputs, plus 'fixed level' audio outputs. Gone are the 'raw' discriminator and 'variable' outputs of earlier classics.

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"this means ferreting around in the dark behind the rack, with torch and magnifying glass"



Noel Keywood

What is a phono socket – and is it the same as a phono stage? And how about a phono input? Are they linked?

This has always bemused me: the whole 'phono' thing is non-sensical for reasons I have no clue about. This is one manifestation of the difficulties I face with plugs and sockets, something that affects us all. It's a mirror into a darker world of design failure perhaps.

As a reviewer I have to talk about "phono" this and "phono" that when they refer to entirely different items and, when I think about it and all the other confusions that surround plugs and sockets – which phono is and isn't – the subject seems an unresolved mess no one cares about.

Well, a few do. Apple specifically addressed plug and socket issues with their Lightning connector, as seen on the iPhone. This could have been a microUSB but USB has become such a mess they decided to come up with something better. Lightning is small and can be plugged in either way around. That doubles the number of pins needed and demands input sensing so not likely to happen with hi-fi equipment but it illustrates a point: connectors as we suffer them are just badly designed for real world conditions. Lightning was an improvement on all those USBs, one that was promptly copied to become USB C. Plugs and their sockets are important – yet many are just plain bad.

Because I spend my life plugging things in and out I get first hand experience of the problems. The phono socket is pretty good, except for that name. Some call it an 'RCA phono socket'. Seems good, but is it an unnecessary complication? Don't we all know a phono socket is a

round thing that sticks out and is easy to locate and use as a result? It's actually a great socket in being simple and cheap to manufacture, small yet strong and can be seen and used in that dark world behind the equipment rack. Apple's Lightning connector would fail here: it can't be seen in the dark, as I find when fumbling to connect my iPhone to charger late at night.

The phono socket does have problems: the central signal pin connects before the outer shield, creating a large buzz, it is unbalanced so mixes signal with ground currents, again creating hum, and there are just two lines, signal and return. Would it not be more sensible to use S pin XLRs instead, now appearing for balanced connection of headphones? It would but we've already been through that with DIN plugs and it didn't work out. Quite why I don't know, was it just that they were cheap and nasty, like the Scart that has also disappeared. XLRs are sturdy and reasonably easy to use, but large, heavy and expensive. Not about to appear on the iPhone methinks.

So let's call the phono plug just that, no need for the RCA prefix. Instead we should stop calling a preamplifier for a cartridge a "phono stage". If we do that then the input can be called something other than a phono input, even if it does go through phono plugs. Perhaps there should be a law against it!

Why on earth do we call it a phono stage in any case? Is this a contraction of the word phonograph? Phonographs were mechanical and never needed a phono stage, so that makes no sense. Looks to me like we should use the abbreviation LP here: it's short and sweet. We then have an LP stage and an LP input that may or may not have phono plugs. I think

that makes sense.

Whilst there is confusion between phono sockets, inputs and stages, at least the mechanical socket was a good one. Not so the fascinatingly bad TOSLINK socket, a peculiar device that I secretly admire – whilst at the same time cursing it.

What's a TOSLINK? Well, there you go: first problem. Wrong name: unmemorable and therefore unusable. Since it was dreamt up by Toshiba perhaps there was a better word for it in Japan, The rest of the world rejected the capitalised Toshiba Link (detractors called it a Toshlink) and called it an optical digital socket, or an optical S/PDIF socket, or a digital optical socket or...

Here's the physical problem. The socket is flush and black so it cannot be seen in the dark and it cannot be located to plug something in, unlike a phono socket that sticks out. A black plug, asymmetric with a flat on it, has to be aligned correctly to fit. Misaligned, it can be forced in, ripping off the sprung door. We once had a reviewer who could not cope with this socket at all: I started to notice missing doors on our heavily used reference products and we then had to do the job for him!

I favour the digital optical link because it eliminates the possibility of ground noise, giving a milder sound than electrical connection through – er – a phono socket (that word again). But this means ferreting around in the dark behind the rack, with torch and magnifying glass, to ensure TOSLINK plug is correctly aligned with socket. With this connector you must tread with care. I'm unsure why the thing needs to be asymmetric in any case; it could have been like an optical version of that thing again – the phono socket. Cylindrical, symmetric and easy to use. A design that has stood the test of time. ●



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"Is bad behaviour part of the rock'n'roll circus?"



Paul Rigby

There have been plenty of exceptions but, in general, if you wanted a detailed dictionary definition of 'bad behaviour' then the words 'rock star' or even 'pop star' would probably be buried in paragraph three.

Many of them have been deserving of the naughty step after antics in public and amongst the general populous.

For example Britney Spears, amongst many other offences, smashed the windows of an SUV, Paul McCartney was arrested for possession of half a pound of marijuana in Japan, James Brown – back in 1988 – lead the police a merry dance on an interstate car chase, Jerry Lee Lewis shot his own bass player and stabbed the editor of a country music magazine with a broken bottle, Boy George was convicted of assault and false imprisonment of a Norwegian male escort in 2007, REM's Peter Dinklage was charged with "criminal damage to a quantity of crockery" and Marilyn Manson was up before the beak for rubbing his genitals on the head of a security guard in Michigan.

You would think that, when the fans were in the frame, the people who keep them in a job, big houses, lots of cocaine and pretzels. You would think that these miscreants, these serial sinners, would all shape up and retain a modicum of discipline on those sacred boards. But no. No they don't.

Ozzy Osbourne set off a delayed riot in 1982 when word reached the Texan audience of his concert that Osbourne had relieved himself at the historical site of the Alamo. Osbourne later donated \$10,000 to the Daughters of the Republic of Texas, who look after the site, as penitence.

Guns N' Roses lead singer Axl

Rose freaked out during a 1991 concert when a fan took his photo. A heinous crime, indeed. Rose demanded that a nearby security guard confiscate the offending item. When that didn't happen, Rose launched into the crowd flailing punches, walked back to the microphone, said "Thanks for the lame-ass security – I'm going home". He dropped the mic, sparking a riot. Tear gas followed and Rose was later charged with assault.

Cypress Hill once turned up on stage with two mixing turntables but only one worked. An onstage fist fight ensued whereupon the turntable was thrown into the audience. The concert lasted twenty minutes.

Even the great jazz pianist, Keith Jarrett, wasn't immune. Jarrett was in the middle of a long piece then stopped. Apparently right off in the far corner someone had dared to cough. The unfortunate fan was berated by Jarrett with "If you're coughing, you're not concentrating".

I must try that the next time I get Covid.

Combining the above? Van Morrison was performing in Manchester during the early seventies. He walked on stage, the audience went wild, rushed to the front of the stage to take pictures. Morrison stopped the band and carried on walking – off the other end of the stage. A DJ then entered the stage and addressed the audience saying that Morrison was an artist and could everyone stop taking pictures because it destroyed Van's concentration.

The Brian Jonestown Massacre in 2006 now. During a show, group member Anton spent most of the evening flailing around the stage, drunk as a Lord, picked up a chair and threw it into the crowd at a heckler.

How could we not mention Julian Cope? Back in the eighties he was being supported by The Woodentops who stole the show as the audience demanded an encore. Cope snapped the microphone stand in two and performed surgery on his bare chest and bled all over the audience.

On another occasion Cope was, according to audience reports "off his head". He spent part of the concert crawling up the aisle of the audience seats targeting women and making orgasmic moans in their general direction.

Saying all of that, sometimes the antics are why you go to a concert in the first place. Ask any old Iggy Pop fan. More blood is spilt at a typical Iggy concert than in your local A&E.

