

P Jones

HIFI WORLD

MARCH 1999 £2.50

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Battleship DVD-5000
from Denon

TWIN SET

Top pre/power
amps under
£600 tested

BABY BOOM

Wharfedale's
active Diamonds



**£1800
COMPETITION**

**WIN TAG MCLAREN PRE
AND POWER AMPLIFIERS
WITH INTERCONNECTS**

SIX PAGES OF CLASSIFIED AD BARGAINS

World Radio History

ISSN 0961-7663



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...to reality



The Nautilus™ is an acoustic engineer's dream. Its radical cabinet technology and hall-mark spiral have reshaped the audio landscape. Literally. For the B&W Nautilus™ loudspeaker sounds like no other. Its performance can only be followed by subtlest of all musical equipment. It is held the best loudspeaker money can buy.

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B&W

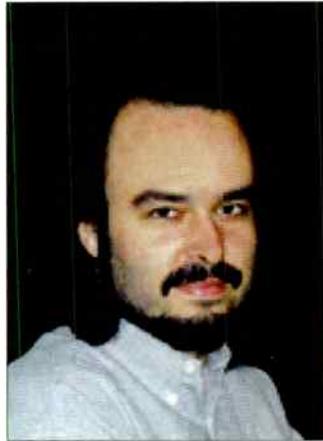
L I S T E N A N D Y O U ' L L S E E

World Radio History

There's an old saying which runs: "A journey of a thousand miles starts with but a single step". This aphorism does a good job of describing the road to a dream hi-fi system, whatever form it may finally take. Step No1 normally consists of a budget integrated, CD player and small loudspeakers, chosen after nervous hours of poring over reviews and prices.

What do you do when that first set-up is sounding tired and weighing heavy on your ears? Some head for a gleaming new piece of CD machinery, others dip their toe in the water of alternative amplification. This month we join the second group by the pool-side with a round-up of the best pre and power amps costing between £250 and £600.

One of the biggest surprises of this group test was the fact that as little as £250 will actually buy a bona fide pre/power combo. On top of this, we were taken aback by the sonic peaks some of our reviewees hit, showing up pricier integrations in the process.



JON MARKS

For many audio die-hards, the perfect complement to a good amplifier is vinyl. One famous name still very much alive and kicking in the world of the black disc is Ortofon, who celebrate 50 years of cartridge-making with their Jubilee. Embodying new techniques for manufacturing its metal body and magnetic circuit, this high-end MC will probably be cropping up on quite a few wish-lists for Christmas '99.

If it's a digital source you seek instead and your budget will run to £1500, Denon's

DVD-5000 DVD player is constructed along the lines of a very substantial outhouse. Its four-layer base-plate, 15mm fascia and myriad audio-grade parts bring it up to 16.5kgs. What does all this add up to in terms of sound quality though? Will the '5000 create the same sort of stir in the hi-fi community as its cheaper stablemate, the highly musical DVD-3000? Find out on page 28.

CALLING ALL AUDIOPHILES!

This year, the Bristol Sound And Vision Hi-Fi Show will be taking place at its usual venue, the Marriott Hotel, on February 20th and 21st. The doors open at 10am, with entry costing £5 for adults and £3 for students. Children under 16 accompanied by ma and pa can slip in for free. Just to whet your appetite, the list of exhibitors includes manufacturers like B&W, Denon, ProAc, Elac, Chord Electronics and TAG McLaren Audio.

HOW WE TEST THE PRODUCTS

- *Hi-Fi World* has its own advanced test laboratory and acoustically treated listening room. No other hi-fi magazine has the benefit of such facilities.

- *Hi-Fi World* has a dedicated in-house team of experienced listeners, and uses selected freelance professionals. We review thoroughly by extensive auditioning, rather than by quick-fire group listening tests.

- *Hi-Fi World's* engineering team designs a wide range of products in-house. No other hi-fi magazine is so expert and dedicated.



WORLD VERDICT



OUTSTANDING - Superb sound, something we'd use ourselves.



GOOD - Has strong merit. Well worth an audition.



ADEQUATE - Mediocre in several areas. May be worth auditioning.



POOR - Seriously flawed. Not worth considering.

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HI-FI WORLD

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ACCEPT NO SUBS-TITUTE

Manufacturers of loudspeakers both budget and esoteric, B&W have extended their ASW range of subwoofers. The two fresh models employ the FlowPort system where the reflex port's flare is "dimpled" with small pits like a golfball. This contributes to a cleaner bass and higher sound-pressure levels according to the company.

The smaller sub of the pair is the £349.95 ASW 500. Its 10in. long-throw driver is housed in a 35-litre cabinet (415mm by 353mm by 401mm) complete with a 70watt MOSFET amplifier.

The £1995.95 ASW 4000 on the other hand is B&W's new flagship. Measuring 580mm by 610mm by 600mm it boasts the same 15in. paper-pulp and Kevlar driver with carbon-fibre dustcap used in the Nautilus 801s. The choice of finishes runs to Black Ash, Cherrywood and Red-Stained Cherrywood.

B&W
Lancing,
West Sussex
BN15 8TR
Tel: 01903 750750



NO CONFUSION

Tube Technology have just released their Fusion one-box CD player. Combining HDCD digital filtering with an in-house FPGA (Field Programmable Gate Array) D/A convertor, the player apparently enjoys a "ten-fold improvement on Multi-bit DACs" in terms of reduced jitter sensitivity. Also helping are independently-regulated power supplies for the clocks, DAC arrays and analogue output stages.

Upgrading is taken care of by an optical digital output and clock input for connecting the Fulcrum 192 DAC. In this

partnership, the master clock is generated in the DAC, thereby cutting out the jitter which can be caused by the transport. The Fusion itself carries a price tag of £1100 complete with a full, system-compatible remote control.

Tube Technology
214 Station Road,
Surrey KT15 2PH
Tel: 01932 821111

M-S BACK IN BUSINESS

Barely a month after the sad news that the renowned loudspeaker manufacturer Mordaunt-Short was to close down, we have received notification from Audio Partnership Plc that they have acquired the company.

A spokesman said AP (widely known via the Richer Sounds

chain of hi-fi shops) feels "Mordaunt-Short is the perfect partner for our Cambridge Audio brand. . . Audio Partnership is keen to quickly pick up where things left off and we are therefore talking to key members of the Mordaunt-Short team to ensure continuity."

ALLISON WONDERLAND

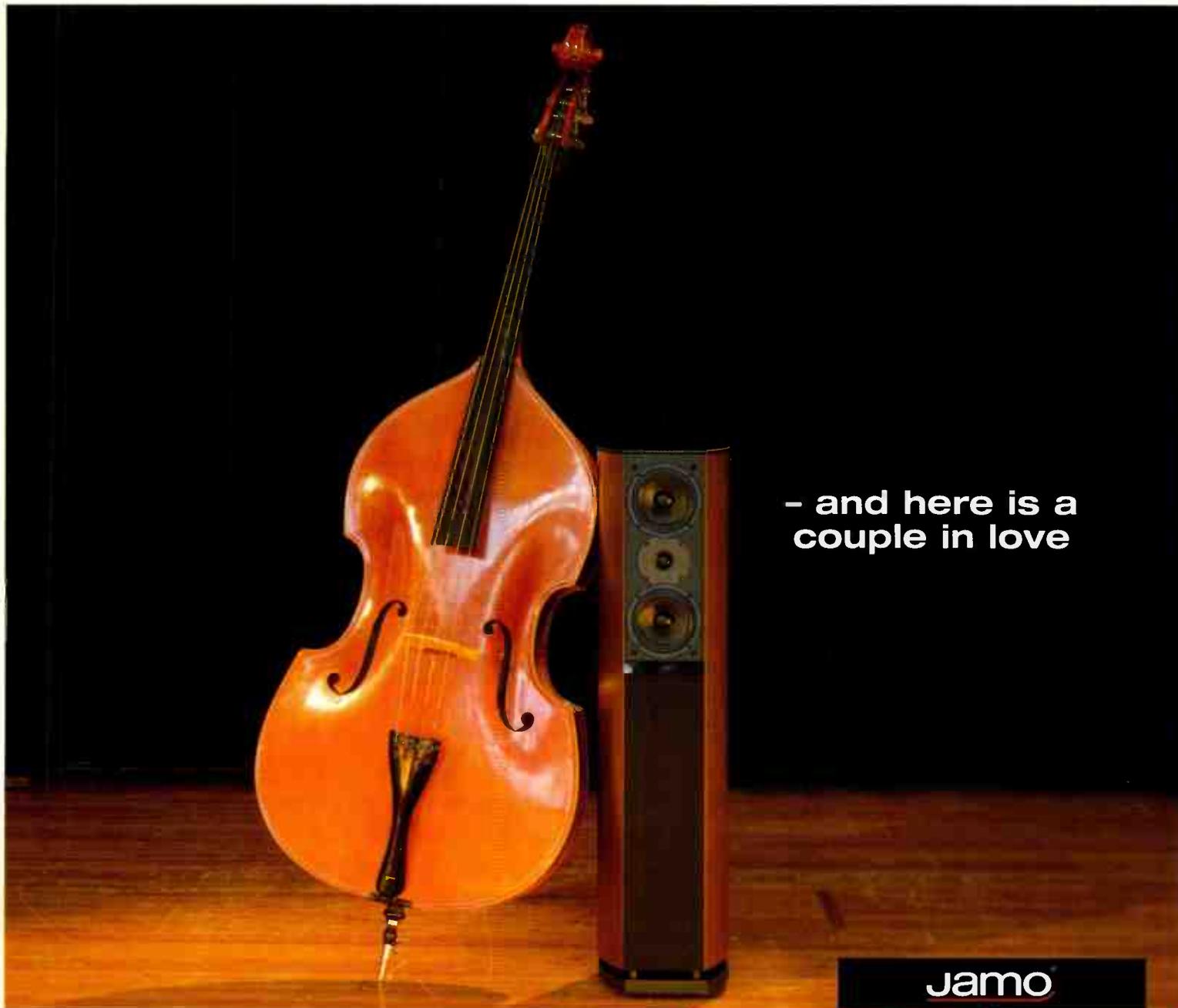
Yorkshire-based Allison UK are dipping a toe into the water of loudspeaker production under the title of RA Labs. Roy Allison is the technological mind behind the designs, the first two of which are stand mounters.

The £150 RA 50 is a ported two-way with a 25mm copolymer tweeter and 130mm paper woofer. £60 extra spent on the RA 10 buys you the same tweeter matched to a 165mm doped-paper woofer in a sealed cabinet. Two floor standers are to be launched soon as well, with plans for a centre 'speaker later on in the year.

Allison UK
20 Cleveland Way,
Huddersfield,
HD8 8NQ
Tel: 01484 603333



Jamo loudspeakers are No. 1 in Europe



- and here is a couple in love

Jamo

30th ANNIVERSARY



Jamo 7 series

The bass forms the foundations of most music. It pulses out into the air, so the body reacts, feeling the music rushing down to the feet. If it turns into sweet music, it is time to dance.

At Jamo, we have always had a particular love for the bass. In the new 7 series, this love has been allowed to blossom.

The development of new high performance bass units was given top priority. But that was not all. We also wanted to design a cabinet which gave the bass the best possible conditions to develop and grow. This led to a design in which the bass unit is mounted face down in the bottom of the cabinet. In this way, the floor itself acts as an acoustic surface, adding even more weight to the low frequencies.

Even at low volume, the bass can now live out its intended role - supplying the backing to the music. With the new design, the bass is an active ingredient, with every tone ringing out loud and clear. No wonder, then, that the 7 Series has quickly made new friends at the "deep end" of the orchestra.

Millions of people around the world have chosen Jamo products. To find out why you should be choosing Jamo, call free on 0321 300316 for a free information pack. Lines are open 24 hours a day every day of the week. All callers will be entered for our free draw to win one of ten exclusive leather CD wallets every month. Don't forget to mention Hi-Fi World and the month of the magazine.

Call Free 0321 300316 and WIN

<http://www.jamo.co.uk>

A TAD MORE NAD

NAD have released what they describe as the "bigger brother" to the C320 integrated amplifier. The £269.95 C340 has all the features of the C320 but with an increased power rating of 50watts into 8 ohms. Separate Pre Out sockets take care of bi-amping.



NAD
15 Faraday Road,
Aylesbury,
Bucks. HP19 3RY
Tel: 01296 482017

HDCD OK

Good news for all not-quite-fans of CD: High Definition Compatible Digital is definitely on the move, with the total number of available titles now standing at over 2000. What's more, Pacific Microsonics (who licence the patented HDCD process) estimate that by the end of 1999 the fortunate music-buyer with an HDCD-compatible player will have

up to 4000 recordings to choose from.

According to Pacific, sales of the 20-bit discs are extremely healthy: 80 million CDs on over 200 labels have been sold through outlets like Virgin, Tower, HMV and Blockbuster. In addition, there are now more than 100 HDCD players on the market.



CENTRE PIECE

The ever-expanding C Series from Celestion now has another member in the shape of the £299.99 C4c centre-channel loudspeaker. One of its main attractions is the bi-wireability of the 130mm mid/bass drivers and titanium tweeter with neodymium magnet. Power handling is 150watts, sensitivity 90dB.

Celestion
Eccleston Road,
Tovil,
Maidstone,
Kent ME15 6QP
Tel: 01622 687442

MAT ADORE

In the six years since the original Ringmat 330 appeared, research and development has not been standing still it seems. On top of the current MkII XLR Ringmat, the company is now offering extra bits and pieces which combine into a complete system.

For the perfectionists out there, the new Ringmat Spacers are intended to lie between the platter and the record. This allows important factors like the stylus' vertical tracking angle to be optimized for different record thicknesses without having to alter tone-arm height.

The CD version of the Statmat is well known to many of our lucky letters winners; the gramophone version is apparently just as efficacious in eliminating sparks and crackles and can be used in combination with any of the rest of the range.

Topping things off is the Ringcap which, at first sight, looks like a scaled down Ringmat. The idea behind this little

accessory is to dance on the grave of any vibration left over after the main mat has done its useful work, targeting especially the labelled area of the record next to the spindle.

The Ringmat Developments people realize that in these degenerate days, not everyone knows how to set up a turntable properly, so the slim volume 'How To Set Up And Fine Tune A Turntable' (catchy title) is given free with every complete set of Support System components. The complete works cost £160 including an XLR Ringmat. If you already own one of these, the complementary items can be purchased individually or as a set for £115.

Ringmat Developments
PO Box 200,
Brentwood,
Essex CM15 9FB
Tel: 01277 200210

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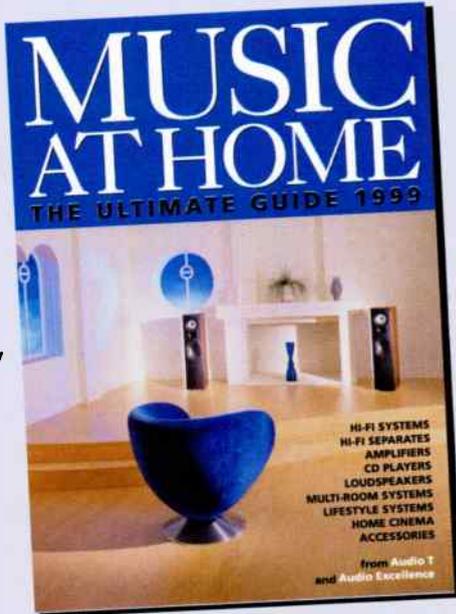
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- ★ You won't find better sound.
- ★ But if you find a better deal, let us know and as long as we can verify it we'll be happy to match it.

A NEW PHASE

John Shearne has announced the arrival of his new CD player, the as-yet-unpriced Phase 7. Fitted with a Sanyo transport and a three-beam linear pick-up, the heart of the Shearne is a bespoke master clock based on a Trichord Research crystal oscillator. Twin 20-bit DAC ICs operating in dual-differential mode sit between the HDCD filter and an output stage which is basically that of the Phase 6 pre-amp fitted with a passive low-pass filter.

Shearne Audio
PO Box 22,
Stevenage,
Herts. SG2 8HF
Tel: 01438 740953



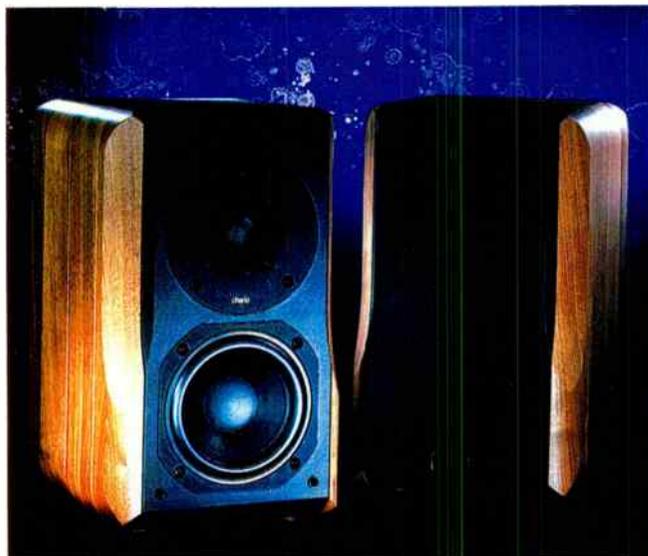
NOT-SO MISSING LYNX

A new entry to their pricier-than-budget range has just been revealed by Chario loudspeakers. A two-way stand mounter, the Constellation Lynx is the front-runner in Chario's new four-strong Constellation line-up to be unveiled over coming months.

The Lynx's driver complement consists of the Academy Millennium's 5in. bass driver partnered with Chario's own T38 'Wave Guide' tweeter, yielding an 87dB sensitivity at 4ohms.

Special attention has been paid to the cabinet finish, the sides of the cabinets being finished in solid walnut. Available from the end of January, the Lynx are priced at £549 per pair.

The Musical Design Co.
PO Box 4146,
Epping,
Essex CM16 6HJ
Tel: 01992 573030



LUCKY SEVEN

With five years in the loudspeaker marketplace behind it, the 7 Series from Jamo has been given a wash and brush up to take it into the next century. There are no signs of change on the outside as all of the alterations are internal.

The revamped designs appear to be aimed at home entertainment fans since a centre 'speaker has been added to the line-up and the bass "tuned" for better compatibility with Dolby Surround and Digital installations.

All of the second-generation 7s have new woofers with cones

of glass fibre bonded to die-cast ABS chassis, which apparently allows the 'speakers to be placed closer to TV sets.

Jamo
5 Faraday Road,
Drayton Fields,
Daventry,
Northants. NN11 5RD
Tel: 01327 300511

NEXT MONTH'S ISSUE

In four weeks' time the following will be on show in a Hi-Fi World near you:

CANARY CA601 VALVE PRE

We return to the time of tubes with this valve pre-amp from American outfit Canary. With its high-quality stepped attenuator volume control, the '601 promises much.

ALIANTE STYLA LOUDSPEAKERS

It looks as though Italian 'speaker manufacturers are out to take over the

hi-fi world as another one joins the fray. We find out if Aliante's stylish and petite Stylas can take on worthies from Opera and Chario.

INNERSOUND EROS ELECTROSTATIC LOUDSPEAKERS

Small and cheap they aren't, but these £4000 hybrid electrostats come with a dedicated active crossover and 200watts

of amplification for their built-in woofers.

SONY PBD-V30 PORTABLE DVD PLAYER

This little mains/battery-powered device can handle 96kHz 20-bit signals as well as standard CD. Fans of MiniDisc and outboard converters can also connect their recorders and DACs to the PBD-V30's digital output.



Simon Pope and Jon Marks set out on the trail of two-box amplification with sub-£600 pre/power combos from AMC, Creek, Moth, Rotel and Technics.

One of the many afflictions dreaded by hi-fi widows is known in medical circles as "boxorum superabundantio", or "the proliferation of black boxes". Signs of the disease in its later stages are outboard power supplies for outboard power supplies, separate DACs and transports rather than integrated players and loudspeakers with external crossovers. There's a silver lining to the grey cloud though - going boxy can seriously improve the sound of your system.

This highly infectious condition often starts with the apparently innocent move

from an integrated amplifier to pre/power set-ups. After all, putting the sensitive circuitry of a pre in its own case away from the interference of the power stages makes sound sense. So too does feeding each from dedicated PSUs, which further reduces interaction. Upgrading becomes a viable option as well since you can slot in a superior pre, power or cables where you would have had no other choice but to sell an integrated.

While many pre and power amps occupy the high-ground at £1000, there's a select band that come in between £300-£600. We brought together AMC's

1100 and 2100 (£250 if bought together), Technics' SU-C900 and SE-A900 (£300), Moth's 30 Passive and 30 Power (£400), Rotel's RC-971 and RB-971 (£375) and Creek's OBH-12 passive and P43 power (£599).

Power outputs ranging from 30watts to 90watts were used to drive our own KLS9 floorstanders in addition to Opera's Prima standmounters. Front-ends were CD players (one box only here!) from Arcam (the Alpha 9) and Musical Fidelity (the X-Ray). Cabling both interconnect and loudspeaker was supplied by van den Hul and Ecosse MAF●

MOTH 30 PASSIVE AND 30 POWER

£149/£249

THE TECHNOLOGY

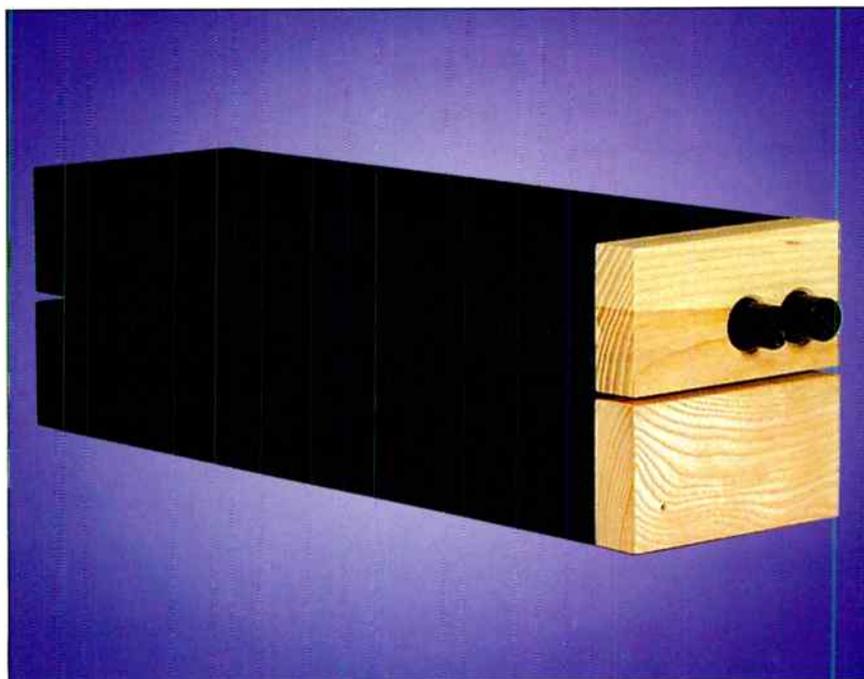
In a world of black boxes, Moth's 30 Passive and 30 Power are black sheep. Their discreet wooden fascias and low-profile cases are a refreshing change from drab steel confections full of air.

The front of the Passive bears a couple of plastic knobs, one for volume, one for source selection. To the rear are the five line inputs, tape loop and output to the 30 Power. The gold-plated socketry has a classy feel to it, although the panel it's bolted to is less solid and can flex quite worryingly when you're pushing on tight-fitting plugs. Another negative point is the way the legends are written on the base of the unit in dark purple ink on the black base-plate!

The back of the 30 Power is a little less crowded. To the left of the small binding posts are the inputs, to the right the On/Off switch. As you might expect, the power amp isn't an earth-shaker with only 30watts on tap.

SOUND QUALITY

Having left the Moths to warm up for an hour or so, I popped Eric Bibb into the



Arcam Alpha 9. Sorting out a decent volume level took the knob around to high noon, suggesting the power amp isn't amazingly sensitive.

With the mellow strains of 'Saucer And Cup' and 'Where The Green Grass Grows' wafting from the KLS9s, the Moths demonstrated a refined and delicate view of proceedings which gelled nicely with these finely-detailed tracks. The music ebbed and flowed gracefully with the gentle drum brushwork and plucked double-bass on the second of these numbers maintaining a relaxed momentum.

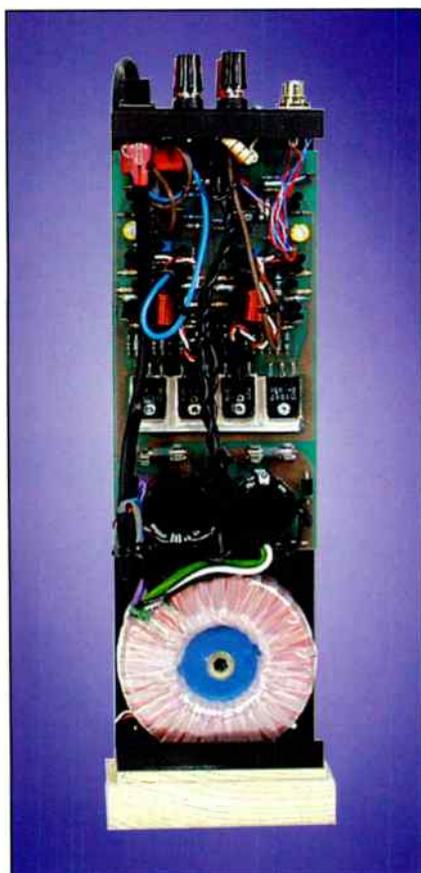
After scoring highly for their enjoyability, the Moths dropped back when it came to painting tonal colours and filling out a sound stage. Eric Bibb's voice had a dryness to it which isn't engraved in the CD, and cymbals were missing their golden shimmer. The same went for acoustic guitar, some of whose character had been leached away. While this didn't make the signal passing through the amps any less entertaining, it did detract from its realism. Aiding and abetting here was a sound stage that didn't really shake itself free from the bounds of the loudspeakers, voices in particular confined between and behind the enclosures.

With Garbage's Version 2.0, there was less to worry about tonally, and the

Moths managed to strike a more convincing balance. Funky rhythms were again right at the top of the bill, my tapping feet confirming there was nothing amiss in the danceability department. Across the treble and midrange the Power and Passive had commendable insight in spite of their small-scale presentation.

Where lighter fare on Good Stuff had emerged uncompressed from the Moths, the drum-machine basslines and wall-of-sound choruses of Version 2.0 lost out in the 'oomph' stakes, as if the slim, wood-faced boxes were running out of steam. Passive pres aren't renowned for their bass weight and smack anyway, but the limited amount of grunt put out by the power was also partly to blame for a bottom-end which could have done with being faster and more visceral.

In choosing finesse over scale, the Moths suit some genres better than others. Neither Ice Cube's 'The World Is Mine' nor Sly and Robbie's The Punishers had the impact necessary to bring Rap or Ragga to life since they were suffering anemic bass. The picture looked rosier with sparse Classical recordings. Solo harp from a dCS compilation CD had an ethereal quality beyond the capabilities of the bulk of amplification at this price. ●



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ROTEL RC-971/RB-971

£150/£225

THE TECHNOLOGY

There are no surprises from Rotel when it comes to appearances - the trademark sleek chassis of the RC-971 pre is not dissimilar to the RA-931 integrated we reviewed back in December 1998. On the front panel you'll find five line-level inputs, tone controls with a defeat switch and a headphone socket. On the back, twin output terminals permit bi-amping.

The RB-971 puts out 70watts per channel output for 1V input and can be bridged to produce no less than 180watts from the two pairs of output devices per channel and the weighty toroidal mains transformer.

SOUND QUALITY

Kicking off with the Version 2.0 album from Garbage showed the rocking power that this combination can muster - RC and RB-971 rustled up a suitably 'loud and proud' presentation. When well cranked up, the volume levels were impressive and the sound appropriately 'in-yer face'. On the quieter passages of 'I Think I'm Paranoid', both instruments and vocals were well focused but the Rotels' grip started to loosen when the heavy chorus kicked in.

Version 2.0 is a full-on, up-front production which trips a lot of amps, so the '971s weren't alone in hardening up and becoming harsher when pushed on more complex mixes. Most of the above showed up in the treble and vocals, Shirley Manson's voice picking up extra sibilance and guitars gaining a razor edge. However, that's not necessarily a bad thing when applied to Grunge Rock



which doesn't really set out to be subtle anyway.

Dropping down the octaves, I came across a bass response which was powerful and deep but tended to the loose, so the core pulse of the bass guitar was a tad diluted. On the plus side, the sound stage had genuine depth and transparency, two rarities at this price.

Changing tack with an acoustic recording found the Rotels in a more relaxed state of mind. Swedish company Opus 3's compilation CD of the Omnibus Wind Ensemble playing various Opera Pearls rang out cleanly through our KLS9 'speakers. This excellent recording captures a spacious and atmospheric church acoustic which was conveyed in a nicely rounded and vibrant fashion by the Rotels. Details such as the clatter of keys on flutes

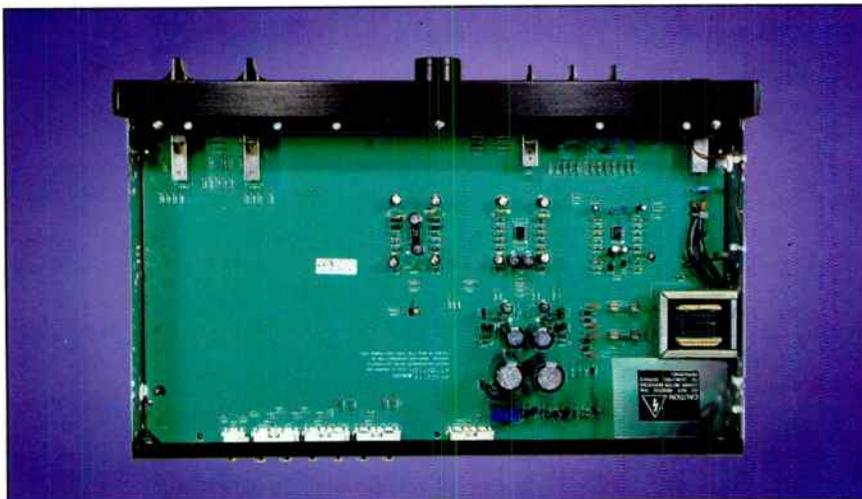
and clarinets were easily discernable.

In Mozart and Rossini overtures the bassoons and bass clarinet, augmented by a double-bass for support, clubbed together to form a balanced and well-weighted bass. The beautiful clarity of this CD made for much more enjoyable and rhythmic results than heavy Rock. To my ears, acoustic music fared considerably better through this pre and power than more Garbagesque offerings. Processed studio sounds seemed to encourage the Rotels to go hell for leather, which is fine and dandy at times but the sound could become rather coloured.

Looking out of the window onto a wet London street in December we wished ourselves and the amps to a Rio beach via the husky tones of Anna Caram on a Chesky sampler. Gently-strummed guitar was complemented by her silky voice caressing each note. The only quibble was that the vocals lacked ambience, the Rotels not quite picking out all the close smokiness of her voice.

The RC-971 and RB-971 would be a good first-time combo for fans of beefy Rock and Pop who aren't too choosy about the finer intricacies of audiophile listening. If a recording is heavily processed, the Rotels will emphasise its shortfalls thanks to their brightish midrange. On the other hand, naturally sweet, detailed acoustic discs make a much better match, neatly counterbalancing the Rotels' tonal idiosyncracies

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CREEK OBH-12/A43

£199/£399

THE TECHNOLOGY

One of the two passive pre/power combinations in the group test is this alliance from Creek Audio. The OBH-12 remote control passive pre is a long-time (and well-used) resident here at World HQ. Leo Lam reviewed it in its own right back in July and came to the conclusion that it was one of the best budget pieces of equipment he had encountered.

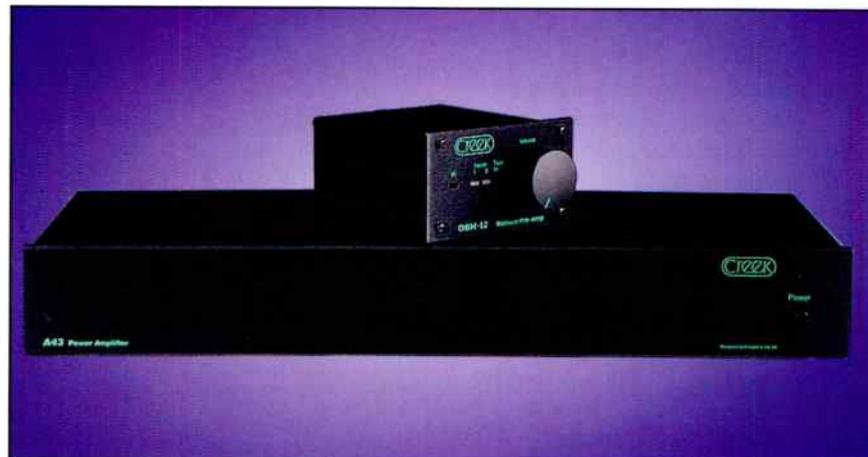
We matched the OBH-12 with Creek's entry-level power amplifier, the 50watt A43, to make up the most expensive combination in the test at £600. The latter replaces (surprise, surprise) the A42, Creeks' first power amp. Bridgeable to produce more than 150watts into 8ohms, the '43 is blessed with a very large toroidal mains transformer.

You couldn't really say this pre and power are an aesthetic match, but at least they share the same livery. However, cosmetics aren't really what Creek is known for. The company concentrates more on delivering the best sound for the price, and it would appear that these two components continue the tradition.

SOUND QUALITY

With the first few notes of Garbage's 'I Think I'm Paranoid', you could tell that the OBH-12 and A43 were sophisticated customers, but given the price difference separating the Creeks from the other candidates you'd expect just such a performance lead.

When it comes to treble, the green and blacks have a smoothness which is



going to win them many happy followers. This contributed to making quieter musical passages easy-going and relaxed, thereby helping to reinforce the contrast between the softer verses and heavyweight chorus.

Passive pre-amps don't generally have a reputation for producing bass with massive slam and thwack, and the OBH-12 was no different in this respect - it could sometimes lack muscle and grip in the lower octaves. On the other hand, everything else from the upper bass to the high treble was extremely well balanced, with a pure midrange resulting in clear, expressive vocals. Unlike other entry-level amplification, the overall emphasis here wasn't on sheer volume but rather power with 'mature' control.

Impressed by the abundance of detail the Creeks were relaying with Garbage, I decided to venture a little further down this particular route and put on the

Kraftwerk-inspired coolness of Orbital's In Sides. Sure enough, all this album's intricacies were highlighted without difficulty thanks to fine midrange and treble lucidity. The only slight hiccup was that, while the very low frequencies on this CD were as prominent as they should have been, they also had a slight tendency to looseness.

Moving on again, this time to the Opera Pearls Opus 3 CD, showed the insight of the OBH-12/A43 set-up, right down to the sound of spittle in the reeds and breath in flutes. There were no problems dynamically either, piano passages retaining just the right amount of tension to keep the excitement in music. The real achievement of the Creeks with this recording, though, was the way they transferred the large acoustic into a broad, deep sound stage.

The final disc inside the Arcam Alpha 9 was the Chesky Records sampler. On voices like Anna Caram's there was a notable lack of sibilance which ensured a life-like and expressive presentation. In fact, the Creeks homed in on vocals as the most important item in the mix. The piano and guitar were, as a result, pushed slightly back in the mix, but this didn't spoil the listening.

The OBH-12 and A43 are very cool customers indeed. Their sound is easily on a par with what you would expect from equipment at £600-£800. Although the passive pre reduces bass kick a little, its freedom from treble grain compensates for this. The power available downstream is sensibly controlled (but not over-civilised) and can deliver the goods without strain when called on to do so ●



TECHNICS SU-C900/SE-A900 MKII

£299.90

THE TECHNOLOGY

Although the SU-C900 pre and SE-A900 power come in separate cases, they're not your usual two-box combo. For as well as being linked together by the customary signal interconnect, an umbilical lead allows the SU-C900 to draw its power supply from its heavyweight partner.

Since there's no mains transformer or capacitors inside the pre, the single large PCB is about as sparsely populated as the Gobi desert. The front panel is rather busier. The rotary input selector switches between three line sources, two tape loops and an MM-only phono stage. Next up are the twin tone controls (defeatable), the volume pot and the balance knob (unfortunately not defeatable).

Inside the 70watt power, a substantial potted frame transformer feeds discrete (not bridge) rectifiers and a pair of Ta-ke II Master Series reservoir caps. As in the SE-A1000 MkII, two MOSFET BC Power Modules (large, grey ICs) actually drive the loudspeakers.

SOUND QUALITY

Setting out on an Electronica tip, I decided to ply this umbilically-connected pair with The Chemical Brothers' Dig Your Own Hole. The title of the second magnum opus, 'Block Rockin' Beats', summed up the Technics' approach succinctly - bass was chunky if a tad loose, midrange fast and treble incisive.

This triplet of traits had the desired affect on 'Private Psychedelic Reel' and 'Setting Sun', the music pumping along in true PA style thanks to the slam of the upper bass, which boosted speed and foot-tapping bounce. Also in PA style, the SU-C900 and SE-A900 MkII's presentation

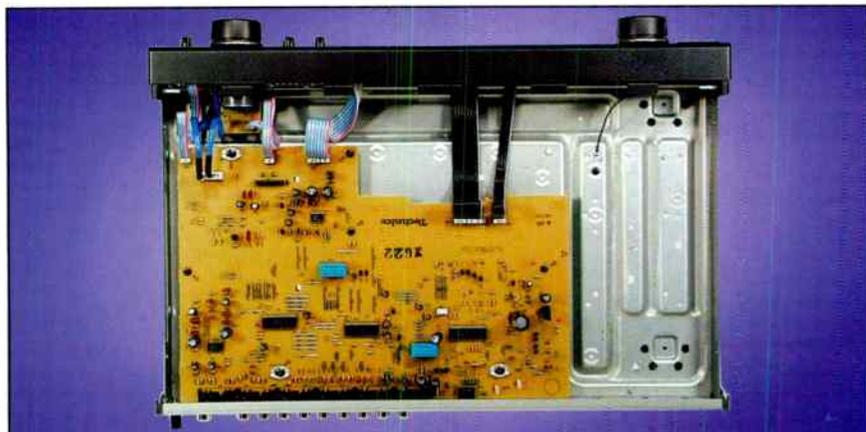


with this genre wasn't the smoothest or most evenly balanced, hi-hats and synths taking on a fizz which exaggerated the rough edges already there in the recording.

Moving to the more transparent production of Orbital's In Sides album offered the Technics better source material to get stuck into. On the intro to 'P.E.T.R.O.L.' imaging and sound staging were both impressively clear and focused, especially the synth notes out to stage left and right and the snare at the centre rear. However, as the tracks became increasingly complex, so the '900s started to lose some of their grip and clarity, individual images blurring together and the sound stage thickening. While this didn't put too much of a spanner in the rhythm machine, it did make it tougher to separate out the various strands woven together in 'P.E.T.R.O.L.'

Swapping Orbital for the dCS compilation raised the recording quality further still. With Vivaldi's concerto for solo organ (Leo van Doeselaar at the keyboard of the Hinz organ in Lees, Holland), the Technics confirmed that, like the Moths, musicality was high on their list of priorities, the notes flowing freely out of the 'speakers. Again, having to handle a single instrument the Technics' sound staging and imaging were fine. Less appealing to the Classical buff would have been the tonal balance. Instead of the rich harmonic signature which should have been reaching my ears, the Hinz had a dry, even arid character. This sense of having been processed came through on the solo harp track on the same disc (Domenico Scarlatti, Sonate K208, performed by Godelieve Schram); the engaging playing couldn't really compensate fully for the lack of sweetness in the treble and midrange.

A spin with Eric Bibb crystallised the affect the SU-C and SE-A900 had on whatever was fed into them. On sparse numbers the sound staging and imaging were both at the top of the class, as were delicacy and detail. Crank up the volume, though, and the sound becomes rougher and edgier, images blurring and the acoustic compressing. Add to this a rather artificial tonal balance and the Technics look a mixed bag in spite of their strengths●



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AMC 1100/2200

£150/£150

THE TECHNOLOGY

Like the 3150a integrated we looked at back in November last year, the 1100 and 2100 are stuffed with features. The pre-amp gets tone controls (which are not defeatable), listen and record selectors and a rubber-edged volume knob. Five line inputs and a tape loop are routed to two pairs of Pre Out sockets on the back panel, so bi-amping is catered for. Harking back to vintage years are the potentiometers on the CD and Multimedia inputs for equalising levels between sources.

The 100watt power amp has these pots too. They're joined by a bridging switch which turns the 2100 into a 250watt monobloc.

SOUND QUALITY

Knowing the trouble much budget amplification runs into when it's called on to deliver some serious bass grunt, the first ports of call for the AMCs were the massive Dance beats of Orbital's *In Sides*, Björk's *Homogenic* and The Chemical Brothers' *Dig Your Own Hole*. The deep, deep throbbing that provides the foundation for the synthesiser and hi-hats on Orbital's *'The Girl With The Sun In Her Head'* surprised with its beefy delivery, this number striding along with a power I hadn't expected. Just to check this wasn't some one-off synergy, I lined up *'P.E.T.R.O.L.'* with its higher tempo. Well, no problem there either as everything in the lower octaves bopped away amenably.

Dance music can be a useful gauge of quantity, but for quality judgements some of the best tracks involve that instrument



of hi-fi torture, the double-bass. Eric Bibb and Needed Time's HDCD recording lit the LED on the Arcam Alpha 9 and I tuned in to *'Shingle By Shingle'*. While the AMCs were lighter and leaner on this disc, they showed that control wasn't merely a fluke occurrence on certain tracks. Ideally, the chunky toroid inside the 2100 should have provided greater pungency and impact in the lower octaves, but at least neither the pre nor the power traded grip for loads of bloated bass.

It was with Eric Bibb that these unassuming black lumps began pulling out the other aces tucked up their sleeves. *'Saucer And Cup'* had a genuine clarity and tonal colour to it which integrated at this price would have a very hard time equalling. Above all, music was just that - music - not background noise. Their poise and imaging precision on less dense numbers ensured the AMCs never obstructed the melodic flow, although there was a slight slowing of pace on Rockier compositions.

Sound staging is an art which plenty of solid-state gear, especially at the budget end of the market, has yet to master. Nine times out of ten, front-to-back depth becomes more and more limited as the numbers after the pound sign get progressively smaller. By the £250 point, you can generally bet on finding perspectives of the wafer-thin variety. The 1100 and 2100 refused to toe the line here, as clearly-focused images took up positions ranging from stage rear to basking in the limelight.

After so many aces you're bound to pull out a joker or two. Corners inevitably have to be cut somewhere and the AMCs are no different from the competition in this respect. The midrange, for instance, was pretty uneven, some vocals recessed where they should have been forward (and vice versa). There was also a slight metallic roughness to strings and a lack of air on acoustic recordings. However, these departures from the straight and narrow are all easily forgiven as none of them sticks out like a sore thumb. Instead of one glaring fault which ruins an otherwise perfect performance, the 1100 and 2100 have three or four shortfalls which are individually a lot less offensive to the ear.

At £350 this combo would be up at the top of the class; at £250 it outstrips the competition without even breaking into a sweat. Like the rest of this month's reviewees, the AMCs may not have a phono stage, but if you have a line-level-only system waiting for new amplification under £300, there's little to touch them.



CONCLUSION

One of the plus points in the career of a hi-fi journalist is discovering components which offer true high fidelity at a sensible price. With the AMC 1100 and 2100 combination, the price is about as sensible as it gets. This, coupled with convincing tonal colour, control and plenty of power on tap, put the AMCs firmly at the head of this group as accomplished all-rounders.

The 1100 and 2100 are eminently persuasive most of the time, but they do have their foibles. The midrange does, on occasions, miss out on the precision, focus and airiness that more expensive equipment can deliver. However, sound staging is excellent and there's enough grunt to flap trousers with even fairly insensitive loudspeakers.

If the AMCs had weighed more heavily on the wallet, the Creek combination would have moved to the top of our shopping list in their stead. The OBH-12 and A43 show just what a skilled designer can achieve with a pre/power at close on £600.

While a passive pre-amp may not be everyone's top choice, it should be noted that what the OBH-12 lacks in bass muscle it makes up for in detail, poise and clarity. Due to that smooth, open midrange and three-dimensional sound staging, vocals and instruments were highly realistic; the Opus 3 CD of Opera Pearls simply shone when played through the Creeks.

Apart from slight reservations about the passive's bottom end, the only other fly in the ointment is the size mismatch between pre and power. This is no major hurdle as another £51 will net you a full-width Creek P43 passive with the option



of active line operation and a phono stage. If you hanker after high-end pedigree that doesn't involve four or five-figure sums, then the OBH-12 and A43 are very much worth a hearing.

After the AMC and Creek contenders, we had a similarly tough time ranking the Moth and Rotel as both had some winning strengths.

The Moth Passive 30 and Power 30 certainly break the mould as far as looks

are concerned. Their slim cases with real wood fascias are a nice touch which gives them that 'hand-made'

appeal so often

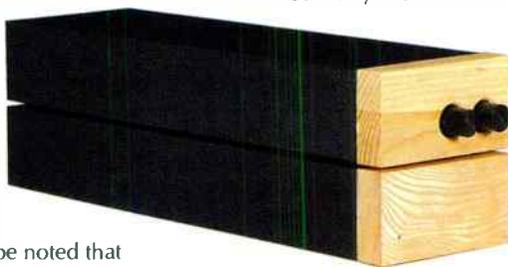
absent from the anonymous black boxes that are the staple at this level.

As regards performance the '30s impressed with their refined approach to lighter acoustic pieces where delicacy and filigree detail were fortes. More testing were complex Rock, Dance and thickly-layered orchestral scores. Relaying these

the Moths' sound staging became boxier and instruments lost some of their tonal colour. At 30watts per channel you can't expect to shake the floor with the Moths, but their handling of chamber music, for instance, still made for enjoyable listening.

Rotel's RC and RB-971 have the edge as regards power with 70watts a side. To their credit this duo managed a lucid of presentation with deep sound staging, which is very good indeed. Although the power amp has bags of power, which you might think would predispose it more to Rock than Classical, the RC and RB were at their most comfortable with orchestral compositions, where generally warmer, more mellow recordings proved the perfect foils to a bright character.

Technics' SU-C and SE-A900 turned out to be a synthesis of the Rotels and Moths, scoring for their excitement on Dance music but dropping off the pace because of a midrange prominence like the Rotels'. As had been the case with the 30 Passive and Power, the sparser the music the better they performed, with excellent imaging and sound staging under the right circumstances. Ultimately, unless you need a fitted phono stage the AMCs are a better bet which will save you £50 too.



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TANNOY

TURN, TURN, TURN

David Price tells the story of 'the big three' belt-drive turntables from Linn, Pink Triangle and Roksan.

Between them, the Linn Sondek LP12, Pink Triangle's eponymous deck and the Roksan Xerxes embody most of what Britain has contributed to turntable design over the past quarter century. In its day, each pushed the game forward by offering inventive new engineering solutions to the problem of vinyl replay. Each also brought its own distinctive philosophy, and laid fresh claim to the mantle of 'best turntable in the world'.

With so much in common it's surprising that, aside from using rubber bands to turn their respective platters, these designs are so radically different. Maybe that's because they are very much of their own times. The LP12 surfaced in 1973, bringing new levels of information retrieval with its rigid 'closed loop' design. The PT followed in 1980, offering unsurpassed neutrality to match a new breed of low-coloration loudspeakers. And in 1986 the Xerxes attained hitherto undreamed-of pitch stability, a goal some had thought only Compact Disc could achieve.

With the youngest of these old favourites now over 13 years old, we thought the time was right to re-tell their stories and put three well-preserved specimens head-to-head, with a Nineties Michell Orbe as reference. Finally, we'll take a look at how they stack up as potential second-hand purchases.

IN THE BEGINNING

Love it or loathe it, Ivor Tiefenbrun's 1973 Linn Sondek LP12 is a seminal design. Its



Linn's LP12 has enjoyed a long and prosperous vinyl life.



Pink Triangle's top deck from the Nineties, the Anniversary, which shared many features with the original PT.

genius lies not in radical thinking, exotic materials or even that old black magic that seemed to follow it around for so long, but in the meticulous application of solid engineering principles backed up by continuous development work.

Even back in the early Seventies the LP12 was a conservative design, with little to distinguish it from established favourites like Thorens' TD150. Under the Linn's original ribbed rubber mat was a two-part platter running on a single-point bearing. This was bolted to the lightweight, welded-steel sub-chassis, itself asymmetrically suspended on three adjustable coil springs.

Conventional stuff you might say, but the vital ingredient was the attention to detail: the bearing was of the highest tolerance; the Mazak alloy platter cast by a special process to reduce resonances; the rigid sub-chassis provided a stable plat-

form for the armboard; the modified Airpax AC synchronous motor was mounted so its vibration was 'sunk' into the plinth, whose stainless steel top-plate was stressed to absorb vibration.

All this made the LP12 an unusually rigid platform for tone-arms, one which was particularly suited to the (then unfashionable) high-mass designs built to track low-compliance moving-coil cartridges. Thus equipped - with the Linn-imported Japanese Grace G707 arm and Supex SD900 cartridge - the LP12 was dynamite. Although tonally far from neutral, it proved a highly involving listen and did much (along with its creator's talents for self-promotion) to get the source noticed as the most important link in the hi-fi chain.

Not content to rest on its laurels, Linn started refining the LP12 from day one. The changes were all retrofitable, and included a felt mat, improved suspension parts, better bearings, a new acrylic dust-cover, plinth bracing, stiffer armboards, belts, a more rigid baseboard and two electronic power supply options. The

biggest change came in the early Nineties with the Cirkus bearing modification. This alters the Sondek's character, bringing it closer to its more neutral modern rivals.

THE NEW PRETENDER

By the late Seventies, the LP12 had established such a reputation that its position seemed unassailable. It was all the more surprising then that the first real competition came from a new enterprise going under the name Pink Triangle.

Launched in 1980, Arthur Koubesserian's creation took Linn's closed-loop, maximum-rigidity principle a step further by side-stepping some of the Sondek's weaknesses with exotic construction materials. For example, rather than going for a Mazak sub-platter/outer platter/felt mat arrangement, PT used a one-piece acrylic disc which possessed exceptional damping properties ("the same mechanical impedance as vinyl", according to Pink). The plinth was wood with removable glass inserts to damp vibrations, and the sub-chassis Aerolam (an expensive aluminium honeycomb used in aircraft flooring), famed for its lightness and rigidity.

Also novel was the single-point inverted bearing, self-stabilising and lubricating with a sapphire thrust cup. Three-point suspension was employed, courtesy of long, small-diameter springs which allowed the chassis to hang freely. The Pink was also notable for its Swiss-made Portescap DC motor, claimed to provide smoother drive than AC synchronous types. This inclusion was relatively short-lived, however. The Portescap made way for an Impex AC motor in the early Eighties because, according to PT director Neil Jackson, "it used gold bushes and cost a bomb"!

The arrival of the Pink really set the cat among the pigeons. Even the Linn-loving (and owning) British hi-fi press was forced to admit that it was a fine turntable which outperformed the Sondek in a number of areas, most notably neutrality. It was refined throughout the Eighties, with the PT Too arriving in 1986 sporting a number of detail changes including a separate, off-board electronic speed control. The subsequent Little Pink Thing was a stripped-down, lower-cost sibling while the Anniversary was Pink's flagship Nineties deck.



Roksan's innovative Xerxes turntable, whose suspension was spring-free.

ROKSAN XERXES

Michell GyroDec aside, the next great British belter to arrive on the scene was the Roksan Xerxes in 1986. No less innovative than either the Pink or the Gyro, the Xerxes bought its own very individual solutions to the problem of designing the ideal record player.

The story goes that its designer, Touraj Moghaddam, was a long-time LP12 user who became dissatisfied with the Linn's failings but couldn't find a deck that comprehensively outclassed it. So he designed his own, and the rest, as they say, is history.

An interesting exercise in lateral thinking, the Xerxes straddled the divide between Japanese-style non-suspended designs and the classic Thorens independently-sprung sub-chassis.

Featuring a thick, veneered Medite plinth (the earliest were real wood) into which two 25mm Medite boards fitted, the deck had the all-of-a-piece feel of a Rega without actually being solely a slab. Rather, the lower inner board housed the motor, while the bearing and arm sat above on the upper board. The upper board in turn sat atop four grommets located in reamed holes in the plinth's baseboard, effectively isolating the arm and bearing from the motor while preserving a closed loop between the two. Such an arrangement allowed the deck to "measure the groove" accurately according to Touraj.

The Roksan's bearing was a captive

steel ball rather than the Linn-style machined thrust pad, which Roksan thought too susceptible to cumulative machining errors. The platter was hewn from solid aluminium alloy rather than cast like the Sondek's, and was a good bit lighter too.

The motor, although from the same stock as the Linn's, was modded with its own bearing and allowed to rotate against a spring, so as to reduce cogging effects. The electronic power supply also worked differently to the Linn's, generating two phases for the motor and then amplifying them. A pair of clocks were included, giving 33rpm and 45rpm at the touch of a switch.

Unlike the Pink Triangle, which despite its expensive construction materials was never the most spectacularly-finished turntable around, the Roksan was a looker. The earliest wood-plinthed examples cost £455 in 1986, but by 1990 the cheapest Xerxes went for £695 in good old Eighties Black Ash. A fantastic rosewood veneer was an extra £140, or you could have one in piano black for £1045.

In Britain, press reaction to the Roksan was grudgingly favourable, with even Linn disciples applauding the Roksan's superb speed stability and detail retrieval.

LISTENING TO THE LEGENDS

Because it's nigh on impossible to compare every variant of each deck with its rivals, a line was drawn in the sand and a 1990-spec version of each deck was audi-

tioned. A pre-Cirkus LP12/Valhalla was lined up against a PT Too and a Xerxes. A Roksan Artemiz and a Linn Ittok LVIII MkII were used on the decks, with a Goldring 1042 MM and Ortofon MC 30 Supreme MC. Michell's Orbe umpired.

First the Linn, which by anyone's reckoning is an enjoyable listen. Peter Gabriel's 'Solsbury Hill' came over in a strikingly different manner to the Orbe's presentation, seeming to have more rhythmic snap but a curiously 'squashed in' sound stage with noticeably less depth.

Nicely involving on an emotional level, the LP12 tended to pull the listener in and focus on a particular strand of the music. But the Orbe showed it to be poor at recreating a realistic sound stage and sense of scale. Tonally the LP12 was all over the place, with a boomy upper bass and curtailed frequency extremes.

There was also a question mark over the Valhalla Sondek's speed stability. Although it sounded very convincing in isolation, against the Orbe it was clearly blurring the balalaika arpeggios at the beginning of Kate Bush's 'Babooshka'. Local dynamics such as tiny rhythmic accents were better carried than the Orbe, but global dynamics (such as its ability to convey weight and scale) were worse. Overall, the Linn was more entertaining than it was accurate, but don't let that dissuade you - despite its faults it was never less than highly enjoyable.

Next was the PT Too, which proved a more self-effacing performer. Closer to the reference Orbe, it gave the impression of different musicians playing together, with their instruments' vibrant tonality and rich harmonics clear as day. Orchestral strings in particular were fantastic, with an uncannily natural tonality on Peter Gabriel's 'Slowburn'. The Pink was also clearly excavating more information from

the groove - 'Babooshka' had greater fine detail and better extended treble.

Although lacking the Orbe's 'warehouse' sound staging, the PT projected voices forward and hung instruments back more confidently than the Linn, which tended to lump things together between the 'speakers. The Pink's dynamics weren't as good, though, lacking the Orbe's power or the Linn's skill with musical accents - it got the job done but never sounded dramatic or emotive. Rhythmically it was quick but not as funky as the Sondek, which always got more into the swing of things. Still, this was in part due to the Linn's artificial mid-bass peak, which helped to push the song along and give it extra urgency.

Moving to the Roksan, those opening arpeggios on 'Babooshka' got even sharper, faster and more explicit, making the LP12 seem badly blurred by comparison. The leading edges of notes were super-fast as well, with snare drums kicking in sharply and powerfully. In fact, the Roksan seemed leaner and more lithe than the Orbe, whose deeper, fuller bass slowed down proceedings a touch. Ultimately the Linn pulled at the heart-strings more, making 'Solsbury Hill' a poignant emotional experience rather than the Roksan's powerful hi-fi one - music was more naturally cohesive on the Sondek.

Tonally the Roksan fell mid-way between the Linn and Pink. It lacked the former's lumpy bass, but was still pretty generous in the low-frequency department. This, allied to its tighter grip and better extension, made for impressive listening in spite of the Linn being more fluid. The midband may have been devoid of the Linn's 'cuppiness' but the Orbe showed it was still a touch hazy, and the treble was tighter and brighter than the Sondek's while failing to equal the Orbe's detailing. Sound staging was impressive - bold and confident with good depth - but couldn't match the Pink's intricacy or the Orbe's scale.

How you rank these turntables depends on the records being played and your taste in music. The Linn's beguiling rhythms pulled it ahead with Jazz, the Roksan's speed was most appreciated with Rock music, the PT's open neutrality was just right for Classical. The Orbe was the best all-rounder, making a consistently fine job of everything - proof that vinyl



The DC-powered deck that started it all for Pink Triangle.

replay has genuinely progressed since these three were pretenders to the throne.

BUYING SECOND-HAND

Inflation has not been kind to the LP12, whose new price has risen by a factor of over 20 since its inception. But it's as a used buy that the Linn really shines - market oversupply and an outdated image have caused prices to dive, meaning there are plenty of bargains around.

The very first PTs retailed for £360 in 1980, compared to the Linn's £340. By 1990 the PT Too would set you back £698 to the Sondek's £598. Its finish is nothing to write home about - 'Colin Chapman-era Lotus' is a respectfully diplomatic way of putting it. As pre-owned purchases PTs are pretty good. Parts availability is okay, there are various upgrades going and there's a reasonable number of decks around to be had - only the mediocre build deters.

Unfortunately, the Roksan's longevity has been called into question. It seems that the deck's upper plinth (the equivalent of Linn's top-plate) sags with age, eventually resulting in severe levelling and arm alignment problems. Indeed, many Xerxes fans believe this to be a fatal flaw in the design. Allied to Roksan's limited parts support for the early Xerxes, and the deck looks a less enticing second-hand proposition.

In the final analysis the Sondek has to be the top turntable for bargain hunters. With plentiful supplies, fine build and easily-obtainable spares, it has all the bases covered ●



Roksan's next-generation Xerxes X deck.

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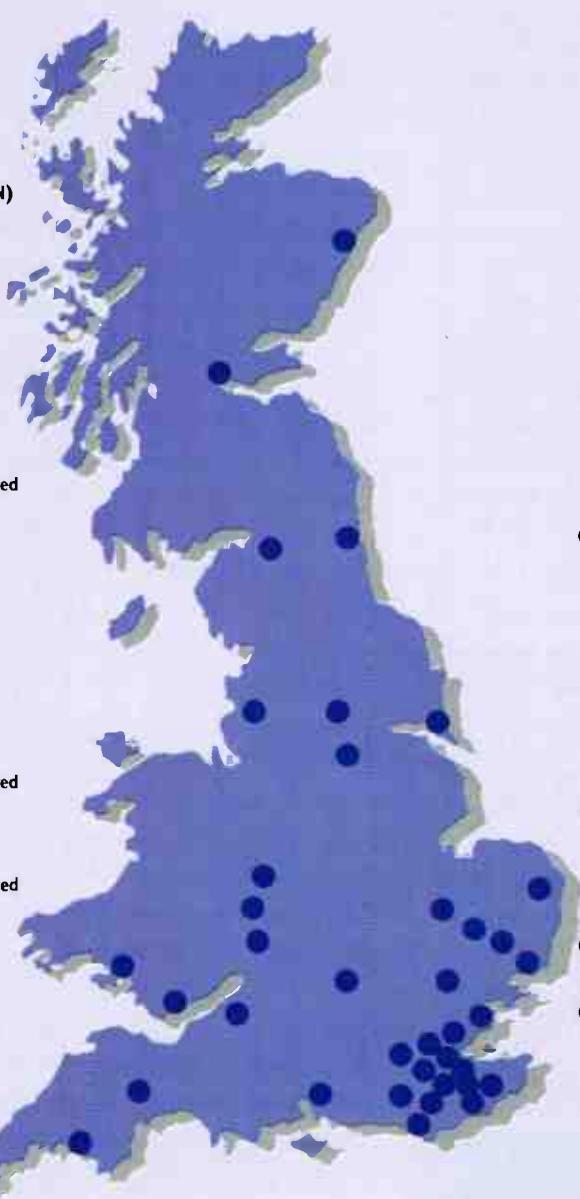
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GOLD RUSH



Has DVD machinery for CD replay come of age in Denon's £1500 DVD-5000? Jon Marks hopes so.

Most hi-fi design seems to follow a herd instinct - build it lightweight, build it black and build it boxy. Unfortunately the insides are often as uninspiring as the outsides, with a sound that fails to communicate the passion and vitality in music. The finger of blame in these instances is traditionally pointed at large companies hailing from Japan, and the components in question do sometimes have "Made In Japan" stickered to their back-panels. However, what companies like Denon prove is that they can pull

the sound and construction stops all the way out without it incurring mortgage-money wallet damage.

Falling for Denon's DVD-5000 DVD/CD player is easy - all it takes is a brief glance at that champagne-gold fascia, a heft of the rock-solid chassis and the odd button-press to realise that you're in the presence of something special.

The HDCD and AL24 LEDs merely reinforce the good vibrations. The first of these indicates a CD with the appropriate High Definition Compatible Digital encoding is whirring away within. The second is a continuation of the research which led to the development of Denon's proprietary Alpha Processing which featured on their tasty DCD-S10 CD player (reviewed July 1997).

ALPHA BEATER

Where the original Alpha Processing generated an extra four bits of data and added these to the bottom of the 16 bits provided by CD, AL24 goes one step further to yield 24-bit resolution. This, say Denon, cuts back on quantisation distortion (where a sampled low-level waveform comes out looking stepped instead of smooth), the result being a

more natural, transparent sound.

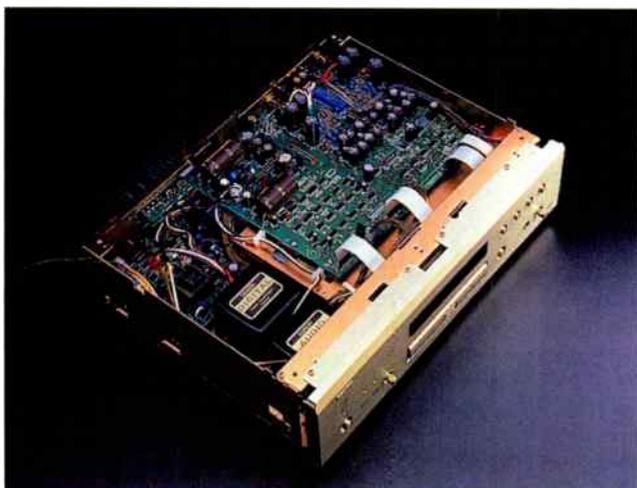
The converters which take the AL24's output are four Burr-Brown PCM 1704s, capable of handling sampling frequencies of 32kHz, 44.1kHz, 48kHz and 96kHz. After these come analogue stages where op amps like the ever-green 5532 occupy PCB space alongside Analog Devices' OP275G.

Interfacing the Denon with the rest of the world are fixed and variable Line Outs, optical and co-axial digital outputs and, the distinguishing mark of Denon's pricier equipment, optical and co-axial digital inputs. These allow the DVD-5000 to be hooked up as a DAC to a CD/DVD transport.

MAKING THE GRADE

The quality of passive componentry is very high. Like Sony's MDS-JA50ES MiniDisc recorder (reviewed April 1998), the DVD-5000 is positively bulging at the seams with audio-grade goodies. Elna's expensive Silmic caps with their Oxygen-Free Copper leads are used almost everywhere, even in the headphone stage (whose volume pot also controls the variable Line Out).

Three transformers keep pure the



Unlike much digital equipment, the Denon's case is packed to the gunwhales.

power supplies for the Digital, Audio and Control sections. There are plenty of regulators too, and thick copper buss-bars. Copper is plated on to the chassis and its screws as well in typical Japanese high-end fashion.