Also ask any fan of The Fall when Mark E. Smith was alive. He would spark anger by walking around the stage, messing with the settings of his fellow band member's personal amplifiers.

Which begs the question. Is bad behaviour part of the rock'n'roll circus? Why is bad behaviour tolerated or even encouraged?

Are rock musicians, in fact, saying "No one can control me, so keep buying my records because you can live vicariously through my personal disasters and make believe that you're not part of the rat race. You don't even have to risk your own relationships, job and home in the process".

Thus, are these surrogate rock heroes just a release valve for our own stress-laden lives? They show us that we are free to do what we want, even if we're not?

"Well, I could be a rebel if we really wanted to. It's just I have work on Monday and I need to paint the fence on Sunday so I might have to delay being a rebel until the next Bank Holiday". ●

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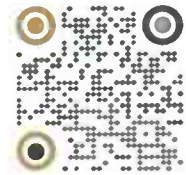
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"Radiolympia started off as a 1920s showcase for the electronic components used in radio"



Martin Pipe

In the late 1970s, when the now-ubiquitous Internet was merely a bomb-resistant system for linking together the West's Cold War-era military computers, I can remember being taken by my father to a local hi-fi/consumer electronics show as a 'treat', a cover for the fact that he wanted a cassette deck to go with his Amstrad 5050 receiver and Audiokraft budget two-way speakers!

This well-attended event took place in a vast building – possibly a hangar, not a million miles away from Southend Airport. I was surprised to see some of the big Japanese brands exhibiting there, among them (if I recall correctly) Sony – who made the deck Dad ended up choosing – and the industrial giant Toshiba.

Back then, consumer electronics products were expensive...and profitable. Hi-fi was in its pre-digital mass-market boom phase. Japanese hardware companies didn't feel the need to buy up 'content providers' (i.e. sources of software) until well into the following decade.

Having a presence at comparatively small shows, especially in prosperous parts of the country with good transport links to pricey London, would therefore have made sense to such large companies. I don't recall seeing any of the smaller specialist hi-fi brands – including locals like Rega – but I was young and gravitated to the well-funded bright lights and most obvious sources of noise. That said Teleton, a mostly-forgotten Essex-based 're-badger' of Japanese OEM gear, was there.

A year before secondary school, I was happy – like many young boys of the time – to

shove collections of catalogues and leaflets into branded plastic bags that were given away for the purpose! More than 40 years on, I wondered what became of that glossy paperwork. Such ephemera would be of definite interest today. I'd like to find more information about the show, because my efforts to track it down have drawn a blank. If you have personal recollections of that (1979?) Essex show, why not drop us a line?

Such shows pre-date hi-fi. When 'steam radio' was in its infancy, an essential date for hobbyists was the ten-day 'National Radio Show' that took place in the Olympia Exhibition Centre in West Kensington. Amazingly, the venue – built in 1885 – is still there. This is unlike the rival Earls Court, home to countless get-togethers including the 'Live' series of consumer-electronics shows I covered for various magazines, which was demolished in the late 2010s.

Radiolympia, as it became known, started off as a 1920s showcase for the electronic components used in radio. As it grew, the show focused more on the consumer. Ready-made 'wireless sets' were presented on eye-catching stands by the big names of the day (including local firm Ekco), while well-known magazines and newspapers printed special 'show numbers' outlining what visitors could expect. Also helping to draw the punters – attendance figures peaked at 238,000 in 1934 – were the era's radio personalities.

On which subject the BBC, then the UK's monopoly broadcaster, was a major presence at Radiolympia. As well as broadcasting from there – it set up a temporary 'BBC Theatre'

in the adjacent National Hall – the BBC was responsible for an internal signal-distribution network that helped the radios present on the manufacturers' stands to deliver their best performance. This was essential in busy parts of London, as poorly-suppressed car ignition systems and other electrical interference could wreak audible havoc on AM radio...and, come to think of it, television pictures. At the August 1936 show, the public was given its first glimpse of the world-leading 'high-definition' (405 line) TV service that would be launched officially a few months later.

British industry's TV-led experience with VHF radio and cathode-ray tubes gave it a head-start with radar, which would be of crucial importance during World War II – then only a couple of years away.

So where are we now, in terms of exhibitions? It's a mixed bag. The 2022 installment of one of the best known UK events, 'The Bristol Show', was cancelled due to the emergence of the Omicron Covid variant.

On a smaller scale, the 2022 Tonbridge Audiojumble was rescheduled from February 20th to May 29th. Also due to take place in May (19th-22nd) is the Munich High-End Show, Germany.

On home soil there is The UK Audio Show 2022 at Staverton Hotel Complex, Daventry, 8-9th October 2022 by The Chester Group (www.chestergroup.org).

And, further north, the North West Audio Show at Cranage De Vere Estate, Cheshire on 18-19th June (www.audioshow.co.uk). Providing no new bugs – no 'variants' – appear of the old bug, it looks like shows will be back with us soon. ●



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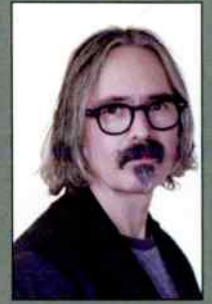
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"a guitarist will rarely get a writing credit for 'composing' his solo"



John Pickford

Some tunes are so ingrained in our collective psyche it's hard to imagine how startlingly unique they sounded when first released. Procol Harum's *A Whiter Shade Of Pale* is one such tune.

Released in May 1967, it reached No.1 at the beginning of June, remaining there for 6 weeks. Along with the two chart-toppers that followed (*All You Need Is Love* by The Beatles and *San Francisco [Be Sure To Wear Flowers In Your Hair]* by Scott McKenzie), *A Whiter Shade Of Pale* provided the sound track to the much-celebrated *Summer of Love*, while providing the blueprint for the Prog Rock genre that followed in its wake.

The original record label credits Procol Harum's recently departed front man Gary Brooker as the composer of the tune along with Keith Reid, who wrote the Chaucerian lyrics. While Brooker wrote the top melody line to accompany Reid's 'We skip the light fandango... as the miller told his tale...' wordplay, the distinctive Bach inspired Hammond organ melody that opens and runs throughout the song was written by keyboard player Matthew Fisher.

Fisher had to wait several decades and endure lengthy legal proceedings before receiving due credit and now enjoys a share of the royalties the song still generates. Quite rightly so.

It can be a fine line between what is considered a composition, which would earn royalties, and an arrangement, which, at best, would earn a fee. A guitarist will rarely get a writing credit for 'composing' his solo, for example. Some bands, usually those with multiple writers, choose to split song writing royalties equally between members,

regardless of who actually came up with the idea or wrote most of the song, to acknowledge each member's input. It's easy to see how either approach could cause resentment.

In 1977, ten years after its release, *A Whiter Shade Of Pale* won a Brit award for 'The Best British Pop Single 1952 - 1977'. Well, actually it shared the honour with Queen's *Bohemian Rhapsody*, released two years previously. Freddy Mercury is credited as sole composer; yet consider Brian May's guitar solo, which plays for almost half a minute. I'm sure there are many among you who can imagine that solo from beginning to end and be note perfect on every flourish and string bend. What's that if it's not a composition? Brian May, though unofficially credited with composing that section of the work, has never made any claims for his contribution, seemingly happy for Freddy to receive all kudos for the track.