At 16.5kgs, the DVD-5000 is reminiscent mass-wise of some of the CD biggies from the late Eighties, like Sony's CDP-555ESD and Pioneer's PD-91. What makes it such a back-breaker by digital standards is the multi-layer chassis. While the lid has only two steel panels bonded together, the chassis consists of four secured with vibration-absorbent sintered-alloy insulators. Fronting this little lot is the 15mm thick alloy fascia.

SOUNDING OUT

There was an air of anticipation in the listening room as the Denon was heaved into position atop Elemental Audio's Monoplinth platform. Both the fixed and variable Line Outs were pressed into service, the DVD-5000 running via Purist Audio Design interconnects directly into a pair of Musical Fidelity X-A200 monoblocs for a lot of the time. Loudspeakers were the BKS 107s and Jamo Concert 8s.

Alanis Morissette's Jagged Little Pill might be as well produced as a Trabant assembled at 4.59pm on a Friday afternoon, but what it lacks in subtlety and finesse it makes up in blistering vocals and high-impact basslines. Where CD often disappoints is in the upper frequencies, which on this disc means enough sibilance to cut a breeze block and cymbals which are more spiky than shimmering.

Given Denon's track record for tonal sweetness as evinced in the DCD-S10s MkI and II, I was hoping for less grain and ear pain as I pressed Play. In spite of high expectations I was surprised by just how clear and natural Morissette's voice was on 'You Oughta Know'. Near pin-sharp imaging from a real wall-of-sound recording was part two of the double whammy, turning the listening session from a labour of reviewing love into more of an

experience to be enjoyed. Even the harmonica on 'Hand In My Pocket' went from resembling a portable buzz-saw fizzing away in the foreground to an instrument that sounded very much closer to the genuine article.

PLAY IT AGAIN

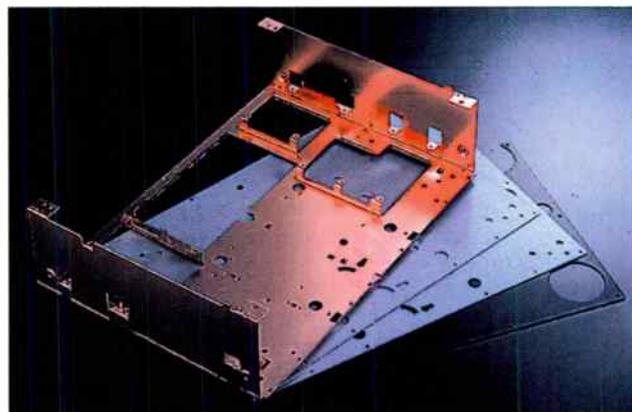
Tracing back down the family tree again, while the DCD-S10s could at times become a little too warm for their own good, the DVD-5000 was a more consistently neutral performer, especially on well-recorded HDCD discs (such as Eric Bibb and the Opera Pearls and Test CD 4.1 compilations, all from Opus 3).

One number on the last of these which gave the DVD-5000's transparency the opportunity to shine was Thelonius Monk's 'Played Twice'. Crisp-edged images hung around and behind the loudspeakers in a sound stage where depth and breadth went hand in hand. Dynamically the Denon combined control with speed and weight, cymbals possessing a rare impact along with the hard-hitting drums and double-bass. Top marks were also awarded to the tonal colour department for the saxophone's rich, throaty utterances. All in all, the player was putting together a truly sterling performance.

Like any revealing piece of hi-fi, this machine will make the most of less processed recordings. Unlike a lot of its peers it won't turn poor productions into an unlistenable mess, as Alanis and The Chemical Brothers confirmed. 'Block Rockin' Beats' is usually the sort of track that lasts for a minute or two before the Stop button is pressed, but the DVD-5000's smack and speed in the upper bass and midrange had me trawling through the whole of Dig Your Own Hole.

GET UP AND DANCE?

It was only after five or six ditties of The Brothers doing their gardening that a nagging doubt about the '5000 surfaced. All of the up-beat numbers on this and the other albums getting the HDCD and AL24 treatment had plenty of bounce and



The quadruple-layer base-plate kills vibration very effectively indeed.

funk. However, as the bpm's slowed so did the drive and musicality. One prime example was 'The Day I Tried To Live' from Soundgarden's A-Sides compilation.

On the humble DVD-3000 reviewed back in August 1998, despite the player sounding loose, flat and muddled next to the '5000, this song had had an addictive scale and musicality which kept me glued to the loudspeakers. Somehow, this time round the bass, for all its power and grip, never seemed to get into the swing of things as it had on Denon's cheaper DVD. The tortuous time signatures on 'Played Twice' caused similar problems, the '5000 not quite grasping the audacious rhythms of this Jazz-fest. 24-bit 96kHz recordings fared better, with stunning tonal quality, sound staging, dynamics and detail, but they too failed to pluck the heartstrings to the maximum.

Putting the comments above into context, the DVD-5000 is still easily the equal of just about any £1500 CD-only equipment in terms of enjoyment and involvement. After the superb '3000, though, this champagne-gold heavyweight fell tantalisingly short of the musical mark set by its stablemate.

Opinion remains divided over DVD playing CD. For those who feel the multi-format machines have little to offer, the DVD-5000 is almost certain to change your mind. This beautifully-built one-box outfit has great strengths that put it on a par with traditional players. Definitely one to audition ●

Denon DVD-5000

£1499.90

Denon

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Chiltern Hill,

Chalfont St Peter, Bucks.

SL9 9UG

Tel: 01753 888447

WORLD VERDICT



Build is second to none. Sound is very solid and convincing, but not as musical as Denon's own DVD-3000.

Measured Performance see p111

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ANALOGUE DIGITAL

Jon Marks gets recording with TDK's latest blank MDs and discovers the difference a disc can make.

One of the more, erm, controversial features to appear in HFW was printed in July 1997. The article which provoked some slightly heated correspondence (both snail mail and electronic) was a test of four blank MiniDiscs. What stirred feelings and had pens heading for paper were the conclusions drawn, that each disc imparted its own character to the recordings made on it. Our experience in the interim has only confirmed the findings of that first mini group test.

None of this boils down to hocus-pocus or black magic - there are plain and simple reasons which explain differences in sound quality, as I found after speaking to one of Kenwood's top designers at a press conference last year. He had found that the number of times a disc has been recorded onto affects its sound. Apparently, gently flexing the caddy (to release some of the mechanical stresses caused during manufacture) could also help slightly. Then there are factors like disc eccentricity (the lower the better, as it means less

work for the laser's positioning servos) and caddy resonance to bear in mind. Anyone who has added damping to a CD transport will know the difference this can make to what you hear from a DAC.

With a couple of newer discs arriving at World Towers from TDK, we thought we'd burn some fresh recordings. Candidate No1 was the interestingly-titled MD Cool 74, which sells for £3.99. No 2 was the pricier and more solid MD-RXG Pro 74, which you'll see in the shops at £6.99.

While the Cool is built along the usual industry-grade plastic lines, the Pro, as its name implies, is more heavily constructed. Like the company's top metal cassettes, a cast metal shell is sandwiched between clear plastic sides to give a structure substantially weightier than your average MD.

MD COOL 74

Whizzing around inside JVC's new XM-228 recorder, the Cool proved to be a chip off the old block of mid-price MDs. There was a commendable crispness to the sound and lack of muddle generally. Bass and treble were both well extended and detail was plentiful. The customary shortfalls were to be found in a glassy sheen to strings, a slight hardness across the midrange and a rather cardboard coloration to double-basses and cellos.

MD-RXG PRO 74

The £3 premium the Pro carries



benefits sound as well as construction. Compared to the Cool, tonal colours were considerably sweeter. There was finer detailing and more control at the frequency extremes too, which was most easily audible on plucked strings and timpani.

Spatially, the Pro was quite a way ahead of the Cool - images sharpened and the acoustic opened out thanks to superior retrieval of low-level subtleties.

In spite of its heavy caddy, the Pro still came second to Maxell's standard-weight £15 Pro disc. As before, sound staging swelled, images snapped into sharper focus and strings had a more natural character. As ever, the stumbling block with the Maxell is the fact that it's not exactly going cheap●

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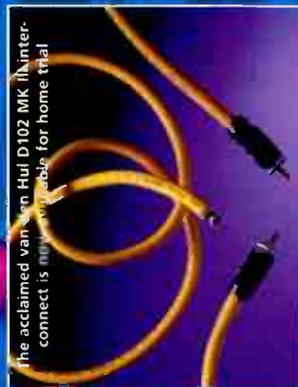


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PROAC-TIVE

Leo Lam gets acquainted with ProAc's Studio 150 floor standers.

Back in August 1998 I had the opportunity to evaluate ProAc's Tablette 50 stand mounters, and a very capable pair of loudspeakers they proved to be. Musical and unassuming, they were flawed only by some cabinet coloration and the constraints of small size which ultimately limited bass depth.

The Studio 150s share many of the features of the Tablettes: both use custom-modified Seas drive units, the '150 simply adding an extra mid/bass driver in parallel. The silk-dome tweeter appears to be the same as well. The main difference is, obviously, height; while the Tablettes are tiny, the '150s are tall and slim, measuring well over 40in. high.

The ProAc's drivers are arranged with the tweeter off-set to one side and sandwiched between the two mid/bass drivers. The latter are loaded by two rear-firing ports of different lengths, which system spreads their output over a broader range of frequencies. Adding the finishing touches are the superb cabinet work and the silver-plated, bi-wire terminals made by Michell Engineering.

I had the Studio 150s fresh from the box and it took well over two weeks of continuous music for their response to stabilise. Even afterwards, improvement was discernable as the units became more and more settled.

The ProAc's were partnered with all the power amplifiers I had to hand during a month's reviewing: Assemblage ST-40 (upgraded); XTC Pow-2; Unison Research Power 35. Although I wouldn't recommend it, a modified Aura VA 80 also drove

the '150s to quite respectable levels without much problem. The rest of the system included a Musical Fidelity Nu-Vista pre fed by my usual Teac T-1/Assemblage DAC-2 combination. The 'speakers were placed around 18ins. from the back wall and as far away from the side walls as possible.

It was perhaps not surprising to find that the sound of these floor standers resembled the Tablettes; clean, fast and exciting, it captured my attention right away. The tonal balance was very close too, which was no bad thing, as was the marked improvement in bass extension.

In terms of character these ProAc's tended to favour valve amplification: with solid-state devices their direct and immediate presentation was a little bright and occasionally hard on the ears. The warmth of valve equipment turned out to be the perfect counterbalance, the result a very neutral, detailed presentation.

Given a capable amplifier the Studio 150s remained completely in control at high volume levels - in fact, they almost asked to be played loud. Using Goo Goo Dolls' latest single, the ProAc's revealed huge dynamics and lightning-fast transients when compared to the Tablettes. Bass was firmer and deeper too, making the differences between power amplifiers very obvious.

Not all was sweetness and light, however. Cone coloration across the top of female voices and down in the male baritone range put a perceptible emphasis on certain notes, which could become obtrusive at times. The cones were joined by the enclosures which were



ProAc Studio 150 £1500
ProAc
Riding Road,
Buckingham Road,
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NN13 7BE
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a little 'active', although this had less of an impact on music replay. While the Tablettes' cabinet honked at bass frequencies, the Studio 150s' resonated somewhere higher, around the lower midrange.

To be fair, none of the 'speakers I have heard at this price is perfect, and preferences between the various compromises boil down to a matter of taste. For a Classical music-lover like me the ProAc struck about the right balance (it was exciting and refreshing to listen to, and its dynamic performance is excellent), only the cone colorations stopping it from scoring higher marks. ●

WORLD VERDICT



They may be musically engaging, but the tall ProAc's brightness means they work best with smooth valve amplification.

Measured Performance
see page 111

WIN A TAG MCLAREN PRE, POWER AND INTERCONNECTS WORTH £1800

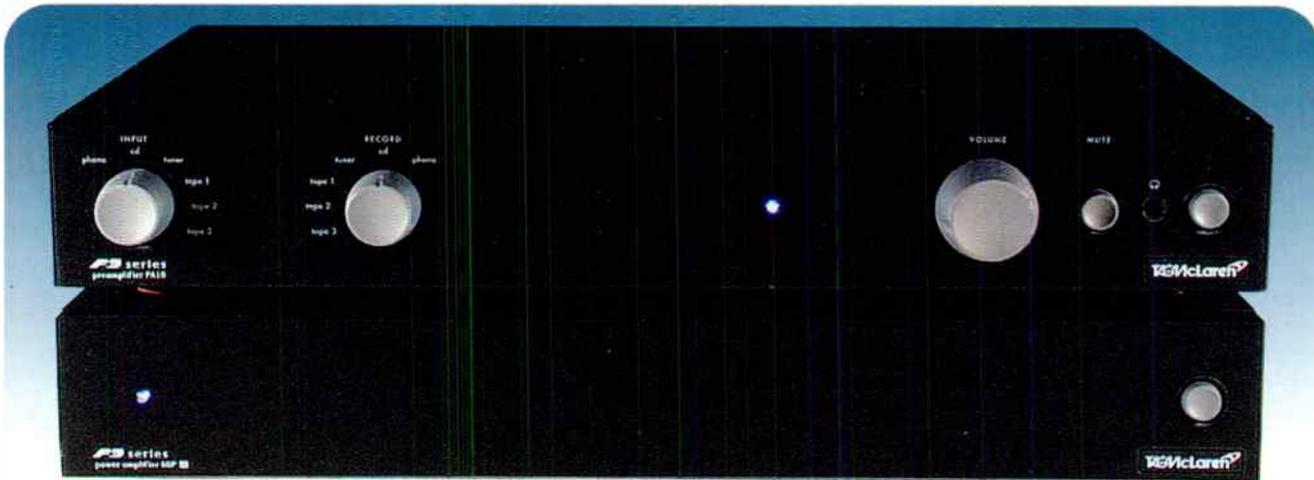
This month's competition threesome consists of the PA10 pre and 60P power along with a set of F3-10-ANA interconnects.

By the time you read this, Christmas will be well over and post-festive depression will no doubt be setting in. "But what of World Towers?", we hear you ask. No gloom here, since this month we are giving away a £1700 pre/power combo from the TAG McLaren Audio F3 Series.

These products were first given a public airing at the Renaissance hi-fi show in Heathrow, September '98. As befits a whole-scale revision of the well-respected Audiolab range, the F3 Series is distinguished by a charcoal-grey solid-aluminium



front panel. Capping it all is that latterday seal of quality, the blue LED. In this instance, quality is not merely skin deep though; the works are full of high-grade components such as Elna Starget capacitors in the PA10 and twin 10000uF Elna reservoir capacitors in the 60P.



The PA10 has six inputs (five line and an MM/MC phono stage) in addition to its Input and Record selector switches servicing three tape loops. Unusually at this level, a headphone socket is also provided (a loudspeaker muting switch to the right of the fascia redirects the output to the internal Class A headphone amp). On the back panel are two sets of Pre Outs for multi-amplifier installations.

The PA10 and 60P passed through the enthusiastic hands of our editor back in November of last year. As far as sound quality was concerned, Jon Marks stated that "these TAGs were a cut above the transistor crowd". On a variety of recordings used in our review this pair produced a consistently well-controlled power and musical clarity. With our reference CD of Stravinsky's orchestral artillery, the TAGs displayed their firm grasp on tonal colour; cymbals and triangle possessed a life-like shimmer and strings were smooth and clean.

One of the most enjoyable aspects of these amps' performance was the deep, firm bass. Jon noted: "timpani came close to shaking our room with their smack and extension". TAG McLaren have also succeeded in designing the PA10 and 60P to cope admirably with rough productions and bad recordings. It's no mean feat to make discs 'musical' when they appear to have been recorded with the proverbial 'wet sock' microphone! The duo have a rare talent for disappearing behind the music, meaning that you listen to the song rather than the hi-fi.

In addition to the 12 components in TAG's F3 range, the company has been working on a range of interconnects, a pair of which we're giving away here too. TAG McLaren's heritage in motorsport engineering is visible in the interconnect's gold-plated connector barrels. These are machined from oxygen-free copper at TAG McLaren's F1 factory in Woking, Surrey.

To qualify for a chance of winning the PA10, the 60P or the F3-10-ANA cables, all you have to do is to tick the correct answers to the questions below. Then, when the Muse gently alights on your shoulder, roll off up to 30 words of verse to complete our attempt to scoop the Poet Laureate-ship.

Stick the form (a photocopy is fine) onto a postcard or sealed envelope - not inside the envelope, please - and send it to the address below to arrive no later than March 6th.

TAG McLaren Competition
Hi-Fi World Magazine,
Suite F29, Imex House,
Kilburn Park Road,
London NW6 5LF

COMPETITION ENTRY QUESTIONS

1) Who is the head of TAG McLaren Audio?

- A. Dr Judo Sugar C. Dr B. Spock
 B. Dr Udo Zucker D. Dr Who

2) When was the F3 Series first unveiled to the public?

- A. Heathrow Show C. Stansted Hop
 B. Gatwick Ball D. JFK Highland Games

3) The Elna capacitors used in the PA10 come from which manufacturer?

- A. Elna C. Rubycon
 B. Panasonic D. Dubilier

4) Tag McLaren is famous in which sport?

- A. Motor Racing C. Cake Decorating
 B. All-In Wrestling D. Table Tennis

5) What was the name of the company which TAG McLaren took over to manufacture audio equipment?

- A. Audioworld C. Audiolab
 B. Audiolad D. Audiophile

COMPETITION VERSE (obligatory)

Complete the following in fewer than 30 words

*When it comes from TAG McLaren, then it's easy to see
 That the stables have bred quite a looker;
 Now these formulated babes could be your cup of tea
 With a full 60P's worth of Zucker. . .*

COMPETITION WINNERS

Christmas winners were: R. Jordan of Essex, Monarchy SM70; R. Bettiss of Devon, Musical Fidelity DAC; P. Warden of Cornwall, Arcam Alpha One; R. Heyward of Herts., Neat Critiques; S. Lovegrove of Essex, Kenwood DPF-3010; C. Baxma of Holland, Sonic Link S-Gold; C. Attenborough of Hull, Classique Transluscents; T. Williams of Oxon., Monarchy DAC; J. Dyer of Notts., Musical Technology PM15; J. Alper of Linton, Slate Handstrobe; T. Constable of Kent, Cable-Talk 4.1 bi-wire; C. Newey of Stevenage, NAD CD player; Mr & Mrs English of Essex, Ecosse Maf cables; P. Hinde of Staffs., JVC XL-V230; A. Tillet of Essex, Alchemist DAC; A. Hargreaves of Devon, True Colors Viper Interconnect; H. Sherwood of Oxon., DNM Lexex pick-up; S. Dyer of Eastwood, Technics CD player; P. Szyzsko of London, Yamaha CD player. **Congratulations!**

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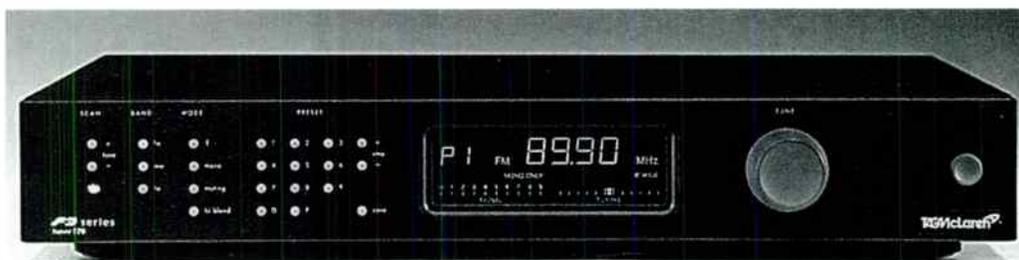
Simon Pope raids the airwaves with the T20 tuner from TAG McLaren's F3 Series.

Ranking as 'also-rans' in the hi-fi Derby, tuners rarely rise above the £700 bracket, only a select few occupying the £1000+ region. The T20 from TAG McLaren jumps in to join this small band thanks to its £1100 price, at which level you'd be fully justified in expecting something rather special from a tuner.

In replacing the output of their previous incarnation, TAG McLaren Audio have followed up the £800 Audiolab 8000T tuner with the T20 in their 'entry-level' F3 series. Of all the F3 components the T20 bears the closest resemblance to its predecessor. The display and fascia configuration is almost identical to that of the 8000T, the buttons (circular instead of rectangular) on the left-hand side located in exactly the same position. Also retained is the nicely-weighted tuning knob which gives the T20 a classy, professional touch in use. This allows station-seeking both manual and automatic via the knob and scan up/down buttons.

Filling out the features list are the signal strength and tuning indicators. There is an IF (Intermediate Frequency) button which, in Wide mode, will present the best stereo separation possible on stronger local signals, Narrow taking care of more distant transmissions. Other features include an inter-station muting button, a hi-blend filter and 39 presets.

I warmed the T20 up first with the supplied 't-ribbon' aerial. In a good reception area, Radio 3's



between-item pauses had me reaching for the pre-amp to check it was on before the presenter's voice piped up. Announcers' voices were eerily realistic, with none of the 'close mic' boom or chestiness common to most tuners.

With vocals replaced by music, the TAG McLaren responded with as open a sound as you can get from Radio 3. A live solo piano recorded in the studio was appropriately balanced and very clear, all the higher frequencies present in the right proportions above a richly resonant bass. Although the music was slow and meditative, the T20 picked up an unremitting sense of frisson in it.

Orchestral music, while being slightly more compressed than the solo piano, still managed to retain the presence that the TAG had shown with the studio recording. The overall character had a touch of dryness about it that lent the music a slightly clinical edge, but this was at least partly down to the carpet-like acoustics of the recording location.

Changing back to the spoken word (and using an outdoor aerial) I spun the knob along to Radio 4 and that venerable airwave-institution,

The Archers. The images of the actors were detailed and atmospheric, and hung precisely focused in a wide sound stage complementing the panoramically-panned voices.

Moving to more commercial pastures such as Capital and Classic FM, I found the TAG coped very well with the excessive compression of both. Rock bounced along nicely with drums and bass guitar muscular and cohesive.

Tuner calibre is a little more difficult to judge when it comes to the lo-fi of AM. Using the supplied 'loop', the T20 relayed transmissions adequately - once the signal was properly tuned, reception was crisp, listenable and mercifully free from excessive background noise.

Next to your run-of-the-mill tuner, the T20 is a breed apart with its clarity, low noise levels and almost uncoloured tonality. Unfortunately the satisfying sound and weighty build lead to a weighty price as well. Quality never comes cheap, but the T20 will have to show its (very worthy) mettle in the marketplace to win over the buying public. Mind you, if you intend spending this kind of money on a tuner, you owe it to yourself to give the TAG a test drive●

TAG McLaren T20
£1099.95

TAG McLaren Audio
Spitfire Close,
Ermine Business Park,
Huntingdon,
Cams. PE18 6XY
Tel: 0800 783 8007

WORLD VERDICT



Extremely well built with a lucid if slightly dry sound. The only real set back here is the price.

Measured Performance
see page 111

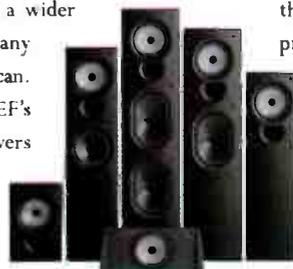
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X-TONE ME!

Richard White twiddles more than his thumbs with Musical Fidelity's X-Tone control.

Recently we've been receiving a bit of correspondence with regard to tone controls, Varislopes and the like. As a consequence we had a rootle round on behalf of control freaks everywhere and decided to have an earful of Musical Fidelity's X-Tone.

Sensibly, Musical Fidelity have chosen a 'via media' on the thorny path of tone control. Most treble-and-bass arrangements tend to be based on the Baxandall plan, which preserves an essentially constant slope over a variable roll-off point. Conversely, variable slope devices have inclined towards the frustrating, with -3dB points bang in the midrange where the aural effects of rolling off can be distinctly unsubtle.

Most tone control circuitry dates from the childhood of high fidelity when the untoward effects of masses of extra resistors and caps boding up the signal was either ignored or else felt to be worthwhile. The Leak Varislope's circuit was available either built in to a pre-amp or as a sort of bolt-on extra, much like



the X-Tone today. The Leak device had its uses in the days when there were at least a dozen recording characteristics to be compensated for, but the slope circuitry used was of the 'crude but effective' variety.

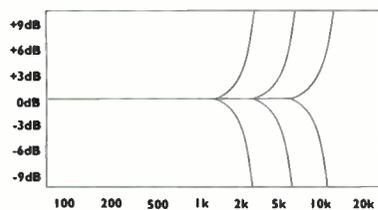
The manufacturers boasted that no chokes or inductors were used in the circuit - all to the good, but a twin-T filter with a variable resistance in parallel is not necessarily less damaging to the signal than a choke! Walker of Quad continued to use a (very carefully screened) choke for his filter circuitry way into the stereo era, and very well it worked, too.

In designing their X-Tone control, Musical Fidelity obviously didn't feel the need to kow-tow to awkward 'retro' consumer expectations like "we ALWAYS have 30dB bass boost!" The unit offers a choice of turnover points, three each in the treble and bass, with up to 9dB of cut or boost. Admittedly it is not often that you need to roll off at 5kHz nowadays but since RIAA equalization is often approximate, dull-sounding records can sometimes be cured by the judicious application of rising treble. At the other

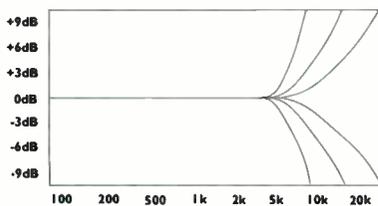
end of the scale, the choice of 30Hz, 60Hz and 120Hz points enables turntable mechanical nasties to be firmly sat upon before they do any more sonic damage.

The most effective use of the X-Tone lies in rolling off the treble with needle-damaged LPs and poorly-produced CDs - you know, the ones where the waveform resembles a flight of stairs. With a sensitive gadget like this, these aural 'errors' can be shunted into a siding, either with a gentle slope above 10kHz or else a more savage cut above 15kHz. Although you cannot expect all of the 'sparkle' to remain after this treatment, the X-Tone's very subtle gradations left us wondering. If all manufacturers had employed circuitry as good as this, perhaps tone controls wouldn't have come quite so close to extinction ●

Musical Fidelity
 15/16 Olympic Trading Estate,
 Fulton Road,
 Wembley,
 Middx. HA9 0TF
 Tel: 0181 900 2866



Treble frequency response curves from a typical Baxandall-type tone control. The slope of the cut or boost is substantially the same but the 'turnover' frequency is varied.



Treble frequency response from a variable slope filter. The turnover point remains more-or-less constant, in this case 5kHz, but the degree of attenuation or boost per octave is varied.

NOT JUST A PRETTY FACE

Matinée idol Richard White clocks the acceptable face of Teac's Reference 300 mini-separates system.

Every time some person or organization has the misfortune to get dogmatic in hi-fi, events tend to swing about to prove him, her or it wrong. Admittedly this can be a long process. A classic example is Harold Leak (yes, THE Harold Leak) whose company adverts in the mid-Sixties contrasted new technology with old and remarked: "How can the valve possibly survive in view of the... comparisons?" Ahem!

After the mini-separates concept had an initially sniffy reception, old audio hands must have been wondering when the products would turn up which would confound and amaze friend and foe alike. Enter Teac's Reference 300 system.

AMPLIFIER

As unfortunate owners of cheapo, desperately mid-fi stacks will be aware, any semi-integrated system of this kind must stand or fall by its amplifier. Poor design here is beyond the abilities of any three-band graphic equalizer to sort out.

Teac have obviously given this end of things some thought. True there are tone controls and a balance knob but careful investigation did not reveal any glaring faults directly due to these. The treble and bass lift and boost are very subtle, which could have its uses for compensating for low listening levels. There was no obvious shortness of breath while playing some demanding Dance tracks and the amp seemed to be able to cope with Classical too.

CD PLAYER

In most domestic set-ups these days, for better or for diabolical, the CD

player is the prime source component. The Teac's is a compact device (of course) which, it must be said, gave a very fair account of itself. Our old friend Joe Beard powered through the system with conviction, not to mention a comfortable amount of bass slam.

Looking for holes to pick, I was surprised to find that the unit gave nicely balanced reproduction across the whole spectrum. Nothing spectacular in the the way of virtues, but more importantly for this class of offering, no unbearable faults. The player has clearly been carefully tailored to match the amplifier.

TUNER

Tuning circuitry, with its now-standard seek-and-lock programme, had a bit of a job making its mind up between bands of poor reception - the supplied 'aerial' is a 12in. length of wire which was out of its depth in a weak signal area. When I beefed things up with a larger aerial the tuner made a better job of things.

Thanks to RDS, the display gives full details of which station is tuned, along with other information like artist names. The signal reaching the amp had fine stereo separation and decent overall clarity, although on a dodgy broadcast, in the best traditions of solid-state limiting, hiss could be impressive.

CASSETTE DECK

It may seem quaint at this late date for the final component to be a cassette deck, but the Teac's is none the worse for that. Hiss level with pre-recordeds was very low, although the deck's generally enthusiastic nature could overstep



the line on poor recordings.

As with many systems, provision is made for remote operation via a timing device, the Off/Play/Record switch controlling this function. As is now equally common in the twilight of the tape format, there is a search facility which takes the drag out of trying to find the track you want. The operational icing on the cake is one of those classy little motorised horizontal drawers that encourage admiring "oohs" from visitors, always a bonus!

Mini separates have come a long way since their initial cool reception. Teac's Reference 300 has pleasing life-style looks married to circuits of genuine worth; let's face it, the divvy works out at £150 per component so you're entitled to expect something reasonable for your hard-earned cash. It remains to be seen whether properly hi-fi mini separates catch on but, with an outfit as appealing as this, there's every chance that the punter starting from scratch could find the Teac a place on his or her shopping list.

**TEAC Reference
300 Series £600**

**Teac
5 Marlin House,
The Croxley Centre,
Watford,
Herts. WD1 8YA
Tel: 01923 819630**

WORLD VERDICT



Keen styling and value for money. Good all-round performer.

Letter of the Month

The writer of the 'Letter of the Month' wins a free subscription to Hi-Fi World as well as a Top Prize every other month

MAKING THE LINK

I have been meaning to raise this point for some time now and have been prompted to do so by the review in the December issue (page 41) of two £1000 interconnects.

I think you will agree, as I'm sure you have said many a time before, that a system is only as good as the weakest link in the chain. Surely the source media plays a part in this equation?

I recently spent a short time working with a BBC outside-broadcast unit and asked one of the engineers what sort of cabling they used to hook mics and other equipment to the mixing consoles.

Given the huge tangles of wire they have, the answer came back as just flexible, good-quality cable costing no more than £2 or £3 per metre.

Now I admit this is an O/B unit and the main studios may use something better, but I cannot see the likelihood of any studio using cable costing £1000 per metre. Nor can I see the master source unit connected to a vinyl/CD press using extravagant cable either, so how can using £1000 cable possibly be justified after the source has been recorded using cable costing only a couple of pounds?

The PCB tracks inside an amplifier, CD player, etc are, in most cases, just plain copper tracks which have not seen laboratory-grade molybdenum plating or such like. The tinned copper wire of a resistor or capacitor leg is surely not up to the standard of all this wonderful OFC interconnect technology either, so why are manufacturers making such expensive cable, which you claim to be so marvellous, when there are hundreds of passive components in an amplifier costing but a few pence?

John Battersby
East Sussex.

It seems to be taking interconnect and loudspeaker cables a long time to shake off the perception that all they are, regardless of price, is lengths of cheap wire. In an area



Is £1000 for interconnects like Sonic Link's Black Rhodiums money well spent or wasted? The debate rumbles on.

full of marketing hype, healthy scepticism as to a cable's material and sonic value can save audiophiles from some unnecessarily expensive purchases. Unfortunately, it can also close ears to the very obvious performance advantages of some wiring which actually has a positive impact on sound quality compared to cheaper alternatives.

The most useful way of describing the affect hi-fi has on the signal passing through it is to think of each component degrading the signal to a certain extent. More expensive equipment which justifies its price premium mangles the music less than inexpensive budget gear, and the same holds true for cables. If you replace, say, a decent £20 interconnect with a

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Fax: 0171 289 5620
E-mail: edit@hi-fiworld.co.uk



decent £50 one, the latter will degrade the signal less, the result being music which sounds closer to the real thing when it emerges from the loudspeakers.

I recently heard some cassette recordings made directly from original master tapes and was shocked to discover just how much better they sounded than both the standard production CDs and LPs taken from the same master. Those working in the professional audio scene are lucky to have sources (whether they be live musicians, keyboards, whatever) and recording gear far superior to what ends up in the hands of most listeners at home. Such a high-grade signal can suffer being piped down cheap cable and still come out sounding pretty good.

JVC apparently paid considerable attention to cabling (amongst other items) in the production of their XRCD issues, which are vastly better than your average CD. Ironically, it looks as

if ignoring the influence of cabling at least partly explains why the bulk of non-audiophile pressings are so mediocre. JM

Ah, cables, cables, cables. After a stint in the world of audio post-production I can vouch for the fact that the amount professionals spend on cable varies widely. As you suggest, many recording studios use ordinary (£3-£5) cable for connecting mics to line inputs which are subsequently signalled to the mixing console.

Apart from anything else, I think if the BBC paid £1000 per metre for cable then the license-paying public would have something serious to moan about - there's an awful lot of cable metres in a recording studio!

Out of all of the production stages, audio post-production probably bears the closest resemblance to domestic hi-fi. It is here that the product receives its final tweaking and honing, and of

course you are working with only two channels.

The quality of cable used in mastering differs from studio to studio but suffice to say it will usually be of high quality, quite often around the £400 per metre mark. This would be used for interconnecting EQ components, compressors, DACs, DAT recorders and U-matic digital recorders both via a patchbay or (preferably) directly into the back of the machines. The shorter the cable, the better the sound quality. Short runs usually result in a master tape of exceptional bite and clarity with unrivalled neutrality.

This master tape eventually ends up (albeit in a different format) as the primary source of your listening enjoyment. Although the quality of all the other studio equipment contributes to the finished item, the cable plays a crucial role in achieving the best possible results. SP

THE 'Y' AND HOW

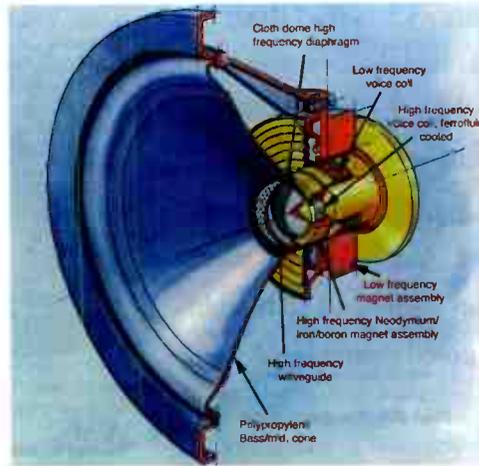
In my system I have an Arcam Alpha 5 Plus CD player, an Alpha 9 amp, KEF Q65 'speakers, Audioquest Emerald interconnect and Audioquest Indigo bi-wired loudspeaker cable.

Although I'm very happy with the sound, there's always room for improvement! I quite fancied bi-amping the KEFs, and the obvious choice would be the Alpha 9P. However, I've been looking into using a valve amp for the Uni-Qs' dual-concentric drivers because of the sound staging capabilities and sonic purity of bottles.

Would I be inviting an acoustic road-crash by mixing new-style tranny amps with old-school valves because of their different power outputs, tonal balances, etc? Also, would the extra expense of needing a pre-amp for the valves and the price of a decent amp (300B), plus messy interconnecting not make the whole project too much hassle?

Martin Vale
Worcs.

Using valve amplification for



The sweet sound of valve amplification should gel nicely with KEF's Uni-Q drivers.

KEF's Uni-Q co-axial drivers (with their polypropylene mid/bass cones and soft-dome tweeters) may give very pleasing effects since they are sensitive enough not to need excessive persuasion. Although there is a good deal to be said for the various 300B amps they do tend to be very pricey. A plain EL34 pentode design would help to keep costs down initially and may prove to be less finicky as part of

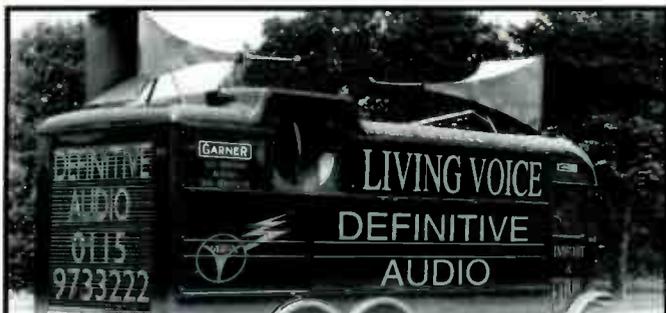
an enlarged system.

As regards mixing valves and solid-state, this should not be a major problem with the latter handling the bass and the former everything else. You're almost certain to hear a difference in character between the two amps, but since the Uni-Q deals with the bulk of the range and the ear is not particularly discriminating at lower frequencies, I doubt you're talking "road-crash".

You shouldn't need another pre-amp if you use a 'Y' interconnect from the Pre Out socket on the Arcam. Then you can add a volume pot in the lead to, say, the valve power to match levels.

As we are often at pains to point out, there are very few modifications which automatically guarantee improvement. At least three-quarters of the sum of human knowledge has been acquired simply by trying things out. Good luck! RMW

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A PASSIVE PREFERENCE

Passive pre-amps are a bit of a fashion at the moment - and very nice they are too - but can you help me understand the dos and don'ts a little better? I am currently using fairly old source components from Rega and Arcam, and driving Lowther Acoustas through a Leak Stereo 20 and a passive pre-amp of my own confection (basically just a signal input switch, a Panasonic pot, phono sockets and a few centimetres of silver wire). The interconnects are a mixture of things and are not important to this query (unless you tell me otherwise), but none of them is over a metre long. It all sounds great, but soon it will be dismantled and the Leak will be reunited with its Point-One pre to drive a second-room system. I was hoping to buy a nice (but not too expensive) valve power amp and use it with the passive device for my main set-up.

In the course of making enquiries I have been told (and do believe) that, whilst passive pre-amps can work wonders, they are not necessarily a good solution in all cases. For example, not all power amplifiers like being fed what is a direct signal, which may emanate from a variety of source components and may therefore have different electrical characteristics in each case.

Pre-amps with gain were not invented just to degrade our signals. They actually perform valuable functions in terms of isolating one input signal from the others and stepping up the low outputs of some components (especially tuners and tape decks). On top of this, apparently very few pre-amps are of universal suitability when it comes to

VINYL METAMORPHOSIS

I'm a vinyl-lover who relies on a Michell Gyrodek with QC power supply, Rega RB300 tone-arm and a Grado Prestige Black MM cartridge. Amplification is an Audiolab 8000A, loudspeakers Castle's Harlechs.

Realising that my 8000A's phono stage is not the quietest (nor the Grado the most informative cartridge) I am in need of help finding replacements. My dealer suggests I try out the Ortofon MC 15 Super II. Is this as far as I should go with the Rega (I cannot afford an SME arm as yet)? As for phono stages, is the Rotel RQ-970BX a substantial improvement over the Audiolab, or should I be looking at



Active pre-amps can sound very good if they're not loaded down with too many controls.

matching with power amps, so why should passive devices be any different?

I am starting to feel surprised that my passive worked so well with the Leak, and I am wondering if it is unreasonable to expect to use it with another amp. Would I be asking for trouble? What are the characteristics of a power amp which determine whether it is feasible or not?

Gary Lowsley
Surrey.

If you are not running a turntable, the choice of an active pre-amplifier is not automatic, particularly if you don't care for tone controls either. The reason your Leak worked so well with a passive pre is due to its high input sensitivity. As far as I know, all Leak valve power amps required a tiny 125mV for full output. This is actually a damn nuisance in many respects - a Quad pre-amp overloads a Leak power amp and the Leak pre-amp hasn't the oomph

Sonneteer and Lehmann Audio's offerings? I am not currently thinking of an amplifier upgrade as I am happy with the other sources. I can spend up to £600.

M. Brown
London.

In my experience the MC 15 Super II is a very worthy cartridge and quite at home on the Rega. Because of the Rega's inherent chunkiness and the lowish compliance of Ortofon MCs, I see no reason not to move up to the MC 15.

When it came out, the 8000A's phono arrangements were singled

to drive a Quad. Besides this, you're driving a very sensitive loudspeaker which will go painfully loud on about a watt or so. Let's face it, your amplifier is not exactly over-worked!

Modern power amplifiers are designed to be driven by heftier signals of 1V-2V. Obviously there's no question of being able to sacrifice a few dB here; pre-amplification of some sort will be necessary unless you're using very short interconnects and a CD player with the standard 2V output.

As regards your remarks on active pre-amps generally, I am inclined to agree that the breed has been unfairly denigrated. This is probably due to the old-fashioned arrangements 'with optional trouser-press' that manufacturers tempted congenital knob-twiddlers with in the past. RMW

Investigate pre-amps in depth with a copy of John Linsley Hood's Audio Electronics.

out for praise - I wonder what's gone wrong. It might be worth having this checked. If your 8000A gets a new lease of life at the repairers why not try a transformer. Ortophon have their own T20 at £249.99 and Sower do a range of individual MC transformers at very reasonable prices. If this doesn't appeal, our most recent recommendation is the Lehmann Black Cube at £395 which Timothy Liu reviewed in October 1998. RMW

Whatever your new phono front-end, hook it up with a pair of Siren interconnects from The Chord Company.

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edit@hi-fiworld.co.uk

IN WITH THE NEW

I am looking for a bit of advice, surprisingly enough. My current system comprises an original Pink Triangle turntable with an SME 3009 arm and Dynavector 10x4 cartridge. The rest of the gear is a Naim NAC 62 with Hi-Cap, NAP 250, Musical Fidelity E600 CD player and Sehring 80 'speakers. The interconnects are mostly standard Naim.

I have for some time (about 10 years!) been thinking about upgrading my tone-arm. I have a budget of around £1000 and, because of the age of my deck and difficulties in getting armboards, I have been looking at buying a new SME, either the 309 or Series IV. However I am beginning to wonder whether the best option might be to go for a Pro-ject 6.9 turntable which comes complete with tone-arm and Ortophon cartridge (the MC 30 at £999 or Rohmann at £1250).

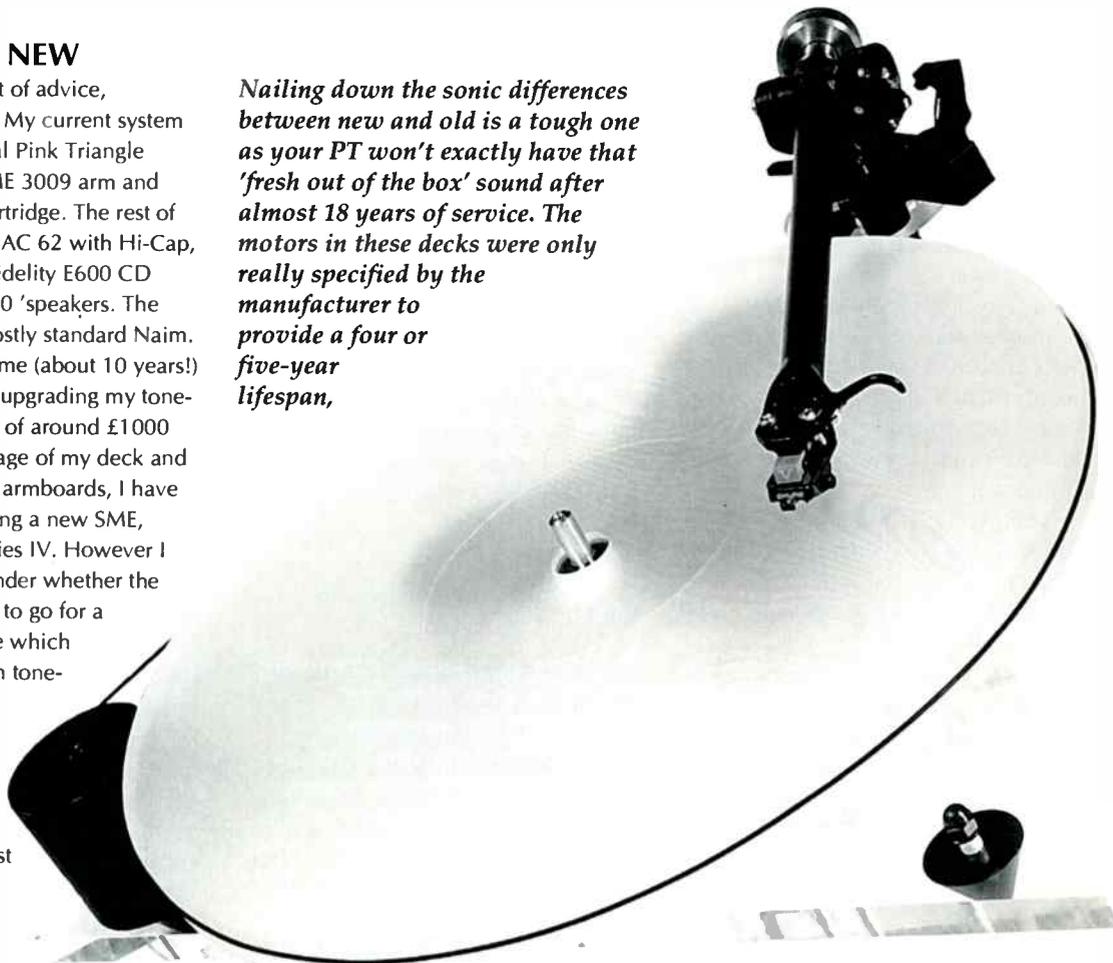
I have to be honest in that I have been influenced by your World Favourites listings and the write-ups both Pro-ject and Ortophon have received. What I can't quite make up my mind on is whether to continue to upgrade the 'ageing' Pink. I guess what I am concerned about is spending a significant sum now and then, maybe, finding that the motor goes or some other fault develops which requires extra expenditure later on.

Given advances in technology and design, would a new turntable like the Pro-ject represent a significant advance on the Pink Triangle? And how 'different' a sound would there be between the two combinations?

Any thoughts or comments that you have would be very welcome.

Patrick Wiggins
patrick.wiggins@scotent.co.uk

Nailing down the sonic differences between new and old is a tough one as your PT won't exactly have that 'fresh out of the box' sound after almost 18 years of service. The motors in these decks were only really specified by the manufacturer to provide a four or five-year lifespan,



You could keep it in the vinyl family with a new Tarantella turntable from Pink Triangle.

so yours is almost certain to be close to going up in smoke.

Pro-ject's 6.9 with arm and cartridge is one option, especially as the MCs it comes with are so heavily discounted against their bought-alone price. Don't ignore the Tarantella (again from PT), although this comes without an arm or cartridge. To keep within your budget, you'd have to sell your PT and SME, hang on to the Dynavector (assuming it's got a

few miles left on the stylus) and try out an Origin Live-modified Rega RB250 arm on the Tarantella.

One point to bear in mind is that, with the OL 250, you should only get the structural mods and internal wiring done. If you go for the re-wired lead outs, their thickness will prevent the Tarantella's suspension working properly. JM

A drop or two of Licon will also help freshen the sound from your record deck.

If you do not want your e-mail address published, please let us know.

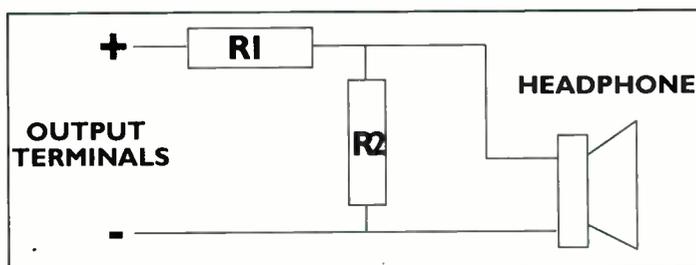
CAN IT

I would like to adapt my Sennheiser HD600 headphones so I can drive them directly from the 'speaker terminals of my 150watt tube amplifier. This may sound a bit extreme but after auditioning amps by Musical Fidelity, Naim, Creek, Earmax, Audiovalve and Amity, I've run out of dedicated headphone amplifiers to try in the UK.

All of these amps were fine - some were very good in certain areas - but none had all the qualities I am looking for. It wasn't until I heard a modified pair of Beyer 'phones being driven directly by a 50watt stereo amp that I found the sound I had been seeking. This approach seems perfect as I already have an amp with a sound I love. So how do I do this without frying my headphones?

Derek Nicholson

Derek.Nicholson.Chaucer@mktmail.com



Wiring up a power amp to drive a pair of headphones is as simple as fitting four resistors to the loudspeaker terminals.

There are two ways you can drive headphones: the first is from an individual low-wattage (about 500mW) stage, the second from the output of a power amp. To make an amp without a headphone socket compatible for phone use is as simple as wiring a two-resistor potential divider onto the loudspeaker terminals. This reduces the amount of power fed to the 'phones and prevents them from getting fried.

As in the diagram, one resistor (R1, approximately 10kohms,

0.5watt power rating) should be connected in series with the 'phones, one (R2, 10ohms, 5watts) in parallel. Make sure you don't damage your favourite 'phones by initially testing this arrangement out with some cheapo guinea pigs. And you can raise the volume level for a given position of the main volume potentiometer on the pre-amp simply by reducing the value of R1. JM

Get the low-down on high-fidelity with a copy of John Linsley Hood's Audio Electronics.

PANEL PURIST

My current system is made up of a Garrard 301/SME 3009 S2/Ortofon MC15; Arcam Alpha CD player; Hafler DH101 pre and Leak Stereo 20 power amps. The loudspeakers are Magneplanar SMGas connected with QED Profile Silver 12 cable.

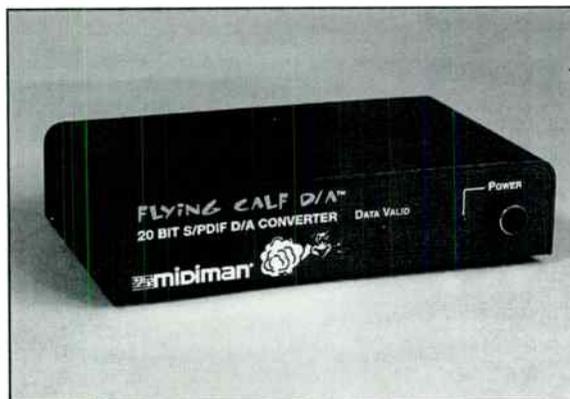
You can probably guess from this that I am guilty of assembling the system in a pretty ad hoc fashion, searching out locally available bargains when funds permit: for example, the unusual partnering of the Leak with the Maggies. I previously used an Audiolab 8000A integrated with these 'speakers but always felt that the warmth of valves would better suit my musical taste for modern Jazz.

I plan to replace the Maggies with a pair of ELS 57s, which I have heard partnered with the Leak to good effect, but lack of space prohibits this for the time being.

Despite the potential mismatches on paper, I find the current system surprisingly engaging. In particular, the Leak seems to communicate the atmosphere of music in a way that my previous amp didn't, although I feel this may be at the expense of detail in more complex music. Bass is also not very well controlled, with a tendency to boominess. Finally, cymbals can be a

little splashy, especially on CD.

So, should I upgrade the CD player first, perhaps with a DPA Little Bit 3, or go for a new pre-amplifier? I could also



When your digital budget won't reach beyond £110, Midiman's Flying Calf DAC is the only choice.

consider a Border Patrol power supply for the Leak, but only if I could find one second-hand.

Nick Cox
nick.cox@virgin.net

Hmmm, deciding how best to allocate funds can be tricky. I'd change the CD player first. You could add a DPA DAC to the Arcam, which would be an improvement on the Alpha's own

DAC. If you get the chance, have a listen to Midiman's Flying Calf at £109 as well - this is a scorching convertor for the money. Then again, you could tweak the player with a new master clock from Trichord (tel: 01684 573524) or AudioCom (tel: 01834 842803).

On the pre-amp front there's Audio Analogue's Bellini at £475 or AMC's mightily impressive 1100 at £149.

The Border Patrol PSU would certainly make a big difference to the sound of the Leak, firming up the bass and opening out the sound stage. This would be a good move with the Maggies as they prefer amps with taut, fast bass if they're not to sound boomy and sluggish.

Talking of the ELS 57s, we're hoping to do a feature on refurbishing these classic loudspeakers sometime soon. I've recently had a pair done by Classique Sounds (tel: 0116 283 5821) and they sound vastly better than your average tired original '57s. JM

Try a free bottle of DNM's Licon contact enhancer on your system for a boost in transparency.



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WHERE FROM HERE?

I have several questions that I would value your opinion on. My system consists of Michell Electronic Reference Turntable with Michell Fluid Arm, Acoustic Research CD-06, Yamaha KX-580 tape machine and a Rotel tuner/pre-amp (used as a tuner only), Audiolab 8000A bi-amped with Audiolab 8000P to a pair of KEF R105 (the original version with a single 12in. woofer). Speaker cable is Cable Talk Concert 3.1. My questions are:

- 1) The Fluid Arm is not designed for MC cartridges since it is intended to work with a high-compliance cartridge. Are there any modern MMs that will work well? I am not prepared to pay the asking price of a Shure V15 V-xMR.
- 2) The CD-06 is a bit ropy and is only in use until I get something reasonable. Can you recommend anything better than the Marantz CD-63 KI-Sig?
- 3) Since the power rating of the two amps is different (although the gain is the same at 29dB, I believe) how is it that they work together? I think that the input sensitivities must be different for full-power output, which appears to mean that the 8000P never outputs more than the 60watts of the 8000A. Is this correct?
- 4) I am dissatisfied with the bass response of the whole system and have

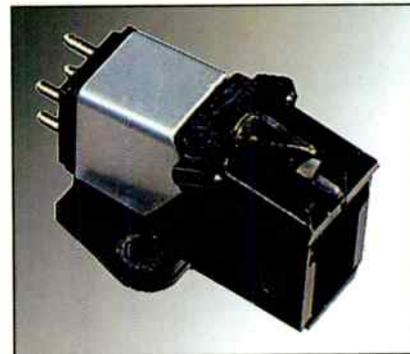
toyed with solutions from rewiring the 'speakers and replacing the crossover components with better parts, to going fully active or just active for the bass low-pass. The active route appears to have drawbacks because I believe that the passive crossovers shape the response as well as knitting the drivers together. Any suggestions?

Joe Power
joe.power@which.net

Starting at the beginning, there's a number of MMs which might suit. DNM do the Mica (£135) and Rica (£185). If your budget did stretch suddenly, The Cartridge Man's Music Maker at £575 is very compliant and sounds superb.

Marantz's £400 CD-63 KI-Signature is still a tough act to follow, even for pricier players. If you wanted to better it by a wide margin, you'd have to think about buying either a Musical Fidelity X-Ray or Arcam Alpha 9 (both £800).

When it comes to bi-amping, as long as the amps have the same input sensitivity and gain, they should work together without any problems. If the 8000A is driving the tweeter and midrange, you'll find it's only idling along at a few



One superb cartridge which combines the high compliance of an MM with the sound of a top MC is The Cartridge Man's Music Maker.

watts output most of the time. Feeding the 12in. bass, the 8000P is probably having a harder time of it providing rather more current.

As you say, if there's a lot of EQ in the crossover (as is often the case with KEF loudspeakers), cheap active operation is out. Swapping the original, industrial-grade parts for audiophile alternatives would certainly improve matters. Better loudspeaker cable is another avenue to explore, what with the likes of QED's Profile Silver 12 at £15/m. JM

A free pair of The Chord Company's Siren interconnects provide the next upgrade.

THAT SENSITIVE TYPE

I have a Meridian 508.24 CD player, Audio Synthesis Passion V passive pre-amp and Unison Research Smart 845 monoblocs. I'm planning to purchase a pair of Spondor SP-100 or ProAc Response 2.5 'speakers, but here in Spain it is very difficult to audition these 'speakers with my electronics.

What would be the best match for my system? I listen to all types of music and my listening room is about 30 sq. metres.

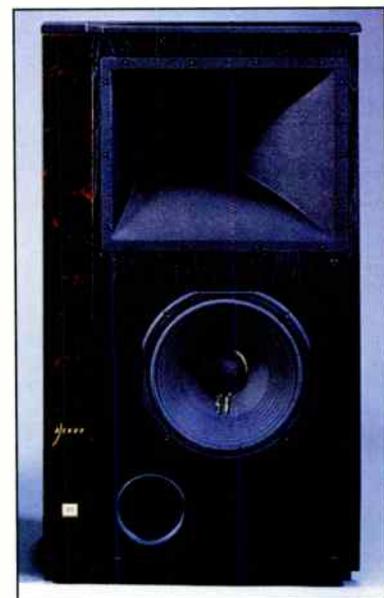
jrgtr
jrgtr@jet.es

Given your choice of power amp, I'd lean more in the direction of the Spondors than the ProAcs. The former have a claimed sensitivity of 90dB, the latter only 86dB. When I heard the 2.5s, they were happiest being bi-amped by a pair of beefy

solid-state amps; a precious few watts of single-ended valve is not likely to go very far through them.

The Response 2.5s currently sell for about £2700. This isn't a million miles off the £3500 of JBL's monster S2600 horn loudspeakers reviewed in July 1996. Although these really need plenty of space to get the most out of their 12in. woofer, they can still sound very good in slightly less spacious surroundings like your own. Their sensitivity isn't that high for a hybrid horn design at 90dB, but they have a scale, speed and punch that neither the Spondors nor the ProAcs could match. If you were entertaining the idea of buying the JBLs, a home demonstration would be vital. JM

Boost the performance of Meridian's fine 508.24 with a Statmat MkII from Ringmat.

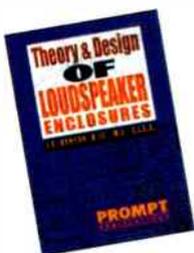


In the case of JBL's S2600 hybrid horn loudspeakers, big build means a big presentation with great sound staging and bass welly.

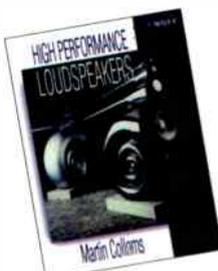
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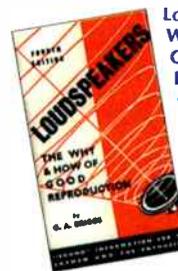


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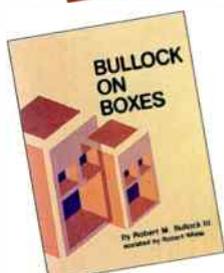
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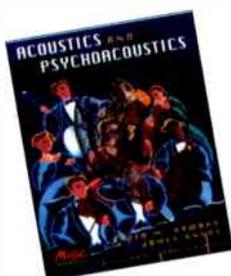
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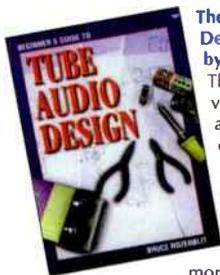
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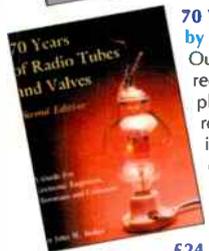
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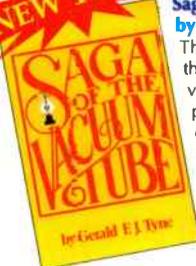
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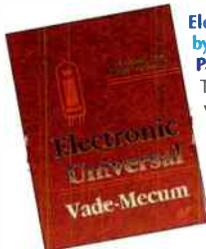
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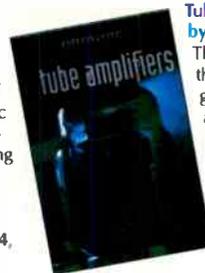
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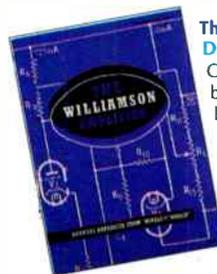
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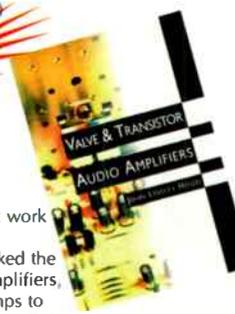
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DIAMOND GEEZERS

Simon Pope looks anew at Wharfedale's perennial Diamond loudspeakers in active guise.

Way back yonder in days of old (well, 16 years ago, actually)

Wharfedale changed the face of bookshelf loudspeaker design forever with their original Diamond. Never before had so much quality bass been present at such small a size (or price), and as a result these little boxes sold like hot cakes.

After a number of variations on the Diamond theme both passive and powered, we have now arrived at the latest amps-included model. The Active Diamond is based on the Diamond 7.1 reviewed back in March 1997. As far as front-panel looks go, the only differences are the inclusion of a combined On/Off and Volume knob.

There is, as you might imagine, a slight weight difference in the two cabinets, only one of which houses the 22watt amplifiers and the crossover. On the back panel of this 'master' we have a mains figure-of-eight inlet, left and right phono input sockets and the 3.5mm jack output which connects master to slave via a run of budget cable.

I tried out the Actives with a variety of components, including a TV, a portable CD player, a PC and a Kenwood MiniDisc recorder. As Chris Beeching commented in his review of the Jamo CS5s in October 1998, proper hi-fi actives like the Diamonds are way better than your average 'multimedia' loudspeakers when it comes to both build and sound. Another point to bear in mind is that 22watts per channel sounds a lot more powerful than you would imagine since it's not being squandered on lossy passive crossover components.

Experimenting with the portable CD through the Diamonds brought mixed results - there was some bass there, but everything from the



lower-midrange upwards had a fairly 'boxy' sound to it. Hooked to the TV, things were a little better; signs of musical power and liveliness were beginning to peek through. These became more evident when the source was changed to a PC and its CD drive. In addition, a real sense of depth was revealed, both in the bass and the soundstage. Percussive attack and rhythm were prominent plus points too, along with clear, precise vocals.

To see what the Wharfedales were really capable of, I ended up feeding them with a Kenwood DM-3090 MiniDisc recorder and a Roksan Caspian CD player through Kimber PBJ cable. Now that was more like it! Reproducing a pre-recorded MiniDisc of The Fugees, the Actives responded with a deep and muscular bass which, I have to admit, took me by surprise - this was a very beefy bottom-end indeed. Vocals were forceful but not overwhelming, every word clearly pronounced with just a slight hint of cabinet boxiness by way of coloration.

A similar result was achieved with an Erasus MD, whose solid, pumping bass and artificially-stretched sound stage suited the Diamonds down to the ground. This kind of Poppy production did suffer from more than its fair share of sibilance, however, and the treble was splashy at times.

Switching formats to CD, the towering compositions of Bruckner and Messiaen also faltered somewhat because of a lack of soundstage width. Still, while the spread wasn't all it could have been, the depth was really quite impressive. In the final analysis, this meant Dance and Rock CDs were better musical partners for the Diamonds.

The Active Diamonds are not ones for high-end neutrality, but then that's not what these 'speakers are about. Their sound can be coloured but it's also very exciting. Match them with a decent, cheap CD player such as Technics' SL-PG490A (under £100) and a good pair of interconnects and you'll have a stonking little set-up that is miles ahead of any similarly-priced Midi system●

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WORLD VERDICT



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Noel Keywood

Who would have thought a personal stereo could cause so much trouble? The Rio continues to get enormous press coverage and I'm sure Diamond Multimedia are delighted. The view is that one little personal stereo costing about £180 will change the face of the music business. My view is that it is the first part of a much bigger change. The Rio itself, and the future of the music biz, will be less significant than the new ways of doing things about to hit us. At the heart of this is the increasing power of computers, of which the Rio and the Internet from which it feeds are manifestations.

All this affects audio directly. Computers can now store music and process it in just about every conceivable fashion. They can re-code digital audio to suit a replay convertor of your choice and then burn the final audio onto a CD.

Sound cards for the PC are becoming very advanced in their abilities, the best accepting 24-bit code at 96kHz from the appropriate ADCs. This means you can connect up a record deck through an RIAA phono stage, turn analogue LPs into digital code way in advance of the current CD format, then burn that digital signal onto a CD-RW. The quality of the original recording will be faithfully preserved, albeit with the reservation that computers are a dirty environment for low-level analogue at present (expect to see screened 'audio' computers in future).

I am not trying to write a 'how to' manual for computer-based audio here so much as illustrate what is becoming possible at this very moment in the fast-

moving and innovative computer business. What is all this going to lead to?