The art of sampling - taking an element of a previously recorded track to create a new piece of work - has long been a feature of hip-hop, however indie band The Verve got into a spot of bother with their 1997 hit *Bitter Sweet Symphony*. The track contains a portion of the Jagger/Richards song *The Last Time* as performed by The Andrew Loog Oldham Orchestra. Despite the sampled string part bearing no resemblance to The Rolling Stones' original record, Verve songwriter Richard Ashcroft was forced to relinquish 100% of his song writing royalties to Allen Klein, the notorious former Stones manager who owns the rights to all of the band's pre-1970 back catalogue. This always seemed terribly unfair but in 2019, Mick and Keef did the decent thing and

signed over their publishing back to Ashcroft.

Plagiarism is another matter though. One of the most high profile cases concerned George Harrison's *My Sweet Lord*. Although Harrison claimed the song's inspiration came from the hymn *Oh Happy Day*, he was found to have subconsciously lifted the tune from *He's So Fine*, a 1963 hit for The Chiffons. How ironic then for the former Beatle to write a paean to the Lord and be accused of breaking one of the ten commandments by stealing the tune!

In more recent times - 2013 to be precise - a more worrying complaint of plagiarism was filed by the estate of Marvin Gaye, claiming copyright infringement of Gaye's song 'Got To Give It Up' by Robin Thicke's 'Blurred Lines'. I certainly raised an eyebrow reading about the case as rather than claiming plagiarism of the melody, the complainants felt Thicke's song (co-written with Pharrell Williams and Clifford Joseph Harris) merely copied the 'feel' and 'sound' of Gaye's track.

In 2015 a jury found the composers of *Blurred Lines* guilty of copyright infringement, much to the dismay of music commentators worldwide. Fortunately, a subsequent appeal overturned the decision. Earlier this year music business expert Ted Gioia opined that it was a watershed moment for composers and publishers, noting the increased risk of copyright lawsuits: "The risks have increased enormously since the *Blurred Lines* jury decision of 2015, with the result that additional cash gets transferred from today's musicians to old (or deceased) artists". Now that can't be good for the future of popular music, can it? ●

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 407 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, pacy 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.

MCINTOSH 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 SOLIO 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...

AVIO 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 LVX 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.

QUAL 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.

TOWNSHENO 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 RB300, 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 LO-70 1978 £600
The best 'all-in-one' turntable package ever made. Clean, powerful and three-dimensional sound, ultimately limited by the tonearm.

AOC ACCUTRAC 4000 1976 £300
Bonkers 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 PL120 1973 £36
When vinyl was the leading source, this bought 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 SONOEK 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 R011S 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.

GOLORING LENCO GL75 1970 £15.65
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 T0124 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 ORIGAMI 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 cost-cut 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 muscular, 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 OBH-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 Supera 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 OBH-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, icy clarity and a breathtakingly fast, musical sound make this one of the very best super-integrateds.

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 masterclass.

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 semi-nal styling to match.

DELTEC 1987 £1900

Fast, dry and with excellent transients, this first DPA integrated is the real deal for eighties obsessives. Ridiculously punchy 80W per channel from a tiny, half-size box. Radical, cool and more than a little strange.

EXPOSURE VII/VIII 1985 £625

Seminal 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 tonally monochromatic. Fine phono stage, very low power.

CREEK CAS4040 1983 £150

More musical than any budget amp before it; CAS4140 loses tone controls, gains grip

MYST TMA3 1983 £300

Madcap eighties minimalism, but a strong and tight performer all the same.

ROTEL RA-8208X 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 Audiobal 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

ELECTROCOMPANIET 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

LECSO 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, TL12 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.

LECSO 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-fit!

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
Smallish 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!

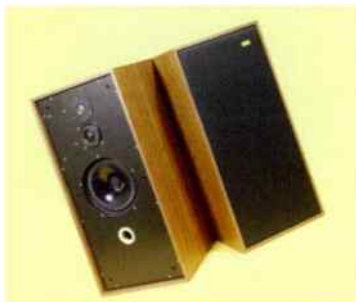


JR 149 1977 £120
Cylindrical speaker was ignored for decades but now back in fashion! Based on classic KEF T27/B110 combo as seen in the BBC LS3/5a. Doesn't play loud, needs a powerful transistor amplifier, but has clarity and imaging,

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.

SPENOOR BC1 1976 £240
 Celestion HF1300 tweeter meets bespoke Spondor 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-500 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 SANOWICH 1961 £39 EACH
 Warm sounding infinite baffle that, with a reasonably powerful amplifier can sound quite satisfying.

QUAO 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 UNITIQUETE 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 'LEGENO' 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 IOECCO £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 OYNALAB MO-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.

MYRYAO 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...

QUAO 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.



NAO 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 MOEEL 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-JE55ES 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 'pr' use and laden with facilities - a great eighties 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 paperbook-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 4000D 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 P0 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 mech.

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 CONSTRICTOR 13A-6 BLOCK 2003 £120
Top quality 'affordable' mains outlet block, with fine build and good sonics. Well worth the extra over standard high street specials, which sound coarse and two-dimensional by comparison.



ASIA

The Official Live Bootlegs Volume One
 BMG

This particular column is partly aimed at addressing unfinished business. For Asia? I've already looked at 'The Reunion Albums 2007-2012' in the August issue.

This one? Well, it's aimed fair and square between the eyes and ears of fans. The 10CD box set is packed with live concert material that spans the first incarnation of the band in its early eighties heyday plus the comeback, kiss-and-make-up tour of the Noughties, all the way to 2010.

Looking on the rear of the slip case, you'd be forgiven for believing that the set features only the five CDs because each concert is entitled, CD1, CD2 and so on. Not so. Within CD1 are two discs. CD2 also features two discs and so on through to CD5. It's an odd labelling practice, I must say.

No matter, the content itself includes concerts from Kleinhans

Music Hall Buffalo, NY, USA (3 May 1983), Centrum, Worcester, MA, USA (22 August 1983), Credicard Hall, Sao Paulo, Brazil (23 March 2007), International Forum, Tokyo, Japan (12 May 2008) and HMV Forum, London, UK (14 December 2010).

The earlier concerts tend to be of the hard core, 'this is Asia and only Asia' approach while the later, comeback concerts also feature older works from Yes and King Crimson, ELP, The Buggles and the like. All the oldies from each band member, basically.

So how do they sound? Both early and later shows sound good. They lack midrange insight yet provide a fine overall balance. The later shows add a touch of midrange emphasis but nothing aggressive. What pleased me was a lack of any edginess while the general sound balance is good with the band – not the audience – dominating sound output.



STONE THE CROWS

Live at the BBC
 Repertoire

This box set is another unfinished topic. I discussed the band's album reissues on CD back in what, June or July of last year was it, as a Classic Cuts? This one packs in a host of additional content over four CD discs.

When they were at their peak, Stone the Crows were pretty powerful and rather arresting. They pinned you to the chair and dared you to make a quick cuppa. Not a chance.

This collection adds a further four hours of recordings to those album reissues, spanning the band's height during 1969 to 1972. And remastered, to boot. The slip case holds two jewel cases of two CDs. In there are also two separate booklets. The first booklet spans fifteen pages and includes photographs plus a new interview with lead vocalist, Maggie Bell. The second, spanning eleven pages gets down to the nitty gritty of the

core session information.

As for those sessions? You're looking at John Peel's Top Gear and Alan Black's Sounds of the Seventies on Disc 1, Sounds of the Seventies from 1971-1972 on Disc 2 with the additional help of Pete Drummond plus John Peel's Friday Night is Boogie Night (this show is a new one on me) and then an entire radio concert on Disc 3, Live In Concert At The BBC from 1971.

The last CD features bonus material such as John Peel's Sunday Concert and Mike Harding's Sounds of the 70s.

All in all, it's quite a selection.

As for the sound? Mastering quality varies because this is a compilation. Generally, I find early BBC radio sessions exhibit an edgy midrange and lack definition although much of that has been reduced/enhanced to acceptable levels here. The In Concert broadcast being especially balanced.

A UK band, The Betterdays could be described as West Country R&B. And I mean proper R&B, not the diluted, chrome-glossed, saccharine soul pop that somehow utilises that moniker these days.

Based in Plymouth the chaps began as a Shadows-inspired group called The Saints then The Saints Beat Combo when The Beatles hit the scene.

Influenced by The Rolling Stones and the Pretty Things, the chaps evolved into a "gutsier" outfit altogether.

The Betterdays, named after a Sonny Terry & Brownie McGhee track, became regional favourites, established their own fan club and newsletter but they didn't have the benefit of the London spotlight and the London power from the major labels.

Yes, they did get to the City but it was tough to travel to and from their home town.

Roads were not the easiest to traverse back then. The result was a Polydor single from 1965 and a bunch of acetates and a dim memory of what could have been.

This collection attempts to give the band their due by collecting all of their works through the sixties including six tracks from a live outing at the Quay club in 1964 and a host of nineties recordings along with a belated 1990 album called 'Backlash' (on NTB Records).

In sound terms? This is a compilation from disparate sources and from varying time periods so I cannot be too judgemental. The early tracks have a compressed, clinical upper midrange although the label has tamed the effect. As you might expect, the nineties recordings offer a broader soundstage and more space across it, there's plenty of detail but a slightly edgy midrange remains.

AUDIOPHILE

I love stories like this. In many respects, John Carter was truly representative of the music industry during the sixties. The 'norm' if there could be a 'norm' at that time was not The Beatles or The Stones or even Amen Corner and Marmalade. John Carter represented the engine of those times. He wrote songs, performed as a backing singer, was a session man and he even produced. He also tried to get his own combo up and running. In this case as part of The Ivy League.

The latter did enjoy two Top 10 hits but neither they nor Carter became major stars. Even so, Carter became an essential part of what made the sixties the sixties and its wonderful that Grapefruit are able to release a 4CD box set based around the man who would later move into the advertising industry.

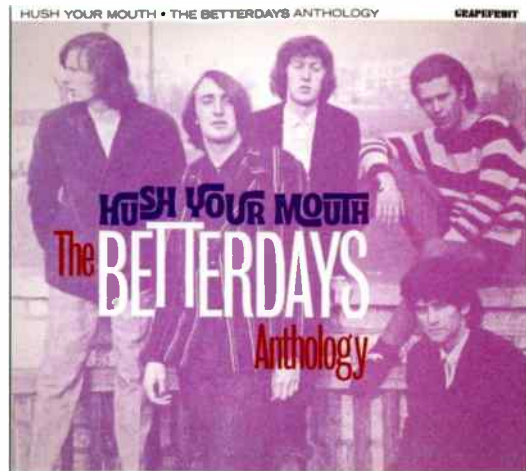
Carter was a fixture in

London's Denmark Street. In many ways, Denmark Street was Britain's own Tin Pan Alley. This was the place where many songs were written and hits were churned out for a host of singers who did not write their own material. During this time, Carter was associated with The Ivy League yes but also The Flower Pot Men and fictional bands like Stamford Bridge, Kincase, First Class and a host of other aliases.

This collection includes a wealth of acetates that have never been previously released plus Carter's own song writing output that became hits for the likes of Herman's Hermits and The Troggs.

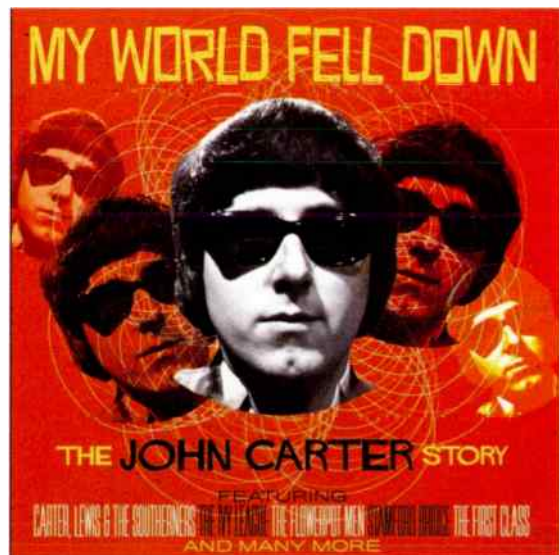
Read the tremendous booklet that comes with this collection, it's startlingly illuminating.

Mastering varies because this is, essentially, a compilation but the meat here is musicology. Music history. As such, this set is priceless.



THE BETTERDAYS

Hush Your Mouth
Grapefruit



JOHN CARTER

My World Fell Down: The John
Carter Story
Grapefruit

Roma Romance

A CD player with valve output stage. Noel Keywood listens to the Synthesis Roma 14DC+

Not a new idea, but a nice one all the same. Fit a valve output stage to a CD player to give its sound some depth and organic warmth,

better emulating the sound of analogue. That's what Synthesis (Italy) do with their Roma 14DC+ (£2499) player I'm reviewing here.

Once you start on this path then other design features suggest

themselves. For a sense of analogue depth and smoothness best to use a linear power supply rather than a cheaper switch-mode, and that is what you can see here in our internal shot. Teac (Japan) make top



quality parts and Synthesis use one of their transports.

Then comes the digital convertor and the most obvious choice for smooth analogue sound is ESS (California) or – following close behind – AKM (Japan) with their Velvet Sound DACs. Synthesis go for the latter, using a premium AK4495SE0. Put this little lot together and you have a CD player that has an easy-on-the-ear sound – unlike most.

So as not to waste the abilities of the AKM chip, it can be accessed externally, making this a DAC too. Inputs are S/PDIF via electrical (phono socket) and optical (Toslink) connections, as well as USB. No problem sending DSD over via DoP I found, using an Audirvana+ software player on a Mac. As you might expect the AKM chip plays anything thrown at it.

The Roma DAC+ is large, measuring 110mm wide, 390mm deep and 95mm high. With a

toroidal mains transformer inside it is also weighty, coming in at 8kg or less. Having a low output of 1.5V I suspect Synthesis use a board delivering standard 2V and place an ECC88 double-triode valve on each channel configured as a cathode follower that, with a gain less than 1, reduces output. They feed just one pair of RCA phono socket unbalanced outputs at rear and there's remote control (only) of volume, on a coarse scale of 0-50, which I found a little odd. Modern DAC chips come with inbuilt 0.5dB step control of volume that usually translates out to 0-100 volume scale for 50dB range, but not here; the steps measured 1dB.

And all DAC chips come with balanced output that needs extra circuitry to go unbalanced to phono sockets. So it's easy to include a balanced XLR output socket – but Synthesis have not done it here. It would bypass the valve stage and be out of idiom

I guess, unless more valves were fitted for this connection alone. A bit of a missed opportunity, within an expensive high quality player where XLR may be expected/required by potential purchasers.

I was also a bit baffled by the remote control's controls. Er – the volume buttons don't change volume! Interesting. To perform this feat the Mode button had to be pressed twice and the track-skip buttons used to change volume. If volume wasn't then altered within seconds the player would exit this function. It was confusing and awkward, leading me to think that this facility is best seen as a pre-set output control rather than a remote volume control, which these days is found in most amplifiers. The Mute function did not work, suggesting that perhaps the unit was not originally intended for this player.