The point is that computers are personally empowering. They allow you to do all manner of things to suit yourself and avoid the interference of others. They cut out middlemen and also cut out a whole layer of expense and imposition. Let me take the cassette and the CD as examples of a commercial monopoly that will never exist again.

Many companies experimented with portable recording systems around the late Fifties. Philips came up with a wonderfully practical little tape system for dictation purposes in 1963 and in the end it became the world-wide, de-facto audio recording system. It is Philips' boast that the Compact Cassette became the world's second most common household electrical item, after the light bulb. What they achieved was a self-sustaining commercial monopoly. You had to record onto cassette if anyone was to lis-

and engineers have told me. So although Philips have benefited from such monopolies in the past, they shun the idea now.

Just look at what these monopolies do. From the word go CD was a pretty dubious hi-fi medium. It never sounded as good as the LP and still doesn't. The idea of an optical disc read by a laser was excellent, but this is storage-medium technology, not audio. I accept that CD is easy and convenient to use and store in the home, and also that it has raised the overall standard of sound quality available from budget audio. A high-quality record deck is for those with deft fingers and a deep wallet.

But why do we all have to accept its restricted sound quality? And who benefits from this sort of imposition? The fact that CD has become a world standard mostly benefits its developers, Philips and Sony. Their licence revenues must be enormous. Otherwise, CD has been a

"Computers are personally empowering. They allow you to do all manner of things to suit yourself."

ten to your work, because the whole world had cassette recorders. But the whole world had cassette recorders because everybody recorded onto cassette.

It is very difficult and expensive to get such a circular system running. But it is also very lucrative once you have done so, because if every cassette and cassette mechanism delivers a royalty fee, after initial launch costs have been recouped it is money for old rope.

In truth, self-sustaining monopolies like this started to crumble decades ago and attempting to re-create them has cost Philips and Sony dear. The Japanese made many attempts to replace the cassette - with Elcaset, DAT and now MiniDisc. Philips tried with Digital Compact Cassette (DCC) but failed.

Compact Disc was the last massively commercial self-sustaining system of this nature, one that became a world standard, and it took a lot of launching. For many years its acceptance and success were touch and go, Philips executives

retrograde step for sound quality since its release in the Eighties.

Computers cut out the need for fixed standards, together with their impositions and costs. In future we will not have to put up with one type of universal standard replay system like CD or cassette. Low-quality recordings will come from the Internet, medium-quality CDs from stores and higher quality material likely direct from music producers or Internet via specialist stores.

In the meantime the Rio is likely to raise a big question mark over MiniDisc. Already, net-heads are comparing the two and Sony have raced to close the gap between them by making MD recorders link up to a PC so they can download MP3 recordings too. MD has a lot going for it the Rio and its brethren cannot touch but I have a nasty suspicion that the Rio and other MPmen are just the start of a new wave that will sweep away de facto standards that earn their inventors lots of money by removing it from our wallets●

Gadgets good enough to save the cost of a new CD player? Yes. If you cringe at an edgy treble or yearn for more realism, read on.

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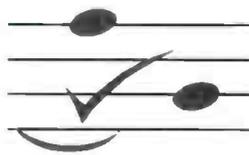
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PASSPORT TO ROLAND



As the world ponders the arrival of portable MP3 recorders, Jon Marks views solid-state recording from the perspective of Roland's AR-2000.

As time marches ever onwards, so music software gets smaller and smaller. After the 12in. LP and 7in. single came the 4.75in. diameter of the CD. Now it looks as if one of the possible future formats (for recording at least), solid-state memory, could drop storage size even further - the PCMCIA PC cards which the AR-2000 uses measure just a fraction over 2in. wide and a tad under 3.5in. long.

As you might be able to tell from its slim 1U case and rackmount bolt holes, the AR-2000 isn't aimed directly at the domestic hi-fi market. A glance at the rear panel confirms the semi-pro origins, as a pair of MIDI sockets occupy panel space between RS422A and RS232C computer interfaces and a bank of control Input/Output terminals. You don't need a lifetime's studio experience to use the AR-2000, though, and wiring it into a domestic system is a piece of cake.

GETTING HITCHED

There are really only two pairs of sockets that audiophiles need to worry about. These are the RCAs labelled Line In and the 0.25in. jack sockets below the legend Balanced Output. The first allow any line-level analogue source to feed its signal

into the AR-2000, the second, strangely enough, permit you to listen in on the results.

One minor hurdle which emerges as a result of the differences between gear designed for use in studios rather than living rooms is said balanced output - XLR is the standard balanced connector on hi-fi equipment. However, compatible cabling can be made up by The Chord Company, for example.

BIT PART

Once the signal from the CD player, phono stage or other source has made it into the AR-2000, it's converted into digital data by Roland's own processing, RDAC (Roland Digital Audio Coding). This highly-flexible system offers varying levels of compression to fit the range of PCMCIA cards on sale. These run from as little as 512kb (which will give a massive 1min 58secs of mono recording with maximum number crunching!) all the way up to 40Mb and 65Mb, where storing around an hour of music at less lossy ratios is possible.

There are two 'grades' of compression (RDAC-Mode 1, Mode 2) and 'Linear', which is straight 16-bit. The sub-divisions within each of these are High (44.1kHz),

Standard (32kHz), Long1 (22.05kHz), Long2 (16kHz) and Announce (8kHz).

READY TO ROLAND

After a trawl through the manual (which was disappointingly devoid of the Japlish contained in many Far Eastern instructions), it was time to fire up the AR-2000. With sources in the form of Denon's DVD-5000 and Philips' budget but nonetheless impressive CD721, I set about recording, monitoring the process through a pair of Sennheiser HD565 Ovation headphones.

Having inserted the memory card after power-up into one of the two available slots, I had to format it. A press of the Mode button took me to the Roland's set-up menu with its seven 'layers'. Spinning and then pressing the Select knob (which works very much like a jog shuttle wheel on a MiniDisc machine), I tuned into section 3.2. Some more simple button-work and a minute or so later the card was ready to accept data on any of up to 500 'Phrases' (Roland-speak for tracks).

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On the Roland's rear are the computer-interface sockets (far left), MIDI connections, remote control screw terminals and analogue inputs and outputs.

HDCD favourite, Stravinsky's Firebird Suite. I started out by setting Phrase One to stereo in RDAC-Mode 2 (the gentler of the two compression levels) and Announce.

Seeing as the bandwidth in this case is only 4kHz (half of the 8kHz sampling frequency) I wasn't expecting too much sparkle at the top-end, sound stage openness or low-level detailing. An apt description of post-Announce Stravinsky would be that it sounded as if it was being piped down a long-distance phone line - the treble was quite obviously being hacksawed off before it could get too high, and there was a major lack of detail. This sort of digit-squashing might save space on your cards but should ideally be reserved for speech only, as the manual points out.

On the following Phrase I opted for the next grade up, Long2. Even with only 8kHz to play with, this was a major step up from Announce. Strings had a much

more natural tonal signature and there was a lot of extra detail and space in the sound stage. While we're still not talking genuine 'hi-fi' here, this compression ratio would be fine for background music to keep your ears happy during a spell of kit-building.

HALFWAY HOUSE

Moving up to Long1 turned out to be a 'swings and roundabouts' scenario. With a bandwidth of a shade over 11kHz, there was appreciably greater clarity, insight and atmosphere to the digits of Phrase Three. Unfortunately, these traits had the knock-on effect of revealing the rough edges to this sampling frequency, with strings picking up a metallic, wiry coloration that made listening tiring and reminded me of early-days Compact Disc machinery.

Phrase Four and Standard grade found the AR-2000 hitting its stride once more as the signs of a bad case of digititis faded

away, the 32kHz sampling rate producing a recording which lost out to the original only in the areas of finesse, subtle tonal colour, imaging precision and sound stage openness.

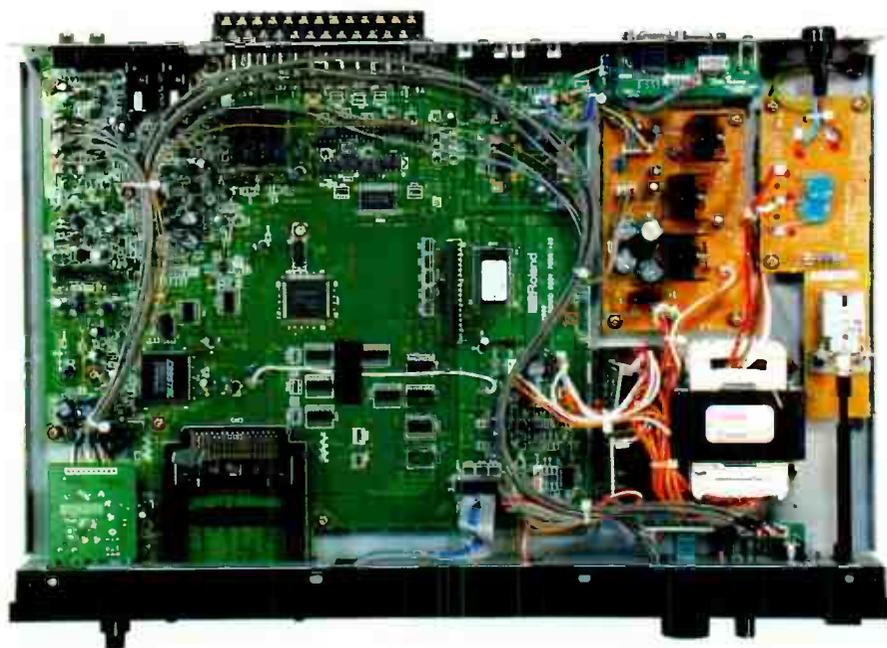
Finally, High stepped forward for its moment of glory. With its superior treble extension and musical expression, this RDAC grade justified its spot at the head of the compression crowd. Considering that CD ploughs through roughly 8Mb per stereo minute, High was doing a good job and taking up only half as much space on the PCMCIA card.

LINING UP

If you're not afraid to build a veritable library of cards (which certainly wouldn't be cheap), you can go for uncompressed Linear recording. With a CD holding 650Mb of musical information, this isn't a particularly practical method of capturing your favourite tunes for posterity. Mind you, Linear does clearly show the influence of the various compression ratios on the sound as it has a sweeter, more organic and more enjoyable presentation than any of the other settings on the AR-2000. It also confirms that the Roland's ADCs are really quite transparent when compared to those lurking inside CD recorders at a similar price bracket.

HERE'S TO THE FUTURE

At £500, Roland's AR-2000 is certainly a tad cheaper than the £4000 Nagra Ares-C we looked at back in December 1998. In its defence, the latter had a jewel-like construction quality that you rarely get in domestic kit below high four-figure sums and was intended to be lightweight, robust and very portable. What both these machines demonstrate is that solid-state recording on PCMCIA cards could become a viable proposition if and when card capacity rises and price falls ●



To the right are the AR-2000's PSU boards, to the left the large processing PCB stuffed with surface-mount ICs.

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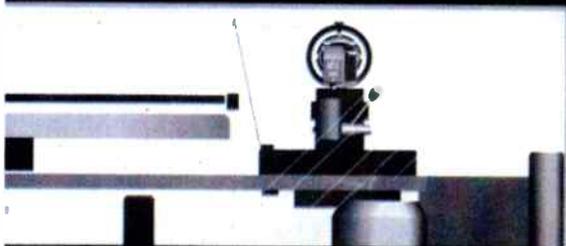
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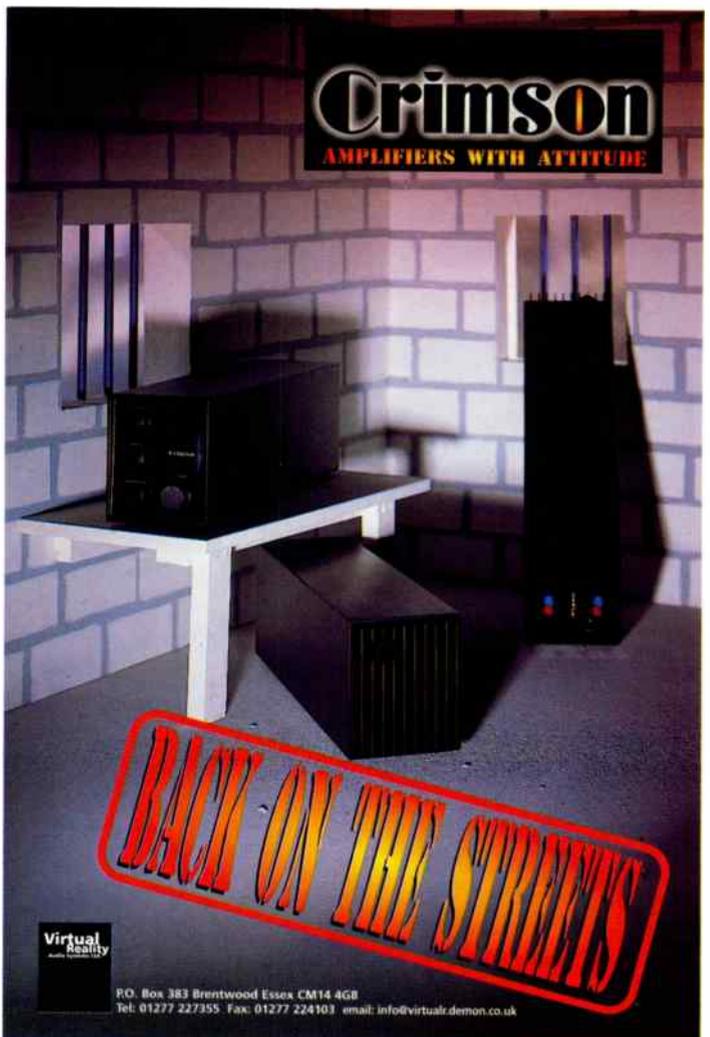


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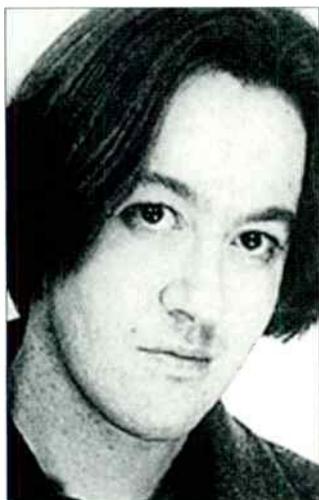
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David Price

would go the way of the Dodo? Well, here's a music carrier that hasn't been comprehensively superseded by anything. In fact, amazingly, it's still getting better. Unlike digital there's no theoretical limit to how far it can evolve - as new technologies come on stream it continues to move forward in leaps and bounds.

Listen to a decent vinyl system now and it's so musical that you wonder how it could be better. Interestingly, though, while today's top turntables are obviously more transparent than those of a decade and a half back, I wouldn't say they've made giant steps forward overall. The original 1980s Oracle, Roksan Xerxes, Michell GyroDec and Valhalla Linn Sondek were all talented performers even

Today's transducers are head and shoulders above their precursors. Advances in stylus profiling and polishing, new coil and magnet materials and lighter, stronger and more rigid bodies have all pushed the game forward. Think James Hunt's 1976 Marlborough McLaren vs Mika Hakkinen's '98 West McLaren Mercedes and you've a good idea of the scale of development. All this has made for superior midband clarity, bass and treble extension, imaging and depth perspective, as well as (perhaps regrettably) a slightly leaner, more neutral tonality.

Great as it already is, what fascinates me is where analogue will go in the future. Can we reasonably expect a new

As the end of the century looms, it is perhaps a good time to reflect on its great technological achievements. Digital computers and manned spaceflight are the obvious ones, but surely somewhere in the top one hundred come both the Long Playing microgroove record and Philips' Compact Disc.

For most people, the concept of vinyl replay as high technology is a little hard to swallow. Unlike CD we see it as terribly dated, or even quaint. But in its day it was red hot, more impressive even than the little silver frisbee at its inception. Indeed, media hype aside, CD was miles behind the digital state of the art at its launch in 1983.

Warp back 10 years and everyone was calling Red Book CD 'the future'. Now, as 24-bit DVD-Audio beckons, it plainly isn't. LP never made any boasts about its veracity, never uttered the word 'perfection' or tried to slap down older formats. But CD did, and having lived by the sword now deserves to die by it.

In truth, it's a modest format with much to be modest about. Not long from now, the notion that people once listened to 16-bit will seem as odd as using a big, long, bendy bit of steel to crank cars into life every morning. It's truly from a bygone era, where Mike Reid was the hottest property on Radio One and the Ford Cortina Britain's favourite motor. In fact, it's amazing that it's lasted so long - I can name no other contemporary consumer technology anywhere near as enduring. Rack systems? CB radio? Sinclair C5s?

What then of LP, the format they said

"What then of LP, the format they said would go the way of the Dodo?"

Well, here's a music carrier that hasn't been comprehensively superseded by anything."

by 1999 standards. The likes of SME's 30, Immedia's RPM-1 and Michell's Orbe are all comprehensively better, but not stunningly so.

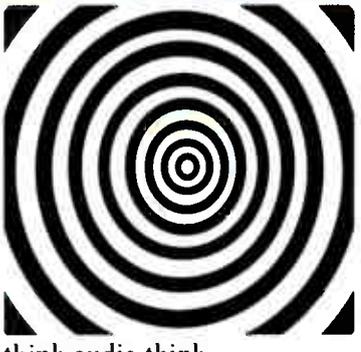
Neither has tone-arm technology progressed hugely. Today's Graham 2.0 and Wheaton Triplanar are indeed superb performers, but much of their design philosophy and technology was available in the likes of Linn's Ittok, SME's Series III or Michell's Focus unipivot over 20 years ago.

No, for my money the really big developments in analogue have been in cartridges. Compare, for example, Shure's V15 MkIV of 1979 with 1999's V15VxMR, or Supex's classic 1976 SD900EV moving coil and a new MC like Lyra's Lydian Beta. In my opinion, the modern cartridge wins every time by a mile.

generation of super-decks, arms and cartridges in the new millennium? You might think not, but don't forget the pundits were saying the very same thing back in 1985. Then we got the Linn Ekos, Naim ARO, SME V, Linn Lingo, Michell Orbe, Graham Unipivots, van den Hul and Lyra MCs, the Ortofon Rohmann - the list just goes on.

With an irony that Oscar Wilde would doubtless have savoured, the fact is that vinyl has made so many of its greatest strides in the twilight of its years. Of course, the valves 'n' vinyl brigade will stick with black plastic till the end (ours, rather than its, I suspect), but in music software terms it's hardly a significant format anymore. Yet it just carries on progressing, just keeps on keeping on. At this rate it could even see off DVD-Audio too!

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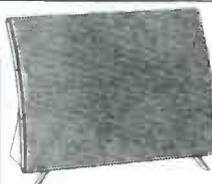
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SUCK IT AND SEE

If the grooves you dig are dirty and dusty, Richard White reckons a spot of spring cleaning with VPI's HW16.5 record cleaner is the way to go.

Outside the hallowed halls of audio, cleaning vinyl is something you do when you're sure the neighbours aren't about. Within our little haven of hi-fi sanity, let's face it, records need to be cleaned occasionally.

As we mentioned a couple of months ago, there's a very broad sweep of opinions as to how this can best be accomplished. Unhappily, many of these methods have caused more harm than good, relying too heavily on the 'damp it down and sweep it up' approach which is popular for municipal gutters but hazardous for coaxing dust out of delicate grooves. Perhaps my favourite is Galton and Simpson's sleeve-note on a Tony Hancock record: "For best results this record should be cleaned after each playing with a piece of fine emery cloth". When you see some poor old Ace Of Clubs LPs in a charity shop, you wonder perhaps whether this sort of advice was taken literally!

Mercifully, none of the above shenanigans has anything to do with the VPI record cleaner. At first sight, this beastie appears to be an internal horn gramophone of uncertain vintage. Having looked all over it and not found the handle, a closer inspection under the sturdy Perspex lid showed a turntable and a swing arm with velvet on its underside. Two robust switches on the front and a clear plastic hose tucked away behind make for a neat and functional appearance. Indeed with the lid open the VPI's resemblance to an old 'school model' record player is marked.

After making a full survey of the machine, the tragic moment arrived when the instruction book needed to be consulted. Mercifully, since the

VPI is American-made, the directions for use are written in commendably plain English. Plug in, place record on platter, screw down clamp and stage one is completed.

A little luck and practice may also be required, but after one or two attempts I became quite proficient at the next step: Applying The Cleaning Fluid. The object is to spread an even layer over the grooves with the miniature pasting brush provided. This process is greatly simplified by setting the turntable in motion. To do this, the left-hand switch on the front is clicked up and, with a quick hey presto and a grinding of gears (which the handbook assures us is normal) the platter slowly revolves under the brush.

Caveats in the manual warn against getting any of the fluid on the record label. This is more easily said than done for the neophyte because the fluid bottle seems to have been designed by Messrs. Heinz: nothing for a moment, then whoosh! Still, no matter: once you have the grooves evenly coated, you're ready for the best bit of all: Cleaning The Record.

The arm is swung over the revolving record and the second of the two switches is flicked up. Immediately the powerful vacuum motor draws the velvet-faced arm towards the disc. On contact, the pile of the velvet dislodges the dirt-and-fluid mixture which is immediately hoovered out of the way along the arm and into a small reservoir within the machine. I have to say that this is a fascinating sight; the wet grooves pass under the arm and emerge practically dry on the other side. By the time the record has been turned under the vacuum arm twice, it is not only dry enough

to be put back in its sleeve directly but clean with it.

The handbook warns that the VPI should NEVER be used as a dry cleaner - if two turns under the brush is enough, there is nothing to be gained from further rotations except wear on the velvet cleaning pads. Extremely dirty records may require a second shot but this is exceptional.

In truth it is difficult to see whether a black disc is clean by eye alone; a pick-up, turntable, amplifier and loudspeakers are the best accessories for checking the work of record cleaners. Mine showed that the VPI had done a splendid job, removing all the years of cumulative grime from the very bottom of the grooves, and without damaging said grooves in the process.

Granted there were some distressing moments: a copy of 'Children's Favourites' turned out not to be dirty but merely suffering from a Galton and Simpson emery clean-up sometime in its long life. On the more high-brow parts of the collection, the VPI really proved its worth, though, reducing surface noise quite dramatically. What's better, as any fool knows, a clean record means a much longer-lasting needle. Looked at this way, if your cartridge needs re-tipping half as often, the VPI could pay for itself in a surprisingly short time.



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VINTAGE VIRTUES

By Haden Boardman.

As a mini hi-fi 'speaker par excellence, few designs have built up a reputation as strong as that of the LS3/5a. Developed by the BBC as a 'Grade 1' high-quality outside broadcast monitor for use in awkward spaces, this little loudspeaker has developed into something of a legend in its own lifetime. Its compact enclosure, with cleverly-engineered infinite-baffle loading and close-tolerance components, has won it many friends throughout the globe; in the Far East there are amplifiers tailored specifically to work with them, and in Italy there is even an LS3/5a club.

Like a lot of other 'classic' items, LS3/5as split opinion. The first pair I listened to years ago greatly impressed me; where other small 'speakers sounded boxy, coloured, cardboardy and thin, these little babies were (and are) open, clean and have a plausible stab at producing real bass weight. They don't play loud, though, and use a number of acoustic tricks to con your brain and ear into thinking there's actually deep bass underpinning the music - forget Drum 'n' Bass or anything requiring ear-splitting levels.

Despite their limitations, when the LS3/5as are partnered with the right amplification they can really sing. If you love a glorious midrange and the recorded voice, then look no further - these 'speakers are for you.

Originally missing the 'a' suffix (LS3/5), early problems with batch-to-batch variations meant a re-think at the BBC labs. Tweaks to the cabinet, the crossover and both of the KEF drive units resulted, a fine mesh grille being fitted over the mylar T27 tweeter dome (pinched from a Celestion HF2000!) and edging applied to the Bextrene B110 bass unit. The second-generation cabinet was fashioned from



birch ply and the very complicated crossover finalised.

Everything about this little 'speaker is tightly specified, even the main grille (which must be left in place). This was back in 1974, and with one slight (forced) revamp in late 1987, LS3/5a production ceased only very recently (with the sad demise of Rogers).

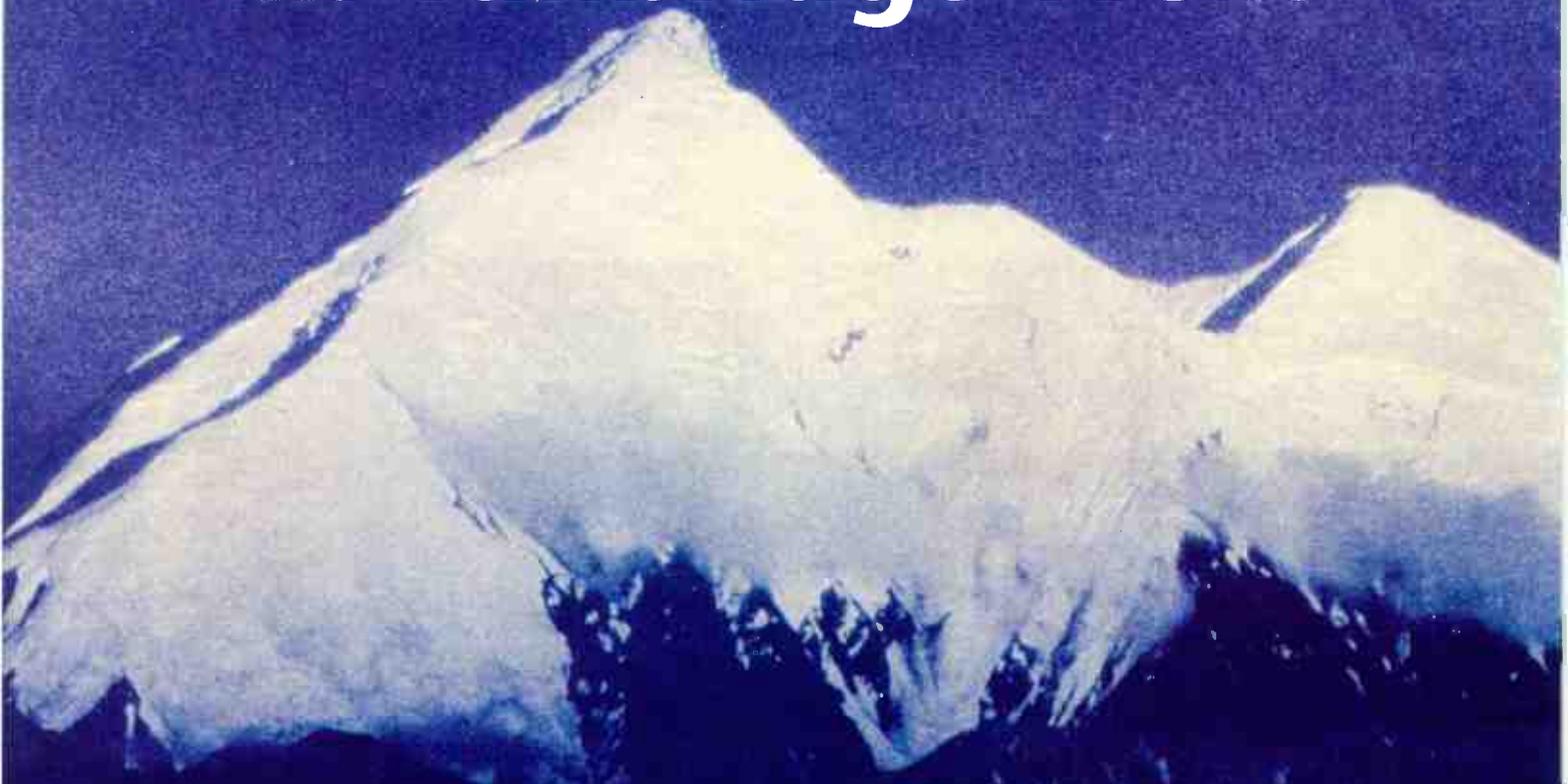
In use LS3/5as ideally need to be matched with top-notch class A amplification, valve equipment suiting them particularly well. These little boxes cannot really stand any more than 25watts of full-range music, less in the bass, so something like a Radford STA15 or 25 is an

ideal match. Couple that low power handling capability with a sub-85dB/watt sensitivity and it's clear this 'speaker is limited in its acoustic output (a single Lowther Acousta/PM6A can produce more noise from a single watt than a pair of these babies can manage with 50watts!) Fortunately, the impedance curve is very gentle; models up to and including 1987 are 15ohms, while those made after are 11ohms. Frequency response +/-3dB is 80Hz to 20000Hz, with absolute bass limited to around 60Hz - not bad for a tiny tot.

I have to say I'm surprised by how much I like these loudspeakers; the only

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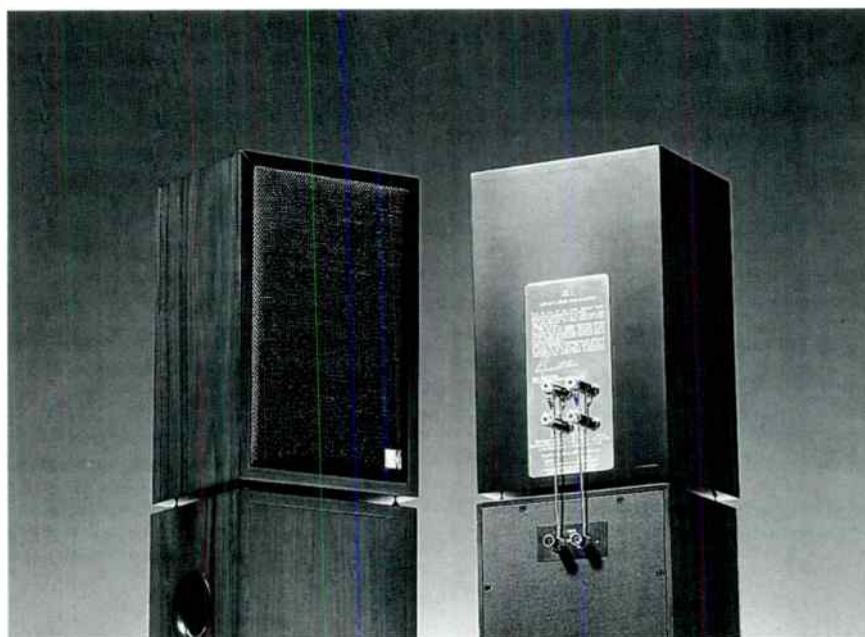
other equally amenable design with KEF units is the not-unrelated JR149. The rest of the KEF stuff with B110s or T27s has not been nice as far as my ears are concerned.

Outside an LS3/5a the tweeter has a very 'whispy' quality to it. The close-mounted tweeter grille and felt absorption strips help a lot with this. Then again, perhaps it is the attention paid to the crossover that makes the real difference - considering its complexity it's very well camouflaged sonically.

Where some 'speakers exhibit peaks and troughs, the LS3/5as are as smooth as silk. The Quad electrostatics are in some ways very similar - I have often wondered if the BBC employed any of the ESLs as benchmarks within their development labs. The LS3/5a differs in suffering absolutely none of the directional ESL tendencies which makes them a lot less fussy over positioning, although decent stands are still required. In fact the lack of a stereo 'hot spot' is one of its major advantages. Where it mimics the electrostatics is in the limited bass extension, restricted maximum volume levels and that glorious midrange which very few others can match at any price.

The midrange really does jump out of the LS3/5as, female vocals sounding wonderfully life-like. As long as you don't push the volume too high, these are exceptional performers with almost every genre except for Hard Rock and heavy Dance that demand high SPLs those dinky drivers were never intended to reproduce.

As a BBC design, the LS3/5a was licensed for manufacture to several different companies. Rogers were first on the market back in 1974, followed by (in alphabetical order!) Audiomaster, Chartwell, Goodmans, Harbeth, KEF and



If you can't live without low bass but you don't want to risk any old subwoofer, Rogers built the matching AB1 column to double as a stand and extend the bottom-end below 60Hz.

Spendor. Others applied for and obtained a license but nothing came of it.

In theory all LS3/5as from the last 25 years, regardless of origin, should sound near-identical, but this is simply not the case in practice. The final presentation depends on how the 'speaker has been treated and the environment in which it has been located.