The remote's operating behaviour just didn't make sense,

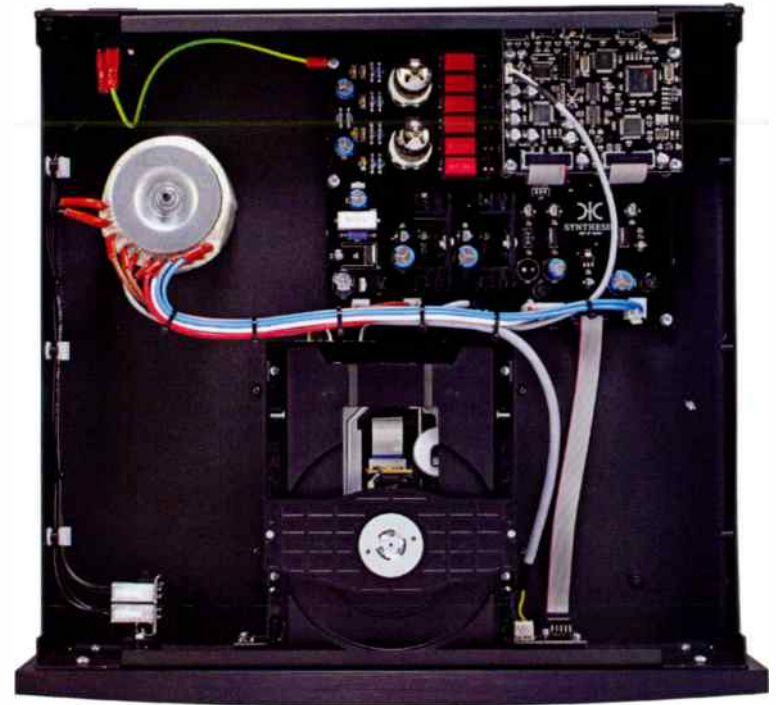


although it got the job done. And the player's small low-res screen was hardly inviting to look at. The player was clunky at the vital user interface, yet the remote was nicely machined and physically solid, just like the player. Curiously contradictory.

SOUND QUALITY

I paired the Roma 14DC+ with our Creek Voyage i20 amplifier but this wasn't an ideal match, coming across as a bit too laid back even for me. The Synthesis better suited our PrimaLuna EVO300 Hybrid amplifier with sonically fast, powerful FET output stage fronted by valve preamplifier stage. This was a match made in heaven, showing clearly what the CD player was capable of. I also input hi-res from a MacBook Pro, running an Audirvana+ software player able to send in DSD as well as PCM. Loudspeakers were Martin Logan ESL-X hybrid electrostatics connected through Chord Company screened Signature Reference cables.

Rimsky-Korsakov's Dance of the Tumblers (24/96) well displayed this player's great strengths, the Minnesota Orchestra occupying a huge sound stage with conspicuous air and space around instruments like occasional kettle drum strikes, a lone clarinet and massed brass.



At left a toroidal mains transformer to provide power and at top-centre two ECC88 low noise double-triode output valves that deliver a lower than common 1.5V output. At bottom centre, a high quality Teac CD transport mechanism.

Strings were fast and vivacious and here I felt the valves being used were good ones as there were no soft edges to be heard, nor any cloudiness. A very pure and insightful sound.

A sense of well etched insight also made itself known with Diana



The remote control: Volume and Mute buttons inactive.



The ECC88 double triode output valves, used as cathode followers to act as low output impedance line drivers. They also impart the 'valve sound', bringing air and space to the sound stage.

Krall's Narrow Daylight (DSD) where plucked guitar strings were vividly fast yet sweet in nature. OK, this was DSD where oft-edgy sound of PCM is banished and highs are noticeably more natural, but the Roma made this very apparent by not smothering the sound in warmth.

Yet at the same time, torture tracks like Neils Lofgren's Keith Don't Go (CD), where treble content is unusually powerful and sometimes overwhelmingly sharp-to-excruciating, slid through sounding vivid yet amenable.

Many tracks revealed this layer has deep, powerful bass. With Dadawa's Canton Story (CD) the shuddering drum strikes had tremendous weight yet there was also good timbral resolution of the instrument, giving more character than is common.



At rear a pair of analogue phono sockets. Above them USB, optical and coaxial digital inputs. There is also a digital output for connection to an external DAC.

"cymbals shimmered either side of the wide sound stage in what came across as a spacious performance"

Similarly, Fleetwood Mac's Dreams (24/96) had a meaty bass line and powerful input from Mick Fleetwood's kick drum, whilst cymbals shimmered either side of the wide sound stage in what came across as a spacious performance.

Whatever I played, CD or hi-res, the Roma 14DC+ was a delight to hear. It worked synergistically with the Primaluna amplifier and there was more space if less speed with our Icon Audio Stereo 30SE single-ended valve amplifier.

CONCLUSION

This player is a bit of a mixed bag. Its user-interface was poor by any standard. A little cheap remote that had buttons linked to function would have been preferable to the unit supplied. But at the other end of the scale, sound quality was superb, with a huge sound stage, glorious

imaging and powerful yet well resolved bass.

I was drawn into listening not only by all this but also by an easy natural quality that made it enjoyable, rather than a task. A lovely sound in every aspect. For sound quality most definitely 5 Globes. A great listen.



The Teac transport has a normal plastic tray, in the Synthesis fronted by a solid aluminium slab.

MEASURED PERFORMANCE

Frequency response of the Synthesis Roma 14DC+ measured flat from 4Hz to 30kHz our analysis shows, with a slow roll-off up to the 96kHz upper limit set by a 192kHz sample rate signal. With CD response was flat to 21kHz.

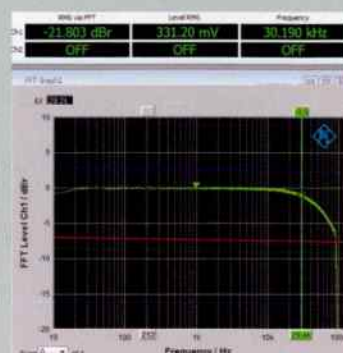
With valves in the output stage there is a balancing act between high output distortion and low level noise. At full level (0dB FS) distortion rose to 0.2% but it was innocuous sounding second harmonic. Running the valves into slight output distortion at peak level resulted in a dynamic range of 109dB being achieved – good for valves. This also helped keep distortion at -60dB reasonably low at 0.07% with 24bit digital, well below the 0.22% figure from 16bit (CD), allowing the DAC to exploit the benefits of hi-res.

Output was low at 1.5V, likely due to cathode followers being used after

a standard 2V output from the AKM chip's drive amplifiers. There is no balanced XLR output nor headphone jack.

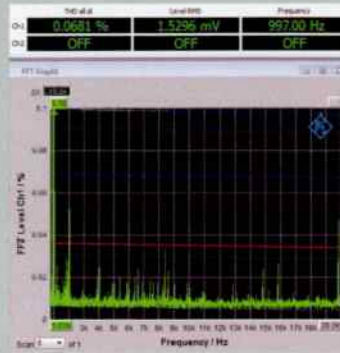
The Roma 14DC+ delivered a good set of figures as a valve-output DAC/CD player goes, able to exploit the benefits of hi-res digital as well as CD. **NK**

FREQUENCY RESPONSE



Frequency response	4Hz- 30kHz
Distortion (-60dB)	0.07%
Separation	94dB
Dynamic range	109dB
Noise	-106dB
Output	1.5V

DISTORTION



SYNTHESIS ROMA 14DC+ £2499



OUTSTANDING - amongst the best.

VERDICT

Lovely sound, if poor remote control and on-board display panel.

FOR

- spacious sound
- excellent bass
- hi-res and DSD

AGAINST

- awkward volume control
- no mute function
- no balanced XLR output

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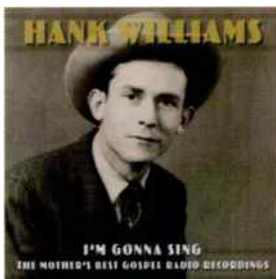
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The Whispers 'Imagination', reviewed by Paul Rigby.

news

HANK WILLIAMS

A 3LP multi-gatefold release from the great man called 'I'm Gonna Sing: The Mother's Best Gospel Radio Recordings' (BMG). Mother's Best being the flour-based sponsor. Originally found within an earlier 15CD set, this collection focuses on the religiously-flavoured output and features ditties that explore life's light and dark.



VOYNICH/S.T.C.F.T.H.O.T.A.

...is a 12" twin-song, nineteen minute single from Dali offering both classic mid-90s era house styles and more intense 'intelligent', looping, trance-like electronica. Tasty morsel.

Also look out for Dali's 'Leviathan' EP that follows a similar path with the title track an 'Electric Sheep'. Hands in the air, glo-sticks... retro goodness, folks.

Also from Hobbes (which is releasing all of this music and more; hobbesmusic.bandcamp.com) check out the 4-tracker 12" fronted by the song 'Shot At Dawn' – a warming suite of vocal synth-pop tracks by The Off Key Hat. Ideal soundtrack to barefoot dancing on the beach as the sun sets.

'Plagued Streets of Pity' from Exterior; meanwhile offers a blend of melodic techno and meaty loops with jazz-tinged percussion and psychedelic overtones.



INSIDE OUT DUO

Two from the Sony imprint (*Inside Out*; www.insideoutmusic.com). First up is Molybaron. What surprised me about their second album, 'The Mutiny' is how remarkably articulate is lead vocalist, Gary Kelly. It's...a nice change. This is prog-metal, full of guitar acrobatics, rocking aggression and sincere lyrics.

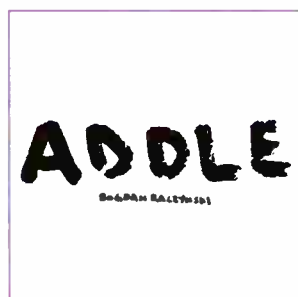
Also look out for Toundra's 'Hex' 7-tracker. A post metal band (post metal takes heavy metal's template and gives it a push) offering instrumental outings of varied texture, tempo and taste. I like it a lot.



ADDLE

...is Polish drum'n'bass man, Bogdan Raczynski's more sedate bucket of playful, minimalist electronica (*Planet Mu*; bogdanraczynski.bandcamp.com/album/addle).

Plenty of low-key restrictions here, melodic yet experimental in arrangement terms.



ONE LITTLE INDEPENDENT & CRASS

Penny Rimbaud and Youth. Two notable names issue 'Corpus Mei' (*One Little Independent*; www.olirecords.com) a gargantuan, cinematic outing presented in full SuperScope with Technicolor tendrils. You'll need Wembley Stadium to fit it all in. Politically pointed, toxic rhetoric, a reflection on capitalism, big business, big money, social breakdown, arms dealing, the shallow nature of society...this is a pulpit-bashing rage against the machine. And then some. Sit down for this one. Then go mix your Molotov cocktails...on the rocks.

Also check out Jane Gregory's 12" single, 'Do Not Go' (crass.bandcamp.com/album/do-not-go). Originally released in 1984 this piece of opera was co-arranged by Penny Rimbaud and released on Crass Records. Oh yes.

Finally, check out Honey Bane's excellent 'You Can Be You', another Crass entry. Originally released on 7" but now 12" this classic anarcho-punk single is resplendent in all its high-energy, edgy, sharp as nails glory.



CHARLES MINGUS

Plus Hampton Hawes's hard bop piano and Dannie Richmond's drums formed 'Mingus Three' or 'Trio' (Jubilee, now Rhino) back in 1957 to perform four standards plus two Mingus originals and a pleasurable jam. Contrasting with his more experimental albums of the time, this one is a relaxed jam affair. It's an album to remind Mingus fans that he could cool it, now and again. This is sexy jazz with a harder edge.



JUDI JACKSON

Jazz vocalist Judi Jackson goes soul with 'Grace' (Sony). There's a slight Deniece Williams aspect to Jackson's delivery, especially in the vibrato but she never dwells there. The Jackson range is impressive yet easy on the ear. She offers old fashioned qualities that should be treasured.



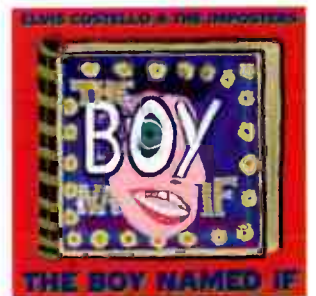
BERNARD BUTLER

From the UK audiophile label Demon comes Bernard Butler's 'People Move On' (www.demonmusicgroup.co.uk) a 2021 Edition of the 1998 release with lead vocals re-recorded by Butler. At least he's upfront about the re-recorded vocals. Unlike some Stones reissues I could mention. Contrasting the original with the older, more mature delivery is a fascinating process.



ELVIS COSTELLO & THE IMPOSTERS

Elvis is back with album number thirty-two and a new double album gatefold called 'The Boy Named If' (EMI) and well, it's a winner and no mistake. Full of sonic variety well-crafted songs, pointed and playful lyrics and tight melodies. I'm surprised at the quality.



...AND FINALLY

From Toronto's AHI comes 'Prospect' (ahimusic.com) a suite of spiritual soul spanning ten tracks of emotional exploration and self-examination.

UK country-pop outfit, The Shires' release their fifth album, '10 Year Plan' (BMG). Based upon uplifting, harmonies there's a comforting, BBC Radio 2, 70s vibes here.

Marianne Faithfull co-wrote most of the songs here including the title track, 'Vagabond Ways' (1999, BMG). Combining the talents of Emmylou Harris, Daniel Lanois and Roger Waters, Faithful is like the perfect rock accident, you can't look away.

Loop has released their first LP since 1990. 'Sonancy' (loopbandofficial.bandcamp.com) is a limited-edition release on 'Transparent Galaxy' vinyl (Blimey!) This space rock explosion bathes in static, feedback and distortion. It's a full-on sonic assault. Loop should be congratulated.



Expecting The Attesa

Looking for a turntable under £1k? Paul Rigby reviews this new belt drive design.



It's been a while. Since I reviewed a Roksan turntable that is. The last review I did was, if memory serves, the Xerxes 20 Plus over four years ago. So about time for another Roksan. This design is relatively unusual because of its price. For Roksan, under £1k is a low price for a turntable.

What we have here is a compact design that doesn't take an awful lot of installation time to get you up and running.

It is a twin-speed (33/45rpm) belt-drive design weighing in at 6.3kg and spanning 432 x 115 x 353mm. An acrylic dust cover, basic tracking weight gauge for the cartridge and phono cable are included. The Attesa (which roughly means "something pretty exciting is about to happen" in

Italian) arrives with a rather groovy plinth with rounded edges.

Running on a stainless steel 303 bearing, the belt passes around a small sub-platter. Over that lies the main platter that is intriguingly built from 10mm of toughened glass, edged in anodised aluminium. On top of that is a fairly basic felt platter mat, made from that rather thicker material that feels less felt and more like harder, processed fibres.

The built-in speed controller is a digitally synthesised AC signal generator driving a factory-calibrated motor.