Rumour would have it the pre-1987 units sound much better, and there is some evidence to support this. The earliest Rogers units, the models with screw-terminal cable connectors rather than 4mm banana-plug sockets, are clearly superior to mid-Eighties models. However, after 1987 KEF sorted driver consistency out. In the mid-Eighties there was a very high rejection rate of the raw KEF drivers, making this period the point to avoid. I believe these later LS3/5as are much better, approaching and possibly surpassing earlier versions.

Loudspeakers from the different licensees are all pretty closely matched; differences are more down to driver batch variations which were outside the manufacturers' control. Snob value, however, plays a pivotal role in second-hand LS3/5a prices. Early Seventies models are so thin on the ground as to be almost not worth considering. Audiomaster and Goodmans variants appear to be worth less than the others, with KEF scoring high for their later models.

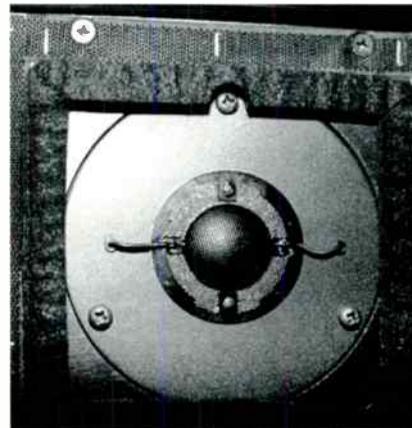
Second-hand LS3/5a prices were fairly

stable until recently. Small 'speakers are always in demand as used purchases, but even so £100 to £300 will buy a pair. Last of the line bi-wireable models retailed for some £700, with the piano finish KEF limited edition retailing for the very thick end of two grand! Sadly, recent events at Rogers have resulted in a mass of new, un-boxed LS3/5as at half the new price, possibly cheaper by negotiation. Even the limited edition KEFs can currently be found heavily discounted. I doubt there will ever be such a good time to buy an LS3/5a again as their production is unlikely to be restart.

As for tweaks, well, other than decent stands and cable there aren't any! Any mods alter the character. Don't delve inside, and avoid over-tightening the baffle screws - you will crack the baffle board! Just plug in and enjoy●



Big bass is a no-no, but the LS3/5as' mid is famous.



KEF's long-lived T27 tweeter fills in at the top.

Time Waits For Saga of the Audio Note

While we all wait for the brave new world of DVD, with its many proposed (imagined??!) benefits to sound quality, Audio Note is introducing a highly innovative and unusual addition to existing digital converter technology.

The question is, will the one times oversampled D to A converter with no digital filter make a further contribution to 96kHz/24Bit technology or extend the life of the existing 16Bit system??

A brief technical discussion follows below.

Digital Audio recording consists of measuring (sampling) the amplitude of the audio waveform at regular intervals and storing the measurement results in the form of binary data.

A digital to analogue converter generates an output which bears a direct relation to the digital data it is presented with, and hopefully if all goes well we retrieve the original analogue signal.

The sampling rate is the rate at which measurements are made and the resolution is the accuracy of these measurements. The greater the sampling rate, and the greater the resolution (number of "Bits") the closer we theoretically get to the original, and infinite amounts of each would result in a perfect recording, this has been the limiting factor so far, because more resolution and higher sampling rate means more information which in turn requires greater storage space and thus greater cost.

The engineers who originally specified CD decided upon 44.1kHz sampling rate and 16 Bits (65536 discrete levels) of resolution were aiming at good recording time on the disc combined with acceptable cost within the technology available at the time (1982/83). This just about gets us to the generally accepted 20kHz upper hearing limit and gives acceptable dynamic range and distortion, but only just.

Due to the limited sampling rate of 44.1kHz the actual bandwidth of the system is limited to a theoretical maximum of 22.05kHz (half the sampling rate). If a digitally recorded signal is played back above the high frequency limit there is a lot of signal related noise which is generally considered to be undesirable. In fact, if you observe a 16Bit 44.1kHz encoded signal which has been directly converted by a D to A converter without filtering it looks a real mess. The current wisdom is to use a digital filter which interpolates the 16Bit/44.1kHz signal to a higher sampling rate and to a seemingly higher resolution. Commonly the interpolation is 8 times oversampling (to 352.8 kHz) and to 18 or 20 Bits of resolution, no information is added, the filter mathematically joins the "dots". Then after the interpolated signal has been converted to analogue an analogue filter is used to put the final polish on the signal.

As the theoretical maximum frequency limit is 22.05kHz and the required bandwidth is 20kHz the digital filter has to cut off very very quickly. In fact the popularity of the digital filter today is entirely due to the impossibility of designing an analogue filter which can roll off so fast, and without phase distortion and time related problems. The digital filter uses a mathematical function called a sinc function which gives the required "brickwall" roll-off and with no theoretical phase distortion. The sinc function is an impulse which starts at time Zero and ripples off infinitely into the future, and the past!! Of course this is impossible in reality and the filter uses a part of the function and feeds the data into one end. Even though the filter only uses a small part of the sinc function it must still be large enough to be effective at filtering and this means that it is usually several milliseconds long, regardless of the duration of the signal itself.

At Audio Note we have long pondered the question of how much damage the signal suffers at the hands of this filter function and the unavoidable time smearing it introduces. To give you an example, if an impulse lasting only one sample is fed into a digital filter, it gets smeared out into a ringing signal several milliseconds long, hardly supporting claims of accurate reproduction, or as we say here at Audio Note: time waits for no-one, not even the "perfect" digital medium. Time displacement is the greatest cause of audible anomalies in audio reproduction and always has been.

Whilst we are not alone in questioning the effects of the sinc function and the digital filtering universally used in all CD-players and D to A converters, we are the only manufacturer unconventional enough to have grasped the nettle properly and removed the digital filter altogether, in an attempt to answer the central question: "how else do you establish with any accuracy exactly what the digital filter actually

does to the signal and is there an alternative method of filtering that would preserve the signal better??"

After much trial and error we found a way of removing the digital filter and incorporating a carefully designed analogue filter after the D to A conversion. Needless to say, this goes so completely against the grain of all current opinion because a lot of the spurious signals above 20kHz are still present in the output of the converter after the analogue filtering. The filter is a 3rd order design with a silver wired inductor and silver capacitors and is so designed to slowly attenuate the higher harmonics in a natural way, preserving as much of the musical waveform as possible, each filter is dynamically matched to within 0.5dB of its partner in the other channel across the full frequency spectrum, to achieve best possible channel balance.

Rather than use an off the shelf voltage regulator chip for the low voltage digital and analogue power supplies for the DAC we designed a unique discrete shunt regulator circuit, and use only the finest components throughout. In fact the DAC 5 power supplies take up more than 2/3rds of the substantial chassis. After the signal leaves the filter it is passed to a valve output stage, similar to that used in the M5 pre-amplifier, and is transformer coupled to the output, allowing both balanced and single-ended operation.

So how does the Direct Line DAC 5 converter with no digital filter and one-time oversampled D to A converter sound??

Let me first give you some background to what I believe matters in music reproduction and how I have arrived at the evaluation criteria we use at Audio Note.

It is no great secret that ever since Digital Audio was introduced in 1983, I have seriously questioned the validity of the claims that the technology would deliver the "Perfect Sound Forever" that launched the technology. I, and many others with me, found analog reproduction far more "real", satisfying and authentic, not to mention less fatiguing.

The main criterion I have always used when evaluating any hifi system or component is that when playing different pieces of software (whether LP or CD) the better system or component is the one that individualises the sound from each record the most, or in other words makes you sense each recording as a different and individual musical "event".

This evaluation system is based on a fundamental analysis of recording in all its forms that concludes that all we really know about recordings, is that they must sound different from each other, the conclusion is based on the indisputable fact that each piece of software was done at a different time in a different location, with different microphones, cables, mixers, tape recorders and they were recorded by different people to any other recording, furthermore the software was manufactured by different cutting and pressing machinery at different plants and as a result must have an individual character or "signature" uniquely its own.

I call this method of differentiation "Comparison by Contrast" and with this tool in hand (or should I say ear??) I have spent many years searching out the "better", more accurate (you will notice that the term used is more accurate, not accurate in its absolute sense, because total accuracy does not exist in recording or music reproduction, it is an unachievable goal, that will never be a reality, no matter how much the marketing men of the hifi industry would like you to believe it is) audio components and technologies in a largely selfish quest to improve the reproduction of my own record collection.

I made this pursuit my livelihood in 1977, when I left my career as a broker with a large multinational shipping company.

Back to the main subject, by the criteria outlined above, CD fails miserably compared against even quite cheap analog component hifi, and I have always thought that this failing was inherent in the medium itself, i.e. the fact that the musical signal is broken down into little "bits", with poor resolution at low levels, which is after all the entrypoint of the musical signal (it is often forgotten that music starts from silence, not from somewhere up the amplitude scale, the assumption is often made that what we hear at the beginning of a note is what was recorded and the words "I hear more detail" assumes that we somehow know what is supposed to be there, which we certainly do not, what the reviewer should perhaps say is I hear more contrast!) it never seems to occur to anyone that the starting parts of the musical note might be missing.

The quiet background of the digital medium should therefore allow the best possible low level detail, but it does not, low level acoustic information like hall ambience is almost completely lost on most digital recordings (it is a little better on good analog recordings transferred to CD, indicating that the digital recording process is at least

No One or the DAC 5 D/A Converter.

partly to blame). modern recording techniques do not help, as multi miking, digital mixing and other technical gadgets used in the studio, "help" the recording engineers do their job speedily and within budget, a far cry from the simplicity, dedication and time that went into every recording made from the early acoustically recorded 78's to the earliest LP's and this real acoustic information is replaced by a varying degree of hard and bright electronic echo, which makes most CD listening fatiguing, unless of course the system used tailors the high frequencies to suit, creating a "listenability" that comes at the price of severe loss of information at high frequencies, which may be preferable, but does nothing for the idea of a wide band system or signal, nor does it improve the listener's ability to distinguish between the great and the merely good performance or interpretation.

While I owned Audio Innovations (sold out 1991) I spent years in denial and despite all the arguments in favour of the commercial considerations of what my company required I heard nothing from CD that encouraged much enthusiasm and since I prize my longterm credibility more than just making money and as long as my favourite music was available on LP either new or second hand, I had no need for CD until the early 1990's when a lot of interesting material (mainly historical piano recordings previously unavailable) suddenly appeared on CD-only releases.

I had already spent a lot of time looking at the subject of digital to analog conversion, without achieving any really substantial sonic improvements against the better converters already available, my approach was to conformist, as it turned out, as it accepted too much of the existing dogma and therefore too closely followed the already beaten track.

In 1990 I decided to test the use of an interface transformer between the converter chip and the analog filter, primarily in the belief that a better interface between the D-A converter chips output should yield sonic improvements but also because I felt that separating the digital and analog circuits ground planes ought to yield some improvements.

Early experiments showed promise, but the matching impedance and associated analogue filter configuration were more critical than first assumed, after two years later we finally got it right and Audio Note launched its first digital product, the DAC3 D-to-A converter with patents awarded in the UK, the USA, Germany, Australia and elsewhere.

Since then we have progressed with greatly refined components quality (DAC3 Signature), even more high quality components plus a power supply with a valve rectifier (the DAC4), and finally the best output stage and ultimate component quality (the DAC4 Signature), and whilst all of these measures achieved even better sound quality than the original DAC3 offered, the improved versions did nothing to dent the original product's price/quality relationship to competing converters, after 6 years on the market it is no mean achievement for a digital product to stay at the top of the performance spectrum in its price range in a market where model life generally is measured in months rather than years.

The more I studied the fundamental equations that all digital theory is based on, the more convinced I became that the sinc functions used in the digital filtering must have a far more damaging effect on the signal, than is generally accepted (or even considered).

The basis for my idea is that there has to be a price to pay in all attempts to improve, "correct" or manipulate the signal, regardless whether it is done in the digital or the analog domain, and I have always thought that the digital filters with their oversampling, reclocking, noise shaping, jitter reduction and whatever else are no different in their fundamental properties to the corrective feedback systems employed in the analog domain, in that they also try to "stop" or reverse time, so their deteriorating effect on the sound must be similar.

In early 1995 work started on the no digital filter - 1 x oversampling D to A converter and when Andy Grove joined me in 1996, his contribution to the idea was a first prototype within weeks of joining, a great credit to his talent and ability.

Although the first version had a fair bit of the sampling frequency breaking through, even with this interference it was obvious to everyone that the sound had something fundamentally "right", it was freer, had more presence, immediacy, delicacy and contrast than any digital product I had ever heard, there was obviously more good information in the digital data stream than previously thought, and it was clear that this converter had very serious sonic potential, so we persevered getting the interface transformer and filtering right, and here we are, nearly three years later introducing the finished product, the DAC5 Direct Line D/A Processor with 1 x oversampling and no digital filtering, reclocking, noise shaping, jitter reduction or other such signal correction or manipulation.

Having listened to the final version of the DAC5 with its no-oversampling D to A conversion for nearly a year, I can say for the first time since my earliest experience with digital audio in late 1983 that digital has more to offer than I had ever imagined, because for the first time there is genuine contrasting quality between recordings with the DAC5, a fact which combined with an incredible sense of hall ambience, where instruments have greater presence, solidity and texture and a far more defined spatial position (provided this is what how it was recorded). An orchestra now has an organic quality where the musicians appear more like real people actually playing in real space, rather than as cardboard images in a sound deadened studio, the reproduction of stringed instruments has the sound and feel of real wood rather than the usual artificial and plasticky presentation of digital.

It may sound absurd, but the greatest beneficiaries of this vast improvement in the sound of my CD's are my big collection of historical recordings of piano music, the distinct differences in style, tempo, tone and sound of each of the great pianists from Sergei Rachmaninov to Joseph Lhevinne, and from Simon Barere to David Saperton is a true revelation, which has greatly contributed to my appreciation of the interpretative skill, dedication and pure musicianship of these great artists.

When all is said and done, however and despite the DAC5's great and almost analog qualities I still find my AN-TT Three Reference turntable with AN-1s/AN-Vz arm and ToGold cartridge excels with the best recordings, but at least now it is a contest between the two formats rather than a race between a Ferrari and a man wearing a pair of worn shoes!

The DAC 5 uses the Analog Devices AD1862NJ chip with as little in the signal path between it and the input chip as possible, the analog filtering has been done in such a way that the carrier frequency is inaudible, although it will show up on the oscilloscope in abundance (another example of the hard to grasp reality of measuring and its correlation to sonic reality)! We have experimented extensively with different filter configurations to find the one that passes an amount of breakthrough that does not disturb the ear without affecting the quality of sound more than necessary.

The DAC 5 has facility for 96KHz DVD technology, as well as the conventional 44.1 and 48KHz, it has high B C-core output transformers, with a 600Ohm balanced output using a professional Lemo connector (we can provide the silver cables with the Lemo plug for this) as well as a standard unbalanced RCA output.

There will be no patent applications or copy rights filed on this revolutionary idea, because that would limit its wider use by other manufacturers, to the detriment of the reproduction of music, instead we are offering a small technical paper on the technology to anyone who wants to test the idea, and this includes any of our competitors, all we ask is that you remember who thought of it first.

The DAC 5 is not cheap at £ 18,500.00, its component, power supply and transformer quality is far too expensive and elaborate for that, but go and give it a listen anyway, even if it is out of your price range, because the improvement it represents is nothing short of a digital revolution and you can rest assured that we shall move this advance in technology down in price as quickly as possible, so after 6 years most of our DAC-range (from the DAC3 upwards) will be upgraded to 1 x oversampling and 96KHz technology, to take us through at least another 6 years, which is in line with our stated aim to do our homework thoroughly and properly and only release products that have longevity built in.

Peter Qvortrup
01.09.1998.



Audio Note

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As another Christmas and sale period passes us by, I can't help thinking that hi-fi is becoming cheaper every year. Rather like the colour TV scenario, many hi-fi separates aren't just resisting inflation, but ignoring the index link altogether and actually falling in price.

In hi-fi terms a direct comparison can be drawn between colour TVs and CD players - both new technologies took between 10 and 15 years to improve in quality whilst also dramatically falling in price.

It's hard to believe that when Sony launched the CDP-101 way back in 1983 it cost a whopping £800. Just as a point of reference, a Linn LP12 cost less than half that amount (around £350) at the time. Today an LP12 Basik without arm costs £1100. By my reckoning, a quick

SL-PG490. What's more, all of these score well for build, looks and sound. Add to this the present depression in the retail trade and you'd be mad to pay even the manufacturers' cut-throat prices.

Before Christmas the SL-PG490 could be had for around £80. In the January sales you wouldn't have had much of a problem knocking a further £10-£15 off this! It really is hard to believe that CD replay can get any cheaper.

It may have taken CD a decade to really drop in price whilst maintaining sound quality, but MiniDisc did the same in less than half that time. The Sony MDS-JE520 is a well-reviewed recorder at £250, nearly half the price of MD machines when they first hit the market (£450). Yet again, though, even before Christmas you'd be hard pushed to find

"It may have taken CD a decade to really drop in price whilst maintaining sound quality, but MiniDisc did the same in less than half that time"

check with a calculator reveals that the cost of a CDP-101 in today's currency would be a smidgen over £2500, pretty strong money when you consider that Sony's CDP-X3000ES signs in at a mere £500. It might not weigh quite as much, but it is beautifully finished, far more user friendly and, despite the CDP-101's undoubted competence, sounds better too.

Of course, it didn't take long for the cost of CD machinery to fall below £250. Yamaha's CD-X3 at £230 was widely regarded as one of the first decent budget players. Today, the impressive CDX-393 can be had for just £130. But that's not all. Denon, widely perceived as one of the better brands, now also fields a player at £130 (the DCD-435) and Technics have even dipped below the magical ton with the

one at its retail price. Huge demand, increased consumer awareness of pricing and changes in the law concerning Recommended Retail Prices (RRP) meant that a '520 could be had for anything between £140 and £170. Even the hallowed sanctums known as Sony Centres resorted to slashing the price.

Perhaps reduced prices in the fields of CD and MD are hardly surprising; after all, they are both mass-produced, high-tech products competing in a fierce market place and being sold through a wide range of retailers from the big electrical chain stores through to market-town kettle shops. Much more of a surprise is to see how other components such as amps, 'speakers and cassette decks are following suit.

Take Arcam for example. Here's a specialist company keen to push their



Dominic Todd

image upmarket with the launch of products such as the £800 Alpha 10 amplifier. When they launched their new Alpha 7R amp at £300, though, it was decided that the price just wasn't budget enough, hence the launch of the £230 Alpha 1 six months ago. The last time you could buy an Arcam at this price was four years ago with the Alpha 5.

Another amplifier company to feel the pinch is NAD. The 310 seems to have been around for donkeys years now; in fact it was released in 1994 priced at £130. Since then it had steadily increased in price to £150 before dropping back to £100 several months ago. Here's a case where a reduction in price can't be blamed on reduced build quality or improved manufacturing techniques because the specification of the 310 is exactly the same now as it was four years ago. It's also built in the same factory in similar numbers. No, the reduction in price has come purely from market forces and increased budget competition from the likes of Cambridge and AMC, not to mention a host of Japanese brands.

These days, even respected budget turntables are on a par cost-wise with their earlier siblings. The Linn example has already been quoted, but if you look to other brands such as Rega and Roksan you'll see they're no different. Cassette decks on the other hand seem to be following their CD and MiniDisc siblings towards ever dwindling prices.

In 1986 a Dolby B, C and HX Pro Yamaha KX-340 cost £160. A modern KX-393 has all the '340's features as well as build and sound quality that are every bit the equal of its predecessor's but at £130. Someone call Mulder and Scully, or they'll be giving hi-fi away next! ●

JUBILANT JUBILEE

Richard White gate-crashes Ortophon's party to try their new £1250 Jubilee MC cartridge.

Audio veterans Ortophon were celebrating a double anniversary last year - 80 years since the founding of the original company and 50 years since the introduction of their first cartridge. Both of these dates have been aptly marked by the production of the Jubilee moving-coil cartridge.

Disinclined as ever to appear behind the times, the Ortophon team have cooked up a rather handsome new body style, which is manufactured by a process whereby metal particles are mixed with polymers for moulding, then in subsequent stages the plastic content is 'lost' by heat treatment to give a finished casting of solid metal.

Inside the body, new techniques have been used to improve the magnetic circuit, resulting in a 35% increase in output compared with Ortophon's well-known Rohmann cartridge. A naked diamond, profiled to the Shibata pattern, constitutes the business end of the pick-up. This chunk of rock is supported by a boron cantilever and the whole works has the very low effective tip mass of .22mg, this figure being achieved despite the lowish compliance of 16cu.

Again on the credit side of the ledger, the Jubilee has relatively friendly sight-lines for setting up and the top-plate has a central raised line

running from front to back (see diagram). This protusion is to permit fine vertical alignment without having to resort to the tiresome expedient of packing pieces or, worse, being tempted to twist the arm. Provided that you are careful not to over-tighten one screw without loosening the other, the idea works well and gives a sturdy three-point fixing without too much trouble.

Once the Jubilee was fixed to the tone-arm and the (fairly hefty) 2.5gm tracking force set, I put The Academy of St Martins-in-the-Field in to bat. Their glorious Philips recording of The Art Of Fugue is a very stiff test for clarity and sound staging. If there is muddle in the pick-up, the awe-inspiring complexity of the piece can be lost in irritating niggles at the needle.

For one thing, the Ortophon provided crystal-clear reproduction of strings, the rather more 'characterful' sound of authentic Baroque-pattern instruments requiring careful consideration if it's not to sound simply 'rough'. Once the wood-wind is mixed in, the cartridge has to collect all the information without fear or favour if one of mankind's greatest intellectual achievements is not to perish in a mire of squabbling soundwaves.

Turning the tables a little into well-recorded Blues and jug-band stuff from Stephan Grossman, the needle tracked nicely into the tricky transients which plectrums put into acoustic music. Because it is usually close-miked, the humble mouth organ can give rise to horrifying amplitude distortion if the stylus is not absolutely tight to the groove; the same thing happens sometimes with records of operatic soprano and can quickly leave damaged grooves



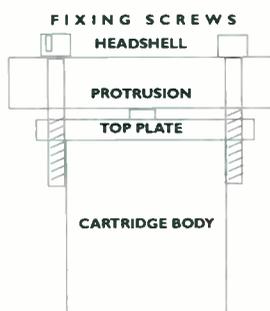
in its wake. The Jubilee again coped extremely well, digging out some unsuspected depths in the details and welding the Blues into an enjoyably musical whole.

If a cartridge fails to do its job on the late-Romantic cannons in the form of Elgar's First Symphony, the music simply becomes irritatingly vulgar, a result which Solti had taken good care to avoid in the studio. For sub-60Hz collectors, the battery of bowed double-basses allied with the bass and kettle drums will give any bit of diamond something to think about. All that it takes with this going on below is a quick clash of the cymbals for some rather unpleasant mistracking to occur.

The Jubilee showed no signs of coming off the rails even under considerable provocation. What was even better was the absence of what some may consider a slightly glassy feel to some of Ortophon's lower-priced cartridges. Given its commendably musical approach, ease of set-up and the smart new look, the Jubilee is an anniversary offering Ortophon can feel justifiably proud of.

Ortophon Jubilee £1250

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WORLD VERDICT



Detailed, musical and sure-footed, the Jubilee goes a long way towards justifying its elevated price tag.

Measured Performance see page 111

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MkII with SRPP input stage!



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KLPP1 & KLP1 use the same chassis

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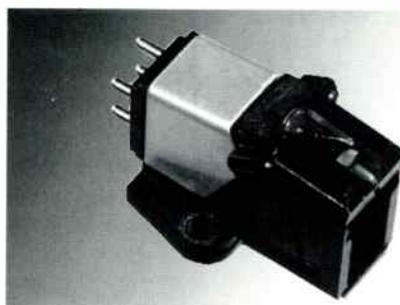
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CONE-Y ISLAND

Richard White meets every audiophile's dream next-door-neighbour, loudspeaker repairer Dave Smith.

Judging by the number of letters we receive on the subject, there is a lot of ruined loudspeaker drivers out there, everything from old favourites like 100-watt Tannoy duals to Daddy's new Jamo which little Tommy has tried to use as a colouring book.

Unhappily, in these degenerate days loudspeaker repairers are not to be found on every High Street in the land. For this reason, when we met Dave Smith of DK Loudspeaker Service at the Rickmansworth audio jumble last year, we felt a World feature on its way.

Dave's early interest in audio matters resulted in attempts to find out what made things tick. Learning the hard way, Dave collected the regulation number of belts from HT lines along the way although he doesn't think that this is what made his hair fall out!

A yen for loudspeakers led to Dave getting a job with ELAC, which covered all sides of the business from theory to practice. He was often on the spot to turn a customer's ideas into practice in the prototyping department, and with a store full of raw materials in the form of magnets, cones and chassis, it wasn't long



Surrounded!



before he was trying out ideas of his own.

Dave says that one such experimental model gave such a mouth-watering graph on test that the boss looked into adding the unit to ELAC's regular product list. Only when the costing was worked out did the scheme falter: "It was only about 50 pence dearer than the most expensive model, but when you're looking for bulk orders it all adds up. In the end it came out just a bit too dear to sell easily."

"One thing I learnt was that experience and, if you're lucky, a bit of a knack can often out-guess the computer model. We used to look at computer crossover

designs and just know that there would need to be a tweak here and there to get the best results. The actual prototype always used to bear this out. I'm not saying that computer designs aren't any good - they give you a head-start in the first place, something to build on - but they can't give the complete answer."

Prototyping and testing at ELAC was an ideal training and set the seal on what had been an interest of Dave's for a long time.

"Right from the start as a lad I used to take 'speakers apart to try and mend 'em - whether they needed it or not! The trouble was that, as everyone knows, the



Removing the remains of the old surround.



Fitting the voice coil and rear suspension.



Aligning the new cone and surround.

tricky bit is getting them back together again at all, let alone actually working."

After 18 months' first-hand experience of all branches of driver and crossover design and manufacture, Dave was ready to set up on his own as a repairer.

"It was always what I intended to do. I was 'up-front' about this with ELAC and so they knew that I was learning for myself. That way I didn't get any bother when I was always asking questions about stuff that I wasn't directly dealing with."

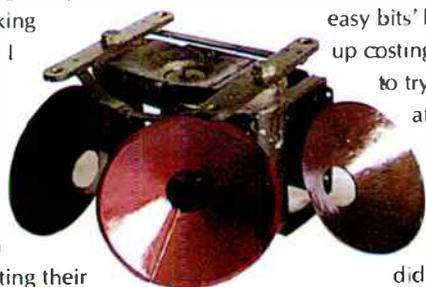
Dave's house is a bit of an Aladdin's Cave or possibly an elephants' graveyard, depending on your point of view. Awaiting their turn on the operating table were several relics which you may have read about, perhaps, but are unlikely to have met personally.

The Voigt energized-field driver was possibly the finest unit available in its day. Its coils consumed roughly 40watts and were able to produce a gap field strength of about 18000 Gauss. Dave is working on a replacement cone assembly and, with an historic piece like this, there are problems:

"Not only does it have to work afterwards but obviously the customer wants it to LOOK right. There'd be no point in making a nice gleaming white cone for this, so I'm trying out different-coloured cones to give the right 'lived-in' look when it's finished."

"At least with this one I've got the original to work from; I get some drivers

when the customer brings the whole works in a plastic bag. They've thought it would be just a simple job and by the time they've finished, the coil is dented, the magnet poles have all gone out of alignment and they've often managed to put a screw-driver through the surround into the bargain! I had a Goodmans Trebax horn tweeter in where the bloke had tried to save a few bob by doing 'the easy bits' himself but it ended up costing him more for me to try and sort it out afterwards."



Looking around Dave's well-stocked workshop, there didn't seem to be much that he wouldn't be prepared to attempt. Stack upon stack of cones, surrounds and all the raw materials for the tricky business of voice-coil fabrication lay round about us. Close-tolerance resistors (.001%!) were in labelled tobacco tins in a neat pile against one wall. Prototypes of cones for which ready-made replacements cannot be sourced vied for elbow room with home-wound multi-tapped inductors - to say nothing of the various materials used for cabinet renovation. Along one wall was ranged the test equipment: dummy loads, sweep generators and oscilloscopes for the thorough testing of the finished repair.

For all the scientific gadgetry, much of Dave's work still requires a good eye, steady

hand and that scarce commodity, elbow grease. Machine tools are not particularly good at the niceties of cleaning 20-year-old glue from nooks and crannies. That's where a sharp knife and the steady hand come in. It's much the same story with aligning the coil, cone and spider in the chassis.

"If you're a big manufacturer making hundreds of the same unit, you can use as many jigs as you like. With my business, practically every job is different and a jig would take longer to set up than it takes me to do the job by hand. I handle just about anything from three-quarter-inch domes to 24in. PA drivers. You want a jig to help. . . ? Where do you start?!"

Evidently after all these years, repairing loudspeakers amounts to a labour of love. The amount of time taken to repair something like the poor, old dead Wharfedale below is not something which everybody would feel is justifiable.

"Look at the build of the chassis and the magnet though. . . beautiful quality. You can experiment all you like with the cone and surround materials but you've got to have something solid to build on."

Having spent a happy afternoon watching Dave at work and talking loudspeakers, it was obvious

that his accumulated knowledge and practical skill were indeed 'something solid to build on' ●

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ISO METRIC

Jon Marks measures up Acoustic Precision's Lithos A regulator modifications for Michell's Iso phono stage.

In these days of digital domination, the thought of a 'best-selling' phono stage might seem anachronistic but one that almost certainly qualifies for such a label is the Iso from Michell Engineering. This dinky smoked-perspex box is to be found downstream of many a cartridge, whether it be bolted to an Orbe/GyroDec or not.

Anyone who has been addicted to hi-fi for a while will know how much difference to the sound of a component the power supply can make. As standard the Iso comes with one of two PSUs, either a little wall-plug affair or the Hera, with its 500VA mains transformer. Inside the phono stage itself, the job of removing rubbish from the supply lines falls to a pair of ICs. This is a vital task as the level of noise which may be tolerable in a power amplifier is often larger than the output from your average MC.

Step forward Acoustic Precision with their no-holds-barred Lithos A regulators. As you might have guessed, 'A' is for Analogue (the company also manufactures a 'D'



version for use in RF circuitry in CD players). Both negative and positive rails are built onto a single PCB stuffed with a mix of surface-mount and standard parts. The only use for monolithic regs here is as pre-regulation to clean the worst excesses off the DC before it gets the Acoustic Precision treatment.

The Lithos is set to output +/-15volts and is limited to 1.5amps peak. If you want to squeeze this much current out of it, though, you'll need to go in for some heat sinking as there's a voltage drop of roughly 4volts between input and output. Other voltages are available on request, but this involves the circuitry being re-optimised. Outputs above +/-18volts are slightly difficult too since many op amps suitable for use in the Lithos can't tolerate more than 40volts across their supply pins.

To test the mettle of the tweaked Iso, I slipped it between a DPA 50S line-level pre and a DNM Lexie MC on an SME V/Trio L-07D. A pair of Magneplanar SMGas was driven by Musical Fidelity X-A200 monoblocs.

First I powered up the normal Iso. This put together its customary crisp performance, with plenty of detail and ambience to recordings consider-

ing its £400 price. Swapping over to the Lithos'd stage brought with it gains in all areas, especially the bass which speeded up and became firmer and harder; any beat-heavy music now sounded faster and funkier.

Higher up things were sweeter and more detailed as well. Where strings and percussion could sound a touch fuzzy and indistinct on the non-turbo-charged Iso, its partner had greater focus and subtlety which was most blatant on hard-struck cymbals.

If you're a fan of image sharpness and spacious sound staging the Lithos A works in your favour there as well as it is substantially more transparent than the off-the-shelf item.

Ubiquitous regulator ICs like the LM317/LM337 can be picked up for around 60p. Selected types from Linear Technology go for about £3-£4. A complicated, discrete device such as the Lithos A is never going to be cheap - you're looking at £199 for a positive/negative set (£89 including fitting for the +5volt D), which thankfully includes fitting. Its impact on what emerges from the Iso is not small, and factory fitting is a major boon. If you're happy tweaking what you've got rather than buying again new, the Lithos A is one to add to the list●



Acoustic Precision
Lithos A £199

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Tel: 01483 267516

ROCK & POP

by Jon Clarke & Stuart Lenz



CYPRESS HILL
CYPRESS HILL IV
RUFFHOUSE 01-491604-11

In many ways the mavericks of the Rap world, Cypress Hill, those spliff-smoking, bong-banging rude boys from across the Atlantic, never really toted the guns and hos like many of their contemporaries. Their manifesto, if they had one at all, was stunningly simple: let's get stoned. And that's exactly what they did most of the time. They were, it's fair to say, the true Puff-Daddys of their generation.