The rather striking tonearm is a unipivot with an aluminium 5052 section fitted to the lower part and ABS on the upper, flatter surface. It looks like a concept design that Vertere may have come up with.

What I didn't like was the lack of a protective cradle clip to secure the tonearm. As it is, it's all too easy to knock the tonearm off its cradle and damage the stylus.

The tonearm features an enclosed tracking force weight that rotates forward or back, producing a quite stylish substructure. Anti-skate is sorted via a simple wire and O-ring dangly bit that fits onto the tonearm and hangs over an angled piece of wire.

Attached at the rear of the tonearm is another tool to easily change the tonearm's azimuth.

The headshell carries a moving magnet cartridge called Dana. This new cartridge didn't receive a great deal of attention from the initial Roksan marketing material I saw but I talked to the company and received more information.

Basically, it uses a bonded elliptical stylus and a diamond titanium stylus tip bonded to a tapered aluminium cantilever. In fact, the same aluminium type as used in the tonearm. Weighing 6.4g, the cartridge demands a tracking force of 2g. Bought separately? Expect to pay £250.

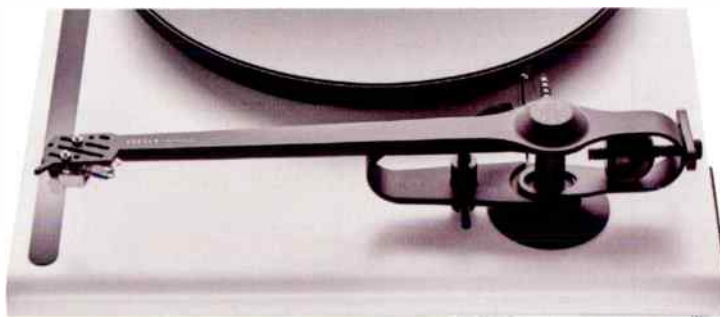
The cartridge arrives fitted to the tonearm but I would advise any potential owner to not dive in and play the turntable 'as is'. Maybe a shop-bought Atessa is a different kettle of fish. Maybe my example had done the reviewing rounds and been messed about with: it needed the tracking weight readjusting and its arm position realigning, so I would recommend a purchaser check the cartridge before play.

Installing the turntable includes placing the main platter and mat over the sub platter, checking the cartridge and tracking weight, plugging in the very basic switch-mode power supply and switching on. There's nothing too difficult here. I was up and running in no time at all.

Before switching on, I took one step back to gaze at the construction, noticing how different it looks compared to most other models currently on the market. Roksan certainly have a unique design here. Yes, there are nods to Vertere with that tonearm and even the older Roksan Oxygene turntable from 2015 in terms of the round-edged plinth but the overall design looks unique and attractive, compact, neat and tidy. Of course, beauty is in the eye of the beholder but I liked it.

The interface is basic yet simple with a power button and two others for speed selection. When you plug the turntable into the mains you only need to press the speed of choice to start the turntable. The motor is of a philosophical bent because it pauses for a moment, contemplates life and the universe and then pushes the platter into action.

Around the back is the usual pair of RCA outputs but inside is a built-in moving magnet-supporting phono amplifier. You can turn this unit on (active mode) or off (passive mode) but doing so means poking a pointy thing into a very small recess (your finger has no hope at all of reaching the switch) and then moving the tiny – and I mean tiny – switch left or right. I



The tonearm is a unipivot with an aluminium 5052 section.

wonder how many times you'll be able to poke at this switch before the switch fails.

I asked Roksan about the design of this area and it replied "The switch is designed to be deliberately hard to access to prevent a user accidentally switching it from passive to active once set up is complete".

I find that part of the statement intriguing because the switch is placed at the rear of the plinth. A place turntable users tend not to approach during normal day-to-day use. But even those who treat this area with care, those who actually want to operate the switch, will find it hard going. So it feels that Roksan has been overly cautious here. To an extreme, in fact. This is the only feature on the turntable that I would call a genuinely bad design decision.

Let's move from switches to sound now. How does the Roksan Atessa turntable sound in operation?

SOUND QUALITY

I began listening tests with a title track from Ennio Morricone. *Metti, Una Sera A Cena* provides a wordless female vocal fronting a string section, electric and acoustic guitars, percussion and secondary percussion, bells and something resembling glockenspiel.

I've said this before but when I begin any sound quality test, I am normally struck by at least one aspect of the product's personality. Something that stands out. Something that hits you first before all else. The epitome of that product's personality.

That happened here too.

What I got from the Atessa was this – impressive transparency. That, I have to assure you, is no mean feat for any hi-fi product, never mind a turntable. What I normally get is big bass notes, upper mid detail, even dynamic

reach but for transparency to hit me first smacks of downright quality. So that first reaction was certainly promising and quite startling, to be honest.

I'll give you an example of what I mean. The left channel on this track held the string section which sat right behind the vocal. The vocal itself was not exactly operatic but it was relatively complex and slightly masked the strings which hit my ear as a single band of violins.

Not any more via the Atessa. Oh no. What I heard with the Atessa was those violins – but with a focused bite to their action. I heard effort being put into their playing, the strength behind it making my emotional reaction to the music palpable.

The transparency element lay just beyond the first bank of strings. I say "first bank" because my ear, with the Atessa, now took note of a second bank of strings, just beyond, for the first time. Relatively subtle they were, that's for sure and slightly buried – but the second set occupied a lower register which was why these strings could be easily missed.

Nevertheless, they provided a tonal counterpoint to the first bank that actually provided a harmony of sort. One that I was hearing for the first time. Now yes, this information is there. It's always there but the ear tends not to pull towards it too often from a turntable at this price point. It's not an obvious sonic feature. It takes a turntable of quality to push through to the rear of the mix, scooping all of the available information on offer and separating it out.

Bass didn't suddenly leap forward or dominate here, retaining its position and power, yet it became subtly more imposing all the same. Like a man mountain might do just by suddenly standing

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This is a twin-speed, belt-drive design with an acrylic dust cover, basic tracking weight gauge for the cartridge and phono cable.

up from a sitting position, he becomes a focus of attention by his very presence. Without actually doing much. That's what the Attessa provided on this track.

The guitars, both electric and acoustic, offered impressive precision with strong focus, piano presented itself with great control while cymbals gave carefree splashes that sent reverb tails in all directions. The midrange had seemingly impressive insight.

Playing Thin Lizzy's 'We Will Be Strong' from the album 'China Town' showed the Attessa could rock with the best of them. The soundstage was big, impressive



The Dana uses a bonded elliptical stylus shape and a diamond titanium stylus tip.

and allowed room for the bold and aggressive electric guitars to frame the music. Drums were solid. Powerful without masking the rest of the detail but also giving my ear a sense of force and conviction. Above all, the music here was suitably melodic. I couldn't help but move my head, feet, arms and anything else that came to hand. Oh yes, hands too.

That the Attessa could cover the rock bases, while also allowing delicate cymbal taps to be clearly heard while big bass drums were hit and guitar wailed, was

a testament to the instrumental separation.

PHONO AMPLIFIER

But what of that phono amplifier? I have to say, I quite liked the built-in phono amplifier. For a built-in phono amplifier, that is... It will not best an external model. Saying that, I could easily live with it, being basically neutral in presentation, offering decent focus around

their heard-earned money, eh? – an external phono amplifier should be the first upgrade move here. Even so the internal model is certainly usable and will provide a good start.

CONCLUSION

The Roksan Attessa is relatively compact, with an attractively designed chassis – it's even a little futuristic in aesthetic terms. There's

The Roksan Attessa is relatively compact, with an attractively designed chassis – it's even a little futuristic in aesthetic terms.

the bass and enough midrange information to allow me to relax and enjoy music.