Take their eponymous debut. This piece of musical experimentation swung between hazy languor and tripped-out paranoia; in a word, it was screwy. The problem is these qualities were further 'enhanced' on their next two albums, but with less success, and by now, their fourth effort, the recipe is losing its appeal.

IV starts well enough with its pseudo-war-zone reportage restyled for West coast residents on lead track 'Looking Through The Eye Of The Pig'. Examining the attitude of the police force from vocalist B-Real's viewpoint, this is hard-core

bolstered by an interesting line in social commentary. Empathy for the law? Not likely! At least this number possesses a good deal more subtlety than better-known anti-police tirades such as Ice T's 'Cop Killer' or '**** The Police' by NWA.

Normal service swiftly resumes, however, and it becomes apparent that B-Real, Bobo and DJ Muggs have little else new to say. So it's back to the gangsta talk: guns are great, especially Smith & Wessons (in 'Steel Magnolias') and women need not be handled with the utmost respect (in 'Freak Bitch', which is particularly offensive).

Also seeping in is an apparent taste for violence, particularly on 'Riot Starter' and the more worryingly titled '16 Men Till There's No Men Left'. This is basically a hitlist of people who've let the Rap community down. Not exactly going to stop the inter-Rap feuding is it?

Finally the band remember what made them famous in the first place and, as if on cue, give us the quirky and humorous 'Dr Greenthumb', a kind of sleepy, dancehall Reggae skit extolling the virtues of their favourite plant. But by then you don't really care.

To be frank, it's only Muggs' menacing cine-noir soundscapes, barnyard noises and Spaghetti Western samples that hold IV together. 'Checkmate' with its drum loop sampled from The Time's 'Release It' is one

solid example.

That these guys are still smokin' after all these years doesn't matter much. It's just that maybe they should put something a wee bit fresher in their pipe.



VARIOUS
VELVET GOLDMINE
LONDON 556-035-2

Has there ever been a better example of a soundtrack outstripping its film? Jackie Brown came within an inch, Reservoir Dogs was on a par, but Velvet Goldmine is definitely a twirl and leap above its celluloid partner.

Far from an album of odds and sods cobbled together for the grasping ad-men, Velvet Goldmine is a collection faithfully following the happenings on-screen. And "Happening, man!" is certainly what it is, even if you're 25 years late in appreciating Glam Rock.

Perhaps what really makes this album has something to do with the deft touches of Thom Yorke and Bernard Butler, who crop up all over the place. On the other hand, maybe it comes down to the nifty

production work of one Michael Stipe, a mate of Thom's apparently. Whatever, this collection of originals, covers and new songs is a worthy, albeit kitsch, concept bolstered by the choicest androgynous stars of the past and present. So we have Lou Reed, Marc Bolan, Jarvis Cocker, Thom Yorke and Placebo bustling to be heard.

Book-ended by Eno's catchy 'Needle In The Camel's Eye' and Steve Harley's 'Come And See Me Tonight', Velvet Goldmine is a neat workout of old and new. The sprinklings of older tunes come in the form of Roxy Music's seminal 'Virginia Plain' and Lou Reed's 'Satellite Of Love'.

Then there's the new doing the old, especially fine in the case of Placebo putting on the lurex to do justice to T-Rex's '20th Century Boy', or Donna Matthews giving an impressively gravel-throated treatment of New York Dolls' 'Personality Crisis' alongside Teenage Fanclub.

Then there's the new doing the new with songs penned for the film. The best of these by far is Pulp's sole contribution, 'We Are The Boyz', a vivid saunter down the Seventies' memory lane.

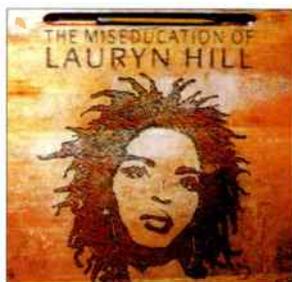
With the five songs from Velvet supergroup Venus In Furs, things get more complex. Including the increasingly hard-working Thom Yorke and Bernie Butler, this band blurs the line between fact and fiction.

ROCK & POP

It's a brave move and pays dividends with, for example, the operatic falsetto Thom lends to 'Roxy's Ladytron' - pure Bryan Ferry.

Elsewhere Wylde Rattz's recreation of the ear-bleedin' garage tramp 'TV Eye' is a gem. Including an original Iggy and the Stooges band member, the track is not so much sung as yelled by one Ewan McGregor (yup he's in the film), hamming it up as US Rock star Curt Wild.

With two fabricated bands backing two fabricated screen figures who are blatantly based on living people, the real poser is why film director Todd Haynes bothered when he could have hired the real Iggy and Bowie in person. Well, apparently Bowie and Iggy steered well clear of the film, Bowie actually refusing to grant the musical rights to use his songs. All of which proves that you don't need hotpants to boogaloo.



LAURYN HILL
THE MISEDUCATION OF LAURYN HILL

Not a name you've heard before? Check under The Fugees, for Lauryn Hill is one

of the stars of last year's hugest dancefloor sensation, 'Killing Me Softly ("One time, one time". Remember now?) And she's not the first. With former compatriots Pras and Wyclef Jean already engaged in their own solo projects (the former hamming it up with the superb Ghetto Superstar), it's about time the smooth, honeyed vocals of Lauryn got another outing. And on this showing, taking time out from The Fugees' cover-version hell is time well spent.

Rap purists aren't going to be her biggest fans. On Miseducation, the clap-along rhyming skills favoured by The Fugees have been dispelled in favour of extra rations of Soul, Gospel and Reggae. Of course there is still a small dose of Rapping, but it takes a back seat.

As a renaissance woman, Lauryn sounds as relaxed singing Reggae-tinged tracks as she does on ballads like 'To Zion', a reflection on the birth of her son whom she refused to abort despite pressure from her parents and friends.

Lauryn is clearly made of stern stuff as Miseducation demonstrates, particularly when she goes tramping off confidently over the huge range of genres cited as inspiration. 'Every Ghetto, Every City' is her tribute to Stevie Wonder's 'Living For The City' complete with Stevie-style fatback basslines; 'Final Hour' draws on Gil Scott-Heron and Wu-Tang Clan; Reggae comes naturally since so much of the album

was recorded in Kingston, Jamaica. 'Lonely Ones' and 'Forgive Them, Father' are strong, but the single 'Doo Wop (That Thing)' is an irresistible triumph.

The sampling is subtle in the extreme: Bob Marley's 'Concrete Jungle' gets a brief airing, as does The Doors' 'Light My Fire'. Certainly there is nothing to compare with Pras's 'Blue Angels', which didn't even make the effort to disguise its almost total reliance on the theme tune for Grease.

If, in essence, Miseducation is a righteously funky chronicle of her battle with the music industry, she demonstrates this in quite extraordinarily practical terms too by writing and producing virtually all the material herself. Others do lend a hand - there are duets with Mary J Blige ('I Used To Love Him') and D'Angelo ('Nothing Even Matters'), and Carlos Santana no less is roped in to provide a little Latin guitar on 'To Zion' - but this album should really be considered a personal achievement.

Overall this is a bold, sassy and intelligent debut, far beyond the dreary karaoke-Rap style of The Fugees. In approach, at least in the way that it tackles social issues, it has something in common with Marvin Gaye's seminal early Seventies album What's Going On.

Fortunately for Lauryn the only true lapse of taste is a karaoke cover of 'Can't Take My Eyes Off You' at the end

of the album. At her request it remains unnamed on the sleeve and apparently she was hopping mad that it had to be included at all. Still, in commercial terms Miseducation will doubtless be a colossal hit over here as it already is in the States.



ALANIS MORISSETTE
SUPPOSED FORMER INFATUATION JUNKIE

Ever wanted to be a shrink for a day? Well now's your chance. Just settle on the sofa, dim the lights and listen to Alanis 'Earth Mother' Morissette (the patient) whilst attempting to unravel the strange thoughts which inhabit that very valuable mind of hers. With a title like Supposed Former Infatuation Junkie, you weren't expecting anything middle of the road, were you?

With an albatross the weight of 28 million album sales around her neck, it's hardly a surprise this 20-something Canadian is a little screwed up. And so she was before, but one can only surmise that things are now worse.

Since the incredible

ROCK & POP

RECORD OF THE MONTH



PORTISHEAD
**PNYC: ROSELAND
NYC LIVE**

With the Mercury Prize-winning *Dummy* behind them and its eponymous follow-up still to come, Portishead took to the stage on July 24th 1997 for a "one night only, special live engagement" at New York City's Roseland Ballroom. Bringing with them a 20-piece

orchestra and their usual theatrics, naturally enough they brought the house down. *PNYC* documents the performance beautifully.

With tracks culled from the debut and the second album - which at the time was still months from inception - *PNYC* boasts some astonishing music, even if it is of the sophisticated coffee-morning variety.

First is 'Humming', the drawn-out intro of an orchestra warming up slowly enveloped by the usual chill of Portishead's winter. The effect is spooky but riveting, all the more so for Beth Gibbon's slow, measured, anguished tones breaking the ice.

Apparently the audience that day witnessed a virtually immobile band, with Beth stock still, hunched over the microphone and not exactly making light of the work. Despite this she gives her best, coming across as a sort of Jazz crooner impersonating Cruella de Ville, while the atmospherics throughout raise the spectre of John Barry.

Where the second album's songs are concerned, it is on the whole a relatively straightforward affair. Besides 'Humming' that means 'Cowboys', 'All Mine', 'Only You', 'Half Day Closing' and 'Over'. However, the songs pulled from *Dummy* are often completely transformed to amazing effect. 'Mysterons',

for instance, has an extended guitar solo, while 'Sour Times' is practically unrecognisable. Not only does it have an alarmingly Mexican ring to it with twanging guitars, but at the end Beth also abruptly caterwauls into the mic for an amazing climax. And 'Roads', usually a towering monument of serenity, is surreally peppered with handclaps.

With *PNYC*, Portishead seem to have come, seen and conquered the most difficult of customers, the US audience. And strangely, for an American crowd, they seem to listen in almost total silence. But hey, that's the spell that on a good day Bristol's finest cast over people.

success of her debut, *Jagged Little Pill*, two years ago, Morissette has become one of the world's hugest stars. Hers was the largest selling album of the Nineties - crickey, it makes her bigger even than Celine, Madonna and Whitney and, strangely, Madonna is her record-label boss.

Well, that's all great except that this, the ever-tricky second album, may not sustain her popularity for long. And by my reckoning she ought to be banged up for a good deal of psychoanalysis.

Jagged Little Pill was infested with highly confrontational yet highly commercial ditties, like 'Hand In Pocket'. Strong melodies and tough 'girl striking out on

her own' sentiments were the order of the day. The music was cracking and men were very much surplus to requirements. Sadly, its follow-up is just one big, mystical fudge and depressing dirge.

Most pertinently, it appears those pesky personal demons that everyone suffers from have, in the case of Alanis, been burrowing deep into her psyche. She's living proof that therapy endangers your health and questioning the great universal consciousness is best suited to the psychiatrist's couch and not to an album.

Take the one true stand-out track 'Thank U', the big Christmas single. While undoubtedly a tune of some note, its chorus speaks

volumes: "Thank you India, thank you terror, thank you disillusionment, thank you frailty, thank you consequence, thank you silence". She really is incapable of singing a wholly happy tune.

To her credit Alanis carries on regardless. With only a few tracks using Eastern-influenced loops, the ingredients remain essentially the same: Glen Ballard producing the Rock trappings, the familiar clatter of drums here and there and the screeching blaze of guitar (plus her loud and often angry vocals).

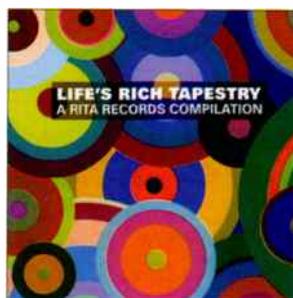
While she occasionally gets her claws into the usual suspects (parents, violent men, etc), it's the great intangibles like karma

('Baba'), the power of fame ('Front Row', 'One') and empathy ('Joining You') which offer a tiny glimpse of some light at the end of the tunnel. The problem is mood, and throughout the album's 17 tracks it never really lightens - there's just too much paranoia and far too many repetitive lyrics to digest easily.

For somebody reaching into herself for inner salvation, ruminating on Buddhism and enjoying 'yoga dates' et al, the peace found on *Supposed Former Infatuation Junkie* is a little disquieting to say the least. Alanis Morissette is undoubtedly up there with Tori Amos for heartaches and headaches. Sigmund, we need you now.

DANCE & AMBIENT

by Sara Davis



VARIOUS
LIFE'S RICH TAPESTRY
RITA RECORDS RITACD1

Despite blending cool melodies of a Jazzy/Electro nature into a massively palatable CD experience, this Rita Records compilation will be a small release that's unlikely to penetrate the Bristol sound/Electro-Funk market.

It's not an issue of quality here, but one of size and recognition - the only big track on this compilation is the Smoke City classic and MTV favourite, 'Underwater Love'. Other artists such as MB, Flywheel and Graham Jerimia are small, underground Jazz-Funk outfits without much of a following. On top of that, given the way the Smoke City album flopped, it's a mystery why Rita Records would take such a gamble with this release.

Market predictions aside, this is a very respectable showcase for Rita Records' registries - it takes a bit of getting used to but grows on you like a Spice Girls' single. The diversity of sounds on this disc extends from Trip-Hop (Smoke City's other, 'Beats For Dogs And Hoes', standing out for its yawning bassline and dusty Jazz) to pure Jazz-Funk with a smattering of scratch (eg,

Noize's 'A Jazzy Delivery').

James Mason's 'I Want Your Love' is probably the most retrospective tune of the collection, mixing raw Jazzy chords with chunky synth. Far, far cooler is Flywheel's gorgeous 'Slowdown', a moody, sexy, chilled-out flute/vocal duet that throws the rich Jazz-Funk tradition into a Café-del-Mar vibe.

This selection is actually a brilliantly quirky blend of refined Big Beat and Electro which would appeal across the board if enough people got to hear it. A relaxed addition to the Electro-Funk sector, but proof that the underground scene is still as fresh as ever.



PRODIGY PRESENT THE
DIRTCHAMBER SESSIONS
VOL 1
MIXED BY LIAM HOWLETT
XL RECORDINGS XLCD128

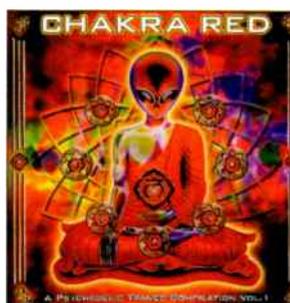
So the rumours may be true - it seems that the Prodigy's individual parts may be going their own separate ways, or at least testing the water with new solo projects.

This is Liam's baby, the first of a massive mix compilation much like the Chemical Brothers' collections. It features a whopping menu of about 50 Rockin' tracks, starting with a real Eighties Hip-Hop vibe but

moving through decades of Pop with the likes of Bomb The Bass, Public Enemy, KLF and some Sixties group called The Beatles. The Sex Pistols grace the selection too, and Barry White - who could have imagined the original spacehopper of love crooning alongside Johnny Rotten?

The mixing is very similar to the Jack Mix variety of medleys popular at the turn of the decade - short, sharp bursts of chorus knitted together in contrasting moods, the Grandmaster Flash cross with the Charlatans being a prime example. Babe Ruth's Rocky 'The Mexican' is another oddball, but despite being dropped into the Prodigy's 'Poison', the result really works. Still, no disrespect to Liam who was, after all, a DJ well before his producer/performer days.

The Prodigy was so ahead of its time we owe it to any member to buy all their records forever, even if they go completely mad and release stacks of Speed Garage.



VARIOUS
CHAKRA RED/CHAKRA BLUE
CAMELEON LC 7467

There are so many bizarre

features to this set of psychedelic Trance it's difficult to know where to begin. First and most important is the funny sales gimmick - a free perfume 'flacon' (that's tube to you and me) embedded in the spine of both CD covers for the benefit of stinky Trance crusties.

Second is the fact that this selection of pounding British Trance, most of which is swiped from major labels such as Twisted, Dragonfly, Flying Rhino and so on, comes mixed and packaged from Germany. Then there's the way in which, rather than releasing a double-CD, Cameleon are pushing the two sides as separate CDs.

Less surprising is the alien/Buddha artwork which is really unimaginative, especially when you take on board the dubious New Age title. When are Trance compilers going to come up with a new image?! The only people on the planet still into this Goan Trance rubbish are the Goan hippies who are so isolated they haven't heard a new record in years.

Musically there are few surprises, the opening track 'Astral Warrior' from Chi-A.D. promising lush, intergalactic Trance before lapsing into a cringe-worthy helping of cheesy Bladerunner-style samples ("I've seen things"). Until midway into the first volume the musical diet is hard and fast psychedelic Techno and nothing else. All in all it makes for dull listening, although the second volume, Chakra Blue, features

DANCE & AMBIENT

RECORD OF THE MONTH

VARIOUS

THE CROSS SECTION COLLECTIVE

CROSS SECTION RECORDS

Whilst the rest of the world is busy trying to initiate a new trend or breed of Dance styles, Cross Section Records is toiling away on a good, old-fashioned House sound that's incredibly refreshing and innovative without even knowing it.

Born out of Baby Blue Records, this label is relatively young and consists mainly of Chris Simmonds' vision; a laid-back, deep House sound with experimental beats, Disco elements and a sophisticated Detroit feel to it.

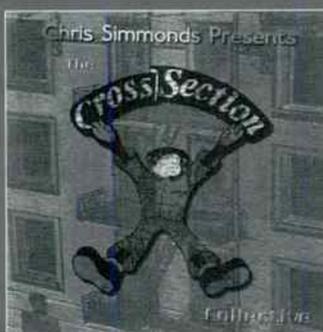
The difference between this album and many other current House collections is that the stylistic elements actually complement each other rather than jostling for dominance. In other

words, the sonic concept is a natural one that seems to have evolved out of a true appreciation and understanding of House, rather than being thrown together for the hell of it. It sounds like a product of diversity and experience, and it is.

Chris Simmonds launched Cross Section after an extensive tour of the world's most underground Dance sub-cultures. He then signed featured artists The Diggers, Private Funk, Indica and DJ Assassin. After adding his own smoochy, minimalist House tracks to the melting pot, seasoning them with filtered samples and running EQ and panning effects through the mix-down,

he created this, a truly engaging, laid-back and progressive House CD.

Cross Section's sole weakness is that it's not as uplifting as House can be.



Despite working to a fair pace it's a very mellow piece of music with no space for breakdowns or big, in-kicking bass. On the plus side, Cross Section is wonderfully versatile, the sort of CD you could easily listen to in the car or at home without getting bored; it also happens to be the

sort of music you could really get into in a club. One of the few quality releases on the market at present, The Cross Section Collective is a truly solid fusion of deep House at its best.

a more bouncy Trance set, some hailing from Europe.

Overall there's very little to inspire here, although the two-CD set would make for good mixing practice (as soon as they start distributing CDs in India, that is) as the tracks are all similarly paced. This is a series best kept for Goan hippy crusties wishing to carve out a career as top Trance DJs.



TEMPLE OF SOUND
BLACK ORCHID
SCHTUMM PRODUCTIONS
SCHTUMMCD011

One of the most powerful Dance/Rock crossover tracks of all time was a tune called 'Templehead'. It featured haunting tribal chanting over an archetypal Dance beat and was responsible for diverting thousands of head-banging Indie kids down the Dance music path.

The collective behind the monster record, named Transglobal Underground, embraced a truly multi-cultural philosophy; the rhythmist was a white, bongo-playing Rapper, the lead singer a Sari-clad Indian woman. The result of such diverse tastes and influences was a veritable hotch-potch of sounds and styles which, nine times out of ten, unfortunately amounted to non-commercial innovation. Templehead, it now transpires, was the tenth time, the flash of genius, the one-hit wonder.

So now that two of the legendary Transglobal personalities have gotten together again, you might be expecting to witness a blend of key influences, of Neil's raw, percussive flavour with Count Dubulah's rolling basslines, screaming guitars and Mediterranean nobility. But it's not actually quite that simple.

Temple Of Sound is another multi-cultural production featuring heavy doses of near-Hardcore Drum 'n' Bass, pulsating Dub, Hip-Hop, Rap, layers and layers of percussion as well as Afro-Cuban jungle noise and Cuban influences. However, it's that Rock/Dance crossover which really comes through on this CD, epitomised by dreamy, languid tunes (such as the title track 'Black Orchid') that rely on weighty instrumental basslines with a

subtle Dance beat and Indie-style vocals akin to those of Nick Cave.

'Sunstone' goes further by mixing Thrashy riffs with traditional Oriental melodies. Elsewhere the musical vibe tests the opposite extreme with tracks such as 'Three Dredds And Brew', a Raptastic, rave-orientated classic.

It's this diversity of stylistic energy that suggests Black Orchid will be a brilliant live experience, with either the acoustic/deep vocal tack or the high-energy/Drum 'n' Bass approach. But as an album, Temple Of Sound is near impossible to classify; like the previous Transglobal Underground works, this is another multi-cultural coming-together with a 10% mainstream-compatibility rating that can't hide its special talents.

T+A
elektroakustik



Elite sports, made even more so

What subliminal advertising messages are contained in this apparently innocent sporting picture? T+A reveals all. Firstly the Audio Triax double-shielded coaxial cable has 330 silver OFC wire strands, unique to T+A. Secondly the CD 1220 is the first CD player in the world with a two-way converter. Thirdly 'Audio' magazine puts it in the five-figure price bracket, although it barely costs a third as much. Fourthly listen to both, that's the hammer!

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JAZZ

by Ian Nicolson



VARIOUS
TOWN HALL CONCERT
BLUE NOTE 7243 4 9781 I

Does the world need another recorded version of Cantaloupe Island? Slip this reissue of the 1985 Blue Note relaunch into your player and, with Herbie Hancock, Ron Carter and the inimitable Tony Williams kicking as the rhythm section, the occasion is one of such joyful reunion the answer is plain.

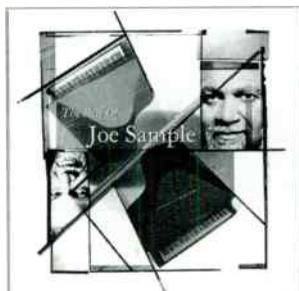
Founded by the evening's guest of honour, Alfred Lion, way back in 1939, Blue Note can lay claim to being the greatest Jazz label ever. The thirty or more Sixties new-bloods invited to play in 1985 by label president Bruce Lundvall and producer Michael Cuscuna constituted a roll-call of post-war stars. Just six can be heard on this disc.

Hancock, Carter, Williams, Freddie Hubbard, Joe Henderson and Tony Williams are joined by Eighties new blood vibist James Newton, but their delectable playing is like enjoying the finest meal in the finest company, yet at mid-price.

Always anchored and powered by Ron Carter's dancing or dreaming bass, the other players switch over just five of their own definitive tunes. Each carries echoes of

the players' careers - so Dolphy, McCoy Tyner, Miles and Monk are all just a memory away. And the tracks themselves, neatly stitched together from different sections of the evening, embrace a freshness and sheer smiling bravado that escapes any hint of masterclass.

From the delicate cinematic romanticism of vibist Hutcherson's 'Bouquet' to the percussive and snaky tour-de-force of Henderson and Hubbard trading Bop lines on 'Recorda Me' or the propulsive, muscular R 'n' B of 'Cantaloupe Island', this is a fitting tribute to an explosive chapter in Jazz history. It's also one that reads as though we've just barely turned the page to find out what happens next.



JOE SAMPLE
BEST OF
WARNER BROS 9362 46937

In which the old master of the slow burn shows off the intuitive command of rhythm and melody that has been his hallmark since the hard-charging Gulf Coast Sound of the Jazz Crusaders reintroduced the dancehall into late-Fifties Jazz.

Although he's best known to Pop audiences in the UK as the man who put the tasteful tinkle into Michael Franks'

Seventies Pop/Jazz poetry (and co-wrote 'Street Life' for Randy Crawford and the Crusaders in the Seventies), Sample's 1998 dates at London's Jazz Cafe reaffirmed his status as a giant of elegant, funky and apparently effortless invention.

The 11 tracks here offer a 'no-filler, no-noodling' introduction to his six Warner Bros' albums, with the emphasis on the 'Dinner Jazz' side - the tracks that have made him a staple of US Jazz radio. But what stands out most of all - past melody, playing and finger-snapping Funk - is Sample's ability to blend Blues, R 'n' B and Jazz into one soulful, seamless, organic whole.

Next time you need to be inspired, take two of these with a glass of something and go straight to first base.



SPHERE
SPHERE
VERVE 557 796

Back in February 1982, when ex-Monk sidemen Charlie Rouse and drummer Ben Riley began the sessions for the first album by Sphere - intended as an homage to the genius of the then-reclusive Thelonius - they had yet to learn he had died the very same morning.

Joined by pianist Kenny Barron and drummer Buster

Williams from that first album, saxist Rouse and Riley continued to record and tour their takes on Monk's exceptional compositions, but the band broke up five years later. Soon afterwards, Rouse himself died, and it seemed that the Sphere quartet would end there.

Since then, Monk's reputation has only grown stronger and pressure has steadily built for a Sphere reunion. And here it is, with the addition of a vigorous and top-form Gary Bartz on alto and occasional soprano saxes.

Kicking off with Monk's 'We See' (and 'Hornin' In' later), the coalition of three of the most celebrated 'supportive' players and the adventurous, raw-toned Bartz generates a rich, multi-layered and swinging music that draws even more impact from outstanding engineering and mastering. Buster Williams' cashmere and cedar bass notes are particularly well-served, and the soundscape skilfully bridges the gap between conveying intimate sonic detail and capturing potent ensemble playing.

Two Bartz originals, a lyrical Strayhorn gem from the Ellington era and a Barron elegy (plus a playful take on 'The Surrey With The Fringe On Top') round off a recording that does simple justice to the genius of the man who prompted their formation, and adds lustre to Monk's position as a master of 20th-century music. But more than that, it's a hell of a band having a hell of a time. Can we have another one soon please, gentlemen?

JAZZ

by Simon Hopkins



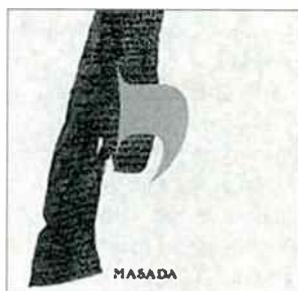
GARY SMITH
FORGOTTEN ROOM WITH CHAIRS
FMR 002

Forgotten Room With Chairs, an album of solo electric guitar improvisations by cult British guitar player Gary Smith, comes hot on the heels of Mass, the eponymous debut of his power trio that features bassist Gary Jeff and drummer Lou Ciccotelli (of Ice, Eardrum and Laika). In fact, this album predates the Mass sessions. It was recorded in 1996, under the encouragement of Trevor Taylor, who was inspired to link Smith's improvising with the photographs of Dylan Collard.

Hearing Smith's playing in this context is certainly a challenge, as he eschews much of the electronic paraphernalia that can make solo guitar palatable. Instead, he plays with a very dry stereo sound, at some times making the thing feedback for all its worth, at others playing lightly shimmering chords that hover on the edge of pretty but always with a threat. Elsewhere, his trademark flurries of dissonant, flying notes, often performed pianistically with both hands on the fretboard, are as mesmerising as ever.

Another fascinating piece

of work by one of the most interesting innovators on the world's most played instrument.



JOHN ZORN
MASADA (TEN) - YOD
DIW 083

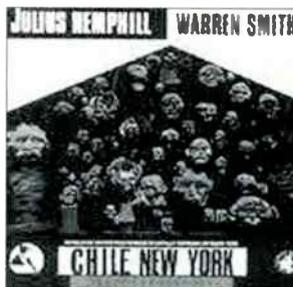
John Zorn's Masada project has, without question, been one of the most significant achievements in contemporary Jazz in the last decade. For those readers not yet in the loop, Masada is at once a group (bassist Greg Cohen, trumpeter Dave Douglas, drummer Joey Baron and Zorn himself on alto), an on-going series of studio albums and, considered as a single piece, a work dedicated to Asher Ginzberg, the father of Cultural Zionism.

The project takes its name from one of the greatest acts of courage and defiance in human history - the Jewish mass suicide at Masada in AD72.

Musically speaking, Zorn's Masada compositions seek to combine the melancholy and pride of various Jewish Folk musics with the sound of the classic Atlantic-period Ornette Coleman band. The results have been staggering: a music

of rare passion, virtuosity and originality.

Yod is part ten of the series and, apparently, the last studio album of the set; I've heard that live Masada albums remain to be released. Anyway, for followers of the series this is, of course, essential, and for newcomers it's as good a jumping-on point as any. If anything, there's even more fire at the heart of these pieces than normal, with several of the tunes breaking down into freewheeling abstract jousting sessions. An awesome end to a genuinely towering achievement.



JULIUS HEMPHILL AND WARREN SMITH
CHILE, NEW YORK
BLACK SAINT 120146-2

This rather wonderful album had a peculiar genesis. Chile, New York was an exhibition of ceramic sculpture by artist Jeff Schlanger put on in New York City in May, 1980. For the opening of the exhibition - which featured 400 extraordinary, individually-formed heads, busts and figures based on the artist's travels in Chile in the early Seventies - Schlanger asked Jazz reedsman Julius Hemphill

and percussionist Warren Smith to perform a piece which, after this initial live performance, would be played as a tape in the exhibition space, turning the whole thing into something closer to an installation than a straightforward collection of sculpture.

Hemphill and Warren were big, big figures in the then-recent history of cutting-edge contemporary Jazz. Applying his talents to a whole bunch of tuned and non-tuned percussion, Smith is a key player in the circle of musicians to have emerged from the Chicago-based Association For The Advancement Of Creative Musicians (or AACM), and has played with such crucial Free Jazz figures as Muhal Richard Abrams and Rahsaan Roland Kirk. The much-lamented Julius Hemphill was a founding member of the acclaimed World Saxophone Quartet, where his playing was perhaps the most ethereal.

The music Hemphill and Smith conjured out of thin air for Chile, New York is quite wonderful. While retaining the core freedom of freely-improvised Jazz in terms of mood and orchestration, it deserves to be seen more as a tone poem (and as such possibly has much in common with the Georgia Fawn-period work of their contemporary and sometime-colleague Marion Brown). By turns edgy and beautiful, the piece is as visually evocative as Free music ever gets. It's great news that this session has seen the light of day as a CD release at long last.

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CLASSICAL

by Peter Herring

Treasures from 17th-century Germany uncovered. Paris rendezvous for two young virtuosi. Canadian pianist becomes involved with colourful Frenchman. Danish legend unmasked at last. And have you heard about the 74-year-old Czech and his affair with a woman half his age? All will be revealed.

RECORD OF THE MONTH

CARL NIELSEN

Maskarade - comic opera in three acts
Aage Haugland;
Susanne Resmark;
Gert-Henning Jensen;
Bo Skovhus; Michael
Kristensen; Kurt
Ravn; Henriette
Bonde-Hansen;
Marianne Rorholm
The Danish National
Radio Symphony
Orchestra and Choir;
conductor, Ulf
Schirmer

DECCA 460 227-2 (2-CD SET)
 (DDD/144.55)

Carl Nielsen's *Maskarade* is without doubt one of the most endearing and tuneful of comic operas, yet this new Decca production is only the second recording to appear, at least to a wide public. Perhaps if the work had been written in Italian, French or German rather than Danish it would have been more widely performed since its Copenhagen premiere in 1906. Then again, it is only in relatively recent times that Nielsen's symphonies have entered the standard concert repertoire, and they have no linguistic obstacles to overcome.

The comedy *Maskarade* was written by the Danish



playwright, Ludvig Holberg, in 1723, a time when the masked ball, or masquerade, was the craze of Copenhagen society. For Nielsen's opera, Holberg's text was reworked as a libretto by the composer's friend, Vilhelm Andersen. Some had misgivings about such tampering with the work of a national icon like Holberg, but the Danish public soon embraced *Maskarade*, its melodies becoming popular well beyond the confines of the opera house.

The subject of a masquerade gave Nielsen a heaven-sent opportunity to include all manner of songs, dances and similarly entertaining diversions. The style mixes a neo-classicism with delicious pastiche and unashamedly draws on 19th-

century models, Wagner's *Meistersinger* and Verdi's *Falstaff* the most obvious influences.

At its broadest level, *Maskarade* is a boy-meets-girl story with a twist in the tale; at a deeper level, it concerns itself with the symbolism embodied by the masquerade itself, where the masks hide reality, all are equal when hidden behind them, and all bets are on. Nielsen makes this point through the person of Henrik the hero, Leander's valet. Superbly sung here by Bo Skovhus, Henrik is a character worthy of comparison with another observant and perceptive servant, Leporello in Mozart's *Don Giovanni*.

Skovhus's is the most familiar name among the solely-Scandinavian cast of soloists, all of whom infuse

their roles with commitment and enthusiasm. Notably convincing is Aage Haugland as the strait-laced Jeronimus who strives in vain to prevent his son, Leander, from participating in the unbridled pleasures of the masquerade and, by implication, discovering a new moral and social freedom.

In every respect, this is an outstanding recording, scrupulously prepared and executed by Ulf Schirmer using a new edition of the score especially made for this production. Schirmer's direction brings a sparkling momentum and keen dramatic edge not always encountered in studio opera productions, and the Copenhagen recording is up to Decca's usual high standards, with finely-judged balance and presence.

Nielsen enthusiasts will relish the echoes of his symphonies in the opera's harmonies and tone colours, others will hear the freshness and vitality which marks Nielsen out as such an original musical voice. *Maskarade* might have gone on to become Denmark's national opera, but the appeal of its cheerful humour and warm humanity is universal.

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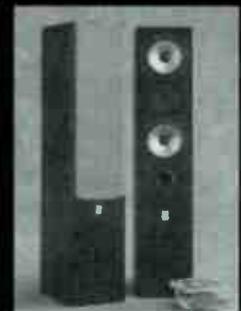


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CLASSICAL



LEOŠ JANÁČEK
**String Quartet No1,
 'The Kreutzer
 Sonata' / String
 Quartet No2,
 'Intimate Letters'
 Guarneri Quartet**
 PHILIPS 456 574-2
 (DDD/41.20)

Those who, like me, grew up with the Quartetto Italiano's recordings of Beethoven and Schubert will concur that Philips' recording engineers mastered the art of successfully taping the string quartet over 30 years ago. This new recording of the Janáček quartets, made at the American Academy of Arts and Letters in New York in April 1996, demonstrates that present-day Philips engineers - in this case John Newton - are maintaining the standards set by their predecessors. As ever, the sound here seems effortlessly natural, capturing all the rich and unusual sonorities of these two works. The performances, however, are more problematic.

Both quartets are products of Janáček's maturity but, where one might expect introspection, reflection and abstraction, these works are bristling with intensity and passion, and are quite unlike any other quartets in the repertoire. Both deeply

personal compositions, the First Quartet is a kind of musical narrative, drawing on the themes of adultery, betrayal and revenge to be found in Leo Tolstoy's novella *The Kreutzer Sonata*. The Second Quartet, subtitled 'Intimate Letters', takes the listener even further into the composer's psyche. This is the 74-year-old Janáček expressing, and perhaps attempting to come to terms with, through the means most accessible to him - music - his obsession with Kamila Stosslova, a woman 38 years younger. Given the powerful, barely-contained emotions that lurk behind these quartets, the most effective performances are those that get under the skin of the scores. For all the urgency of their playing, the Guarneris are just a shade too civilized in what are effectively musical psycho-dramas.

Technically, the playing throughout is exceptional and the lyrical passages are lovingly shaped and phrased. Yet the overall impression remains episodic rather than one of organic descriptive development as each 'story' unfolds. This is where I find the Lindsays, on the ASV label, preferable; they also take greater expressive risks in what, above all, is music of extremes, and their performances are consistently involving.

In many respects, the Guarneri Quartet has much to offer, though not, it has to be pointed out, in the way of value for money; with the Lindsays you get a full 33 minutes' more music in the shape of Dvorak's *Twelve Cypresses*.



OLIVIER MESSIAEN
**Préludes/Quatre
 Etudes de Rythme,
 Nos 1 and 4 (Ile de
 Feu, Nos 1 and 2) et al**
 Angela Hewitt, piano
 HYPERION CDA67054
 (DDD/75.48)

This recording represents an intriguing departure for the Canadian pianist Angela Hewitt, whose name is most commonly associated with the music of J.S. Bach (and where she has proved an outstanding interpreter). Here, she enters the very different sound world of Olivier Messiaen, beginning with the eight *Préludes* written in 1928-29 when Messiaen was in his early 20s. Though clearly influenced by the piano *Préludes* of Claude Debussy (down to the use of poetically descriptive titles) there are already several pointers to what would evolve into one of the most original and distinctive voices in 20th-century music.

Messiaen's *Préludes* bear the stamp of his own unique sense of tone colour and harmony. Like the Russian mystic-composer, Alexander Scriabin, Messiaen 'saw' a clearly-defined palette of colours associated with musical sonorities. For

example, the first of his *Préludes*, *La Colombe* (The Dove), which has E Major as its tonal centre, is described in hues of orange and violet.

In comparison with Messiaen's other piano works, these early *Préludes* are rarely performed but, in Angela Hewitt's hands, they emerge as something infinitely more substantial than 'apprentice pieces'. Her playing of the second *Prélude*, *Chant d'Extase dans un Paysage Triste* (Song of Ecstasy in a Sad Landscape) is wonderfully poetic. She also relishes the two *Etudes de Rythme*, *Ile de Feu*, Nos 1 and 2, and the result is breath-taking.

Much the same can be said of the extraordinarily demanding *Regard de l'Esprit de Joie*, one of three pieces Angela Hewitt plays from the cycle *Vingt Regards sur l'Enfant-Jesus*, one of Messiaen's most important and inspired instrumental compositions. The rapt, perceptive playing in the longest of the three, *Le Baiser de l'Enfant-Jesus*, and in *Regard de la Vierge*, prompts the hope that Hyperion will persuade her to record the entire work. It would provide formidable competition for the excellent Joanna MacGregor on the sadly now-defunct (at least for new recordings) Collins Classics label.

As in her Bach recordings, Angela Hewitt offers playing of sensitivity, precision and clarity, and, where called for, no little power, as well as evident understanding. The recording does full justice to the nuances and the impact of her playing.

CLASSICAL



FRANCIS POULENC

Cello Sonata

GABRIEL FAURÉ

Elegie in C minor, Op24, et al

FREDERIC CHOPIN

Cello Sonata in G minor, Op65

Peter Wispelwey, cello; Paolo Giacometti, piano

CHANNEL CLASSICS

CCS10797 (DDD/67.30)

The combination of two of the leading performers on the Channel Classics label proves a potent one. Given a programme that seems to suit both players, temperamentally and stylistically, this first collaboration between the Dutch cellist, Peter Wispelwey, and the Italian pianist, Paolo Giacometti, has all the feel of spontaneous music-making and of an equitable partnership.

A Parisian flavour pervades their recital: Poulenc and Fauré were French and spent the greater part of their careers in the French capital; the Pole, Frederic Chopin, was the darling of the fashionable Paris salons in the 1830s-40s.

Francis Poulenc, the centenary of whose birth falls this year, published his Cello Sonata in 1948. It was dedicated to the cellist Pierre Fournier, with whom the composer frequently performed

the work in concert. The sonata is nothing if not eclectic: there are echoes of Fauré, Ravel, Chopin and even Prokofiev as well as - from the opposite extreme - of dance-hall and café melodies and popular song. Notwithstanding this diverse mix, the work has a coherent, distinctively individual voice, full of sharp wit and sinewy energy.

The same can be said of the under-rated Chopin sonata, a one-off in the midst of his vast output of mainly solo keyboard music. As with Poulenc and Fournier, it was the product of a friendship, in this instance with the cellist August Franck. Dating from 1846, the Cello Sonata is a supreme example of Chopin's mature style and evidence of his mastery of large-scale forms (something which tends to be sidelined by the emphasis on his piano miniatures). An expansive, aristocratic opening movement leads to a dashing scherzo and a limpid, nocturne-like slow movement. The finale, with the rhythm of the Polish Mazurka never far off, is full of high spirits.

Between the sonatas, Wispelwey and Giacometti insert three short pieces by Gabriel Fauré, including the heartfelt and haunting Elegie. Here, too, the playing is utterly seductive, and its technical quality is matched by the recording: full-bodied, with a rich bloom to both piano and cello, immediate and well-balanced, giving equal weight to the instruments. Channel Classics would do well to encourage similar collaborations between these two outstanding young virtuosi.



GERMAN BAROQUE
CANTATAS

Works by Ignazio Albertini; Johann Christoph Bach et al
Andreas Scholl, countertenor; Concerto di Viole; Basel Consort
HARMONIA MUNDI HMC
901561 (DDD/71.50)

The German countertenor, Andreas Scholl, is one of the voices of the moment. The 31-year-old has forged an enviable reputation in recent years on the strength of some superlative concert performances and many distinguished recordings for the Harmonia Mundi label.

This CD finds Scholl in largely unexplored territory, but one that yields similar, if unexpected, riches: German sacred music from the generations preceding Johann Sebastian Bach. Scholl's explorations prove varied and captivating, and reflect the enduring Italian influence on German music of the 17th century.

The most familiar names among the composers here are the Dane, Diderik Buxtehude, whom Bach revered, and Heinrich Schütz. Buxtehude's Jubilate Domino is joyous delight, with its piquant accompaniment of viola da gamba, bass viol, lute and chamber organ. Indeed, the

accompaniments, supplied by various combinations drawn from the viols of Concerto di Viole and the violins, lute and organ of the Basel Consort, contribute enormously to the appeal of this recording.

Works by Schütz, from the Kleine geistliche Konzert of 1639, open and close the programme, and both demonstrate the remarkable qualities of Scholl's voice. It isn't simply a matter of technique, although his purity of tone and precision of line are stupefying, but of expressive strength and an often surprising emotional range. The latter is nowhere better appreciated than in the Klag-Lied (Elegy) which Buxtehude published in 1674 in memory of his father, and in the lament Ach daß ich wassers g'nug hatte (Oh, had I but water enough) by Johann Christoph Bach. This is a work whose dramatic intensity and harmonic daring would have surely earned the admiration of the composer's second cousin, Johann Sebastian.

No less fine is the Salve Regina of Giovanni Rovetta, Monteverdi's successor at St Mark's, Venice. It is sung here in a version by the Lubeck organist, Franz Tunder, and reworked as Salve mi Jesu, with all references to the Virgin Mary (the Regina of the original) expunged to make it acceptable to Lutheran protestant ears. Andreas Scholl makes an eloquent case for this rarely-heard repertoire. Each hearing, aided by a beautifully clear, detailed and focused sound quality, only enhances appreciation of both the music and the irresistibly persuasive performances.

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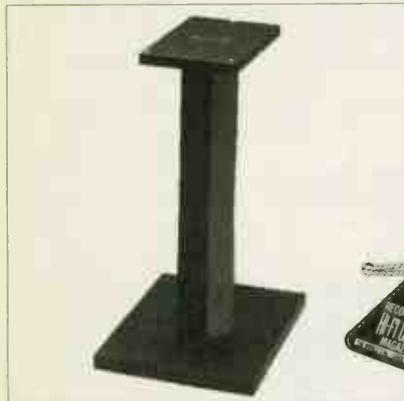
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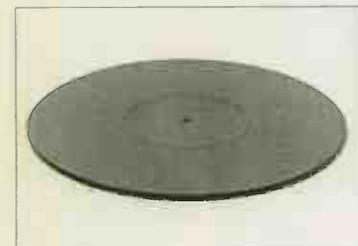


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Audiolab 8000S	xd	699.90	559.00	Linn Mimik	xd	875.00	700.00
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B & W P5	xd	875.00	745.00	Linn AV 5103 Processor	xd	4850.00	3880.00
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Cyrus SL	xd	398.00	298.00	Linn AV 5140 spkrs	xd	2000.00	1650.00
Cyrus PRE	sh	648.00	325.00	Mission 754F	xd	1298.00	799.00
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New Items & Old Items Sale

In the December issue we referred to the new AVI Gravitron speakers, the Inner Sounds Eros Electrostatic Hybrid's and the Michell Orca/Alecto pre-power combinations, so please refer to that issue for more detail. The Gravitrons should be here next week, so by the time this comes out we should have had time to have a good listen, so do ring and enquire! Both the Gravitron and Eros cost £4K, but early next year there will be a new smaller version of the Eros, called the Isis at £2K, but will be purely passive.

Sale of Ex-Demo/P.E. Equipment	Price	Retail
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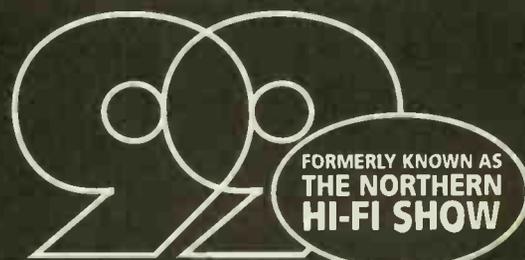
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Sonographe SC1 Pre	£1250	£450
Sugden Optima 140 (2X70w Intgd)	£770	£448
Thorens TTP2000 Mk1 Pre (Ex Dem)	£499	£397
Thorens TTA2000 Pwr (Ex Dem)	£599	£497
Threshold S300 (Nelson Pass)	£1500	£995
Thule PR200 (Pre) + 2 X PA200 (pwr)	£2700	£1598
Yamaha DSP - A2070 A/V	£1499	£993
Yamaha DSP - A3090 A/V	£1499	£1093

AMPLIFIERS - VALVE

Art Audio Quintet (Monos)	£2000	£878
Audio Innovations 200 (13w Pwr)		£295
Audio Innovations 200 (Pre)		£298
Audio Innovations 1.1 (Pre)	£369	£269
Audion Sterling (MM Phono stage)	£350	£250
Audio Note P3 (300B Power)		£1298
Audio Note OTTO	£1350	£795
Audio Research V70 Pwr (Ex Dem)	£4480	£2487
Audio Research VT-60	£2000	£1295
Audio Research V140 (Mono-blocks)	£9000	£3998
Audio Research SP14 Pre (silver)	£3300	£1295
Audio Research D250 Power		£2498
Audio Valve Baldur (200+200 watt mono-blocks)		
UNWANTED PRIZE!!	£10,000	£5298
Audion Sterling Integrated	£595	£398
Avantic SPA II Vintage valves		£168
Cary SLA-70 MkII (Pwr)		£998
Croft Series 5 (Power)		£495
Copland CTA501 Power amp	£1800	£998
EAR 859 Integrated - beautiful!		£1298
Gordon Welford (Pre) Hand made, hard wired		£448
Muse Model 300 (Mono powers)	£2150	£1657
Graaf WFB 2 Pre (Ex Dem)	£1195	£897
Luxman LX33 (Integrated)		£698
Muse Model 300 (Mono powers)	£4400	£2898
Papworth Audio M100 monoblocks	£3600	£2600
Papworth Audio M200 monoblocks	£5200	£3998
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(Up graded and built by Hi-Fi World staff)	£1000	£748
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Denon TU660 Tuner		£145
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Harmon Kardon TU950		£158
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Leak Delta AM/FM Tuner		£75
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Marantz SD55 3 hd / 2 mtr	£400	£195
Myryad T/40 (Ex-dem)	£399	£294
Nakamichi 481Z		£298
Nakamichi 630 Tuner/Pre-amp	£500	£295
Pioneer RTU11 1/4 + 1/2 track 10" R to R		£598
Pioneer F91 Tuner		£395
Quad FM3	Choice from	£95
Revox A77 1/2 track		£POA
Revox B77 Mk's 1 & 2 (Call for details)		£POA
Sony TCK 611S	£330	£218
Sony TC399 3 speed 1/4 track 7" R to R		£220

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Alchemist Nexus APD3+A CD Player	£600	£425
Arcam Delta Black Box (DAC)		£148
Arcam Delta Black Box 5 (DAC)		£248
Arcam Delta 170 (Trans)		£198
Audiolab 8000CD	£1000	£635
Audiolab 8000CD (Ex-dem)	£1000	£749
Audiolab 8000CDM Trans	£1400	£985
Audiolab 8000DAC	£1000	£550
Audio Alchemy Vac-In-The-Box	£249	£175
Audio Alchemy Drive 3	£695	£498
Audio Alchemy DACMAN (Ex dem)	£149	£117
Audio Alchemy DAC-IN-BOX (Ex dem)	£229	£177

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Audio Synthesis DAX Piano Blk	£1495	
AVI 2000MC Reference CD	£1300	£898
Cambridge Audio DAC Magic 2i	£200	£128
DPA Little Bit 2 (DAC)	£250	£148
Denon DCD1650 (CD Player)	£600	£295
Kinshaw Overture DAC		£195
Krell SBP64X DAC	£9900	£1798
Linn Karik (CD)	£1850	£1100
Linn Numerik (DAC)	£1500	£795
Marantz CD17	£800	£538
Marantz CD80		£230
Meridian 200	£818	£425
Meridian 203 DAC	£560	£195
Meridian 206	£995	£495
Meridian 263 DAC	£650	£395
Meridian 500 Transport (Old style)	£1025	£793
Meridian 508 20 Bit (Ex-dem)	£1650	£1293
Meridian 563 DAC	£865	£468
Meridian 563 DAC (Ex-dem)	£865	£693
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Monarch DIP Jitter Buster	£245	£188
Monarch DIP Jitter Buster (Ex-dem)	£245	£197
Musical Fidelity Digilog DAC		£98
Musical Fidelity A2 CD (Ex-dem)	£499	£397
Musical Fidelity E61 CD (Ex-dem)	£299	£247
Myryad T-10CD (Ex-dem)	£399	£294
Myryad T-20CD (Ex-dem)	£599	£494
Naim CDS System (Ex-dem)	£3940	£2995
Naim CDI	£2000	£1178
Naim CD2 CD Player	£2000	£1378
Pioneer PD91 CD Player	£900	£495
Pink Triangle Da Capo	£1500	£975
QED Digit Reference	£450	£284
Rega Brio (Ex-dem)	£229	£174
Rega EXS (Ex-dem)	£599	£444
Roksan DAC 1		£250
Roksan Atessa (Trans)	£2300	£575
Rotel RCD971 CD	£400	£293
Rotel RCD930AX CD	£200	£143
Sugden SDA-1	£800	£528
Teac VRDS10 CD Player	£770	£538
Technics SL-P1200	£1100	£498
Theta TLC	£230	£178
Theta TLC Jitter Buster (Ex-dem)	£229	£177
Theta Cromia HDCD DAC	£950	£797
Trichord Pulsar 1(DAC) (Ex-dem)	£1195	£658

Castle Avon (Ex-dem/Yew)	£849	£647
Castle Chester (Yew)	£995	£545
Castle Durham (Inc stands - R/wood)		£245
Castle Harlech (Ex-dem/Yew)	£995	£879
Castle Howard (Ex-dem/Walnut)	£1199	£847
Castle Howard Mk2 (Ex Dem)	£1200	£947
Castle Pembroke (Black Ash)		£200
Celestion SL6 + stands		£198
Diesis Solitaire		£150
Epos ES12 Walnut + stands	£500	£375
Epos ES14 Ex-dem	£675	£474
Epos ES14 Black + stands		£428
Epos ES30 Rose Ex-dem	£2550	£1997
Gale 301 (Black)	£250	£159
Harbeth HL4 + Stands	£1000	£398
Harbeth HL5 Teak		£798
Horning Agathon Sig Bronze	£3500	£1600
KEF 104/2 (Teak)		£795
KEF 107 + Cube (Walnut)		£1395
KEF Model 100 (Ex-dem)	£359	£254
KEF Coda 9 (Ex-dem)	£299	£224
Kelly KT2 (Ex-dem)	£699	£597
Kelly KT3 (Ex-dem)	£1199	£897
Leak Sandwich (Classics in good cond)		£135
Leak 2060		£125
Linaeum LFX	£649	£445
Linn Isobarik		£750
Linn Kan (Black Teak)		£295
Linn Kaber (Active) Ex-dem	£3000	£2393
M&K VX7 MkII Sub (Ex-dem)	£450	£344
Magna Planar SMGA (Blk & Chrome)		£450
Magna Planar SMGA (Wood/Brown)		£450
Meridian M30 Active (Black)	£900	£525
Meridian DSP5000 Blk (Ex-dem)	£3495	£2797
Meridian DSP5000 Rose (Ex-dem)	£3495	£2793
Meridian M2500 Sub (Ex-dem)	£1695	£1297
Mission 707 (Walnut)		£100
Mission 727 (Teak)		£158
Mission 733 (Black)		£155
Mission 752 (Rosewood - marked)		£250
Mission 770 (Mahogany + stands)		£225
Monitor Audio R352 (Teak)	£395	£248
Monitor Audio Studio 60SENew/Blk	£5000	£2995
Musical Fidelity MC2		£150
Naim Intro (Ex-dem)	£680	£574
Naim SBL - Cherry (Latest)	£2030	£1378
Note Perfect Virtuoso (Ex Dem)	£2750	£1497
Note Perfect Concert (Ex Dem)	£2450	£1297
Pink Triangle Vertical (Ex Dem)	£896	£597
ProAc Response 3.5 (Ex dem)	£4250	£2997
ProAc Response 3.5 (Cherry)	£4250	£2800
Quad ESL57	From...	£395
Quad ESL63	£3449	£1898
Quad ESL63 (Ex-dem)	£3449	£1997
Rega XEL (Rosewood)	£1040	£655
REL Q100E (Ex dem)	£495	£393
REL Storm (Ex dem)	£695	£493
Rogers LS33/AB33 (Black Ash)		EPOA
Royd Minstrel (Walnut/Black)	£240	£168
Ruark Equinox Light Oak (Up-dated)		EPOA
Snell J.III with stands	£770	£478
Snell K II		£288
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Tangent RS2 + Stands	£400	£225
Tangent Monitor 2 (Rosewood)	£200	£140
Tangent 607 MkII		£185
Tannoy Oxford (10" drivers)		£195
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Apogee Centaur Minor	£1345	£847
ATC SCM10 (Black) (Ex-dem)	£999	£693
ATC SCM20SL (Ex-dem)	£3000	£2293
ATC SCM20T (Ex-dem)	£4250	£3493
ATC SCM50A (Ex-dem)	£5875	£4493
Audio Note ANJ/SPX (Efficient)		£1098
B&W 2000IFS Centre	£220	£108
B&W P5 (Rose) Ex-dem	£875	£593
B&W Silver Signatures Fabulous!	£6000	£2498
Cambridge Audio R50 (Trans Line)		£495

MISCELLANEOUS

Harmonix TU812 LP Record Clamp	£220	£170
Siltech 560 Balanced cables 1mtr pr	£1600	£600
XLO Signature 2.1 Balanced Interconnects		
1.0m pair: (£675) £448	0.5m pair: £485	£398
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Essex Digital correction for Celestion SL700	£750	£375

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A&R Cambridge A60	£75
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Audiolab 8000A (Din) Fully upgraded to current spec	£295
Aura VA80SE-X	£195
Beard P100 (100 wpc valve power amp)	£695
Naim Nait 1	£135
Nytech CPA602 + CP122 Pre/Pwr	£300
PS Audio Elite	£450
Rotel BX935	£170

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Arcam Alpha Plus	£150
Arcam Delta Black Box	£175
Marantz CD52	£120
Meridian 263	£225
Mission daD 7000	£199
Mission PCM11	£140
Philips CD1 210	£95
Philips CD 850Mk11 (Trichord clock upgrade)	£195
Pioneer PDS 801	£175
Pioneer PDS 901	£290
Rotel RCD965BX	£165
Yamaha CD 3050	£175

TUNERS

A&R Cambridge T21	£75
Hitachi FT5500 Mk11	£95
Yamaha T80	£175

PRO-LOGIC

Yamaha DSPE 200 Processor	£149
Denon AVC 3020	£425

TAPE DECKS

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NAD 6220	£95

HEADPHONES

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Musical Fidelity MC 2	£195
Gale 301	£125

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Note: All 'previous' prices as shown are either the former manufacturers' list prices when new, prices customers paid for their equipment (receipted) at the time of purchase, or the estimated price of comparable equipment/models at today's value.

MEASURED PERFORMANCE

DVD PLAYERS

DENON DVD-5000

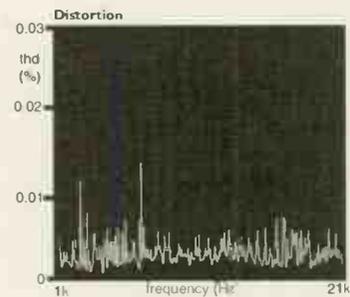
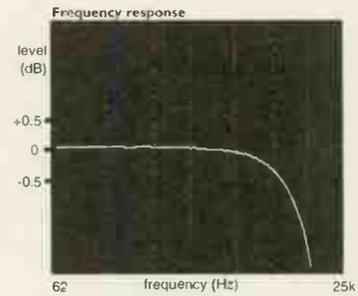
Some interesting and outstanding features became apparent during measurement of the DVD-5000. I measure frequency response using an impulse, convolved by a Fast Fourier Transform analyser. This is fast and accurate, but uncommon. Denon's processing system, like Pioneer's Legato Link, appears severely flawed when reproducing this fast pulse, frequency response reaching no further than 8kHz (-1dB). Our response analysis shows this. However, with steady tones the DVD-5000 reaches up to 20kHz like any other CD player. Players like this usually exhibit a warmth in their sound and the DVD-5000 was no exception, although equally it could be said to be exceptionally smooth in its sound.

Smoothness is likely to come from another unusual property, very low distortion on low-level signals. Where quantisation products normally reach 30% at -90dB, due to CD's old 16-bit coding scheme, Denon's processing system reduces this to 4%. In other words,

the DVD-5000 produces no less than eight times less distortion than conventional CD players, at low levels I should add. At -60dB and above it produces very little distortion, but is on a par with other machines. All other parameters measured well.

The Denon produces such unusual results it can only be judged on sound quality. Happily, in this area it seems quite exceptional. This is a fascinating player worth auditioning. **NK**

Frequency response	4Hz-8kHz	
	left	right
D:stortion (%)		
-6dB	0.005	0.005
-30dB	0.018	0.025
-60dB	0.4	0.4
-90dB	3.6	5
Separation (dB)	left	right
1kHz	117	118
20kHz	91	92



Noise	-116dB
with emphasis	-116dB
Dynamic range	109dB
Output	1.9V

AMPLIFIERS

AMC 1100/2100

The AMC stereo power amplifier turns out a healthy 136watts into a normal 8ohm loudspeaker. This rises impressively to 225watts into a low 4ohm load. The power supply is beefy and it shows in the output figures and good regulation. This power amp has muscle and will go very loud, as well as coping with most loads, even difficult ones.

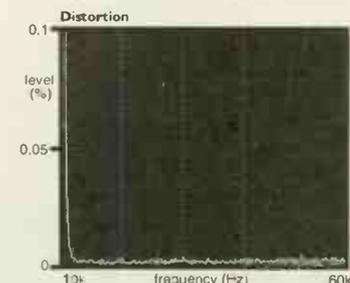
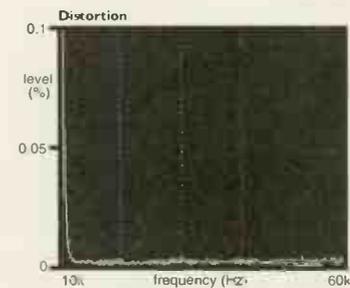
The pre-amplifier provides plenty of gain, giving high sensitivity values of 180mV on all line inputs. There is no phono input. Bandwidth was wide, measuring 5Hz-75kHz, so the amplifier will deliver strong, deep bass.

Distortion was minimal at all powers, low to high, never exceeding 0.01% even

under the most arduous conditions. Our analysis clearly shows lack of distortion spikes.

The AMC measured well all round and is likely to sound smooth and powerful. **NK**

Power	136watts
CD/tuner/aux.	
Frequency response	5Hz-60kHz
Separation	76dB
Noise	-101dB
Distortion	0.006%
Sensitivity	180mV
DC off-set	2mV/9.5mV



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Audio Innovations 800 Series III Valve	1000	499
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Audio Note CD2 Valve CD Player	999	695
Audio Note IO II Cartridge Kondo (Re-tip)	1800	850
Audio Note TTL/RB250/IQ1	750	495
Audio Research LS 7 Line Preamp	1599	950
Audion Golden Knights 300B Mono Blocks	3995	1799
Blueprint Point 1 Loudspeakers	1000	650
Cambridge Audio DAC Magic II	149	89
Cogan Hall Intermezzo REF 0.5M	375	95
Conrad Johnson PV10 AL SE	1299	825
Epos ES 11 Loudspeakers Blk	479	249
Gordon Wellford Naim 120 Poweramp	500	249
Harbeth HL-K6 Cherry	1049	599
Henley Designs HMC 50 Phono Stage	199	99
Koetsu Black (Re-tip - low hours)	N/A	350
Krell KRC HR Remote Preamp	6950	4750
Lecson AP1/AC1 with manuals	N/A	295
Mark Levinson NO 331 Power Amplifier	4500	3450
Michell Orbe 9 Months Old Gold Plated	2000	1395
Micromega CD3/ Duo Pro DAC	3000	1299
Micromega Minium Speakers	299	99
Micromega Stage 3 CD Player	999	495
Mission 754 Freedoms Primevera	1499	799
Mordaunt Short MS25 I Black	349	119
Naim Audio CD3 Compact Disc Player	1085	595
Naim Audio NAC 32 MM/MC Preamplifier	N/A	149
Naim Audio NAP160 Power Amp	N/A	495
Orelle DAL 80 DAC	599	195
Orelle SA 100 Amplifier	449	359
Proac Tablette 50 Mahogany	600	399
PS Audio 2B Poweramplifier	N/A	149
PS Audio 4.5 Preamplifier	499	225
PS Audio IV Phono Preamplifier	499	195
Quad FM2 Stereo Tuner in FM3 Case (V rare)	N/A	145
Rega ELA Cherry Latest Spec	535	425
Rega Elicit Integrated Amplifier	740	529
Rega HAL Pre Amp MM/MC Remote	998	649
Restek Concret II CD Player	2500	1795
Rogers Studio 5 Rosewood	799	399
Roksan Atessa DP3P CD Player	1595	899
Roksan Atessa DP3T Transport	1295	699
Roksan DP1 Transport	995	495
Roksan DS 5 Power Supply	549	429
Roksan L1.5 Preamplifier	2250	1495
Roksan S1.5 Stereo Power Amplifier	1495	999
Roksan Xerxes Cognecenti Gun Metal Tabz	1750	895
Roksan Xerxes/Tabrizi/MC25FL	1295	695
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Ruark Sceptres Cherry	599	449
Sony X3000 ES CD Player	500	349
Sugden SDT-1 Special Edition CD Player	1499	895
The Source Turntable/PSU	1500	499
Unison Research Smart 845 mono's	3250	2199
VDH CD 102 Mk2 3.0M WBT	N/A	115
Yamaha DSP 1000A Prologic Amplifier	1000	395

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New products now on demonstration

DCS - Midland Audio Exchange is now the exclusive stockist for the Midlands and North Counties for the amazing Elgar 96/24 DAC. It's award winning technology and ground breaking design puts it at the pinnacle of digital technology. The DCS Purcell up-sampler will enable you to take a normal 44.1 kHz recorded CD disc, up-sample to 96 kHz then send it to the Elgar to process it at that frequency. The results are truly spectacular, with improvements to position of instruments, depth of image, a fuller and tighter bass and lastly no more screechy nasty top end - whatever the disc!

But it doesn't stop there, take your 96Khz signal and now reprocess at 192kHz then as before send it to the Elgar. You have now a sound that compares to the original master tape! *This product is by far the best digital in the establishment and is well worth a serious listen*

Michell Engineering Ltd - Those guys in Borehamwood have done it again, The Gyro SE takes the bull by the horns within the sub £800 Turntable market. Basically, they have taken the Gyro off its Perspex plinth and given it a stand-alone motor, (this can be upgraded to a full Gyro