To make the most of the turntable though – and let's face it, after paying all that cash why wouldn't anyone want to maximise

no doubt in my mind it is a quality product, the sort of turntable that will have you nodding your head in knowledgeable approval with bunched eyebrows a-plenty. It's depth of revelation is intense and engaging.



The Attessa includes a built-in phono amplifier.

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Grub club

We're getting down and dirty this month in the grubby DJ booth, down in the mud with Mudhoney and further deeper still with the Velvet Underground.

MUDHONEY

First published in 2013, this is an updated paperback edition of the original book with a new chapter tagged on the end, bringing the band's activities to present day. You get another 34 pages or so.

In broad terms, what you have here is a book based on the life and times of the grunge band, Mudhoney, based upon original interviews (always a nice thing for any biography) but the focus is not too focused. There are outlying details which look at Mudhoney's position in the larger scene. This is a good book to examine the grunge genre in general terms.

You hear about how the band got to know each other, their musical influences, their musical and career development. One example being Green River which featured future members of Mudhoney but also Pearl Jam, Mother Love Bone and Temple of the Dog. Other highlights of this tome include interactions with other people and bands around them.

This is an informative, detailed yet lively and easy to read book. Highly recommended.

TALES FROM THE BOOTH

A small-format paperback, part three of a trilogy that attempts to convey what it's really like to be a superstar DJ. In this edition, the editors have corralled opinions from a host of DJs from all over the world. From Japan to Russia, Britain to Singapore and more. Because no names are named, there's a freedom to reveal all here.

The tales told are blessedly varied and are taken from a host of characters with real lives. This book is not a scandal sheet or "she did this to him and he said that to me" but it reflects real lives.

For example, there's the now 54 year old man who offers a potted yet still interesting biography. As a young man, our

unnamed interviewee was a dedicated clubber, won a dance contest and was invited into the hallowed DJ booth because of his dedication. This story in particular offered fascinating history because we're told that the DJs of the period used vinyl but also tape from a Revox RTR player and... cassettes! Our interviewee tells us how he was taught his DJ trade too.

Then there's the guy who was mistaken for being from the band Faithless...with hilarious consequences; a mid-range DJ was paid ten times his normal fee for a millennial gig; another whose club was raided by gun-toting police and ferocious dogs – and even a hi-fi related vinyl-cleaning editorial that will be of direct interest to the readership of this magazine. Remarkable.

THE VELVET UNDERGROUND

In short this book is a guide. It's a good, structured, small format guide and it's readable with some messy details thrown in for good measure. Roberts has used quotes from his own Lou Reed interviews to spice up the content but it's a guide or rather, Guide.

So we are introduced to the band members, Andy Warhol, his entourage and the world he and – of course – the group moved within. We do get a good sense of the personalities involved, their problems down to three decimal places and who was bedding who.

Sure, there's not a great deal of soul in this approach. You do feel that there is an element of box ticking here but that's OK in this kind of book

Then we move onto the albums themselves, complete with a stats page of track listings, where they were recorded and when – and so on. We even get Lou Reed's Top 20 tracks. A structured yet readable tome.

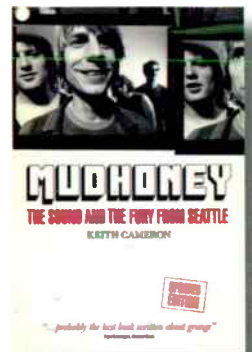
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Authors: Keith Cameron

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Price: £16.99

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Title: Tales From the Booth

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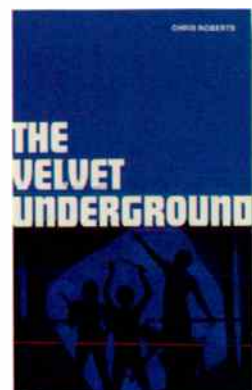
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THE WHISPERS

THE WHISPERS

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"The Whispers took the disco beat and formulas, then added their own brand of soul"

Sure, it's not a magnum opus. It's not 'Dark Side of the Moon'. It might not even be termed a minor classic. Even so, The Whispers' 'Imagination' is a landmark album and worthy of note. The Whispers had been around for a long time before this album appeared in 1979.

Formed in 1963 in Watts, Los Angeles, the group went on to accrue thirty-four songs that entered the US R&B Top 40 charts. Fifteen of those reached the Top 10, two hit the No.1 spot. Fifteen of their twenty-two albums also reached that Top 40 with eight in the Top 10 with two reaching No.1.

Lead by the voices of Walter and Wallace Scott, identical twins born in Forth Worth, Texas, the Whispers began life harmonising covers from The Temptations and The Four Tops. "The Temptations were the group that everyone imitated", said the Scott Brothers in a recent FunknStuff interview. "Back then, you saw an incredible show so we had the routines, you saw the splits, everyone was well dressed. The competition was ferocious. Although after the shows were over we all got along. Today? The younger guys? They're shooting each other!"

In the late sixties, the group hit the road, relocating and shuffling through varied record labels until, on the Janus label, The Whispers had a breakthrough with The Time Will Come – and then they reached No.6 on the R&B charts with the single, Seems Like I Gotta Do Wrong which also snuck into the national Top 50 charts. Three albums followed via Janus.

In 1975, the group signed to Dick Griffey's Soul Train label. Politics resulted in Soul Train being rebranded as Solar while The Whispers were joined by future stars Shalamar.

Each Solar release increased the band's confidence, if not commercial success. The song quality improved, the group's performances became more professional, the group's voice was spot on. Now they needed a trigger.

That trigger was Leon Sylvers III, a Memphis Tennessee singer, songwriter, multi-instrumentalist and producer who transformed the Solar label sound. Sylvers even handed The Whispers their first US

R&B No.1, the magnificent 'The Beat Goes On' in 1979. The first (and largest) of four UK hits, reaching No.2, No.19 on the Billboard charts and No.1 on the US soul charts.

You could say that The Whispers were one of the eighties R&B pioneers before that decade had even begun. Forging a new, post Disco, chart presence that made this newly tweaked R&B direction approachable to the masses, opening ears to other notable releases that would follow from the likes of The Gap Band, Tom Browne, Shalamar, Indeep, Imagination and more.

Disco hadn't gone anywhere. It was merely evolving to escape the bad press. So it hid within the soul genre and emerged anew as R&B which is where most of it remains today. The Whispers took the disco beat and formulas, added their own brand of soul and introduced that lot to a new decade, the eighties.

The Whispers' success was also salutary. It reminds us that the music of the time didn't just consist of punk or, by then, post punk and new wave. Despite what certain music historians tell us. This is always the problem when music fans look back into music history. Their selective memory highlights the headliners, the revolutionary creative artists but ignores the rest to the detriment of history as a whole.

This album offered its own basic innovation but it was also full of little highlights. 'Lady' was a sweet ballad that reached No.3 in the US R&B charts, whilst A Song for Donny was a eulogy for the passing of the legendary artist, Donny Hathaway who had died that year by falling from a 15th floor hotel window in New York. Even the cover of The Temptation's My Girl was notable because, while the album looked forward, this song nodded towards the past and the group's influence from The Temptations.

'The Whispers', the album was the first LP from the group to hit platinum and is still the group's largest world-wide seller.

You can find much of this album on a new, nicely mastered box set compilation from the Robinsongs label called 'The Whispers: The Definitive Collection 1972-1987', a 4CD with a couple of Christmas bonus tracks to boot. **PR**



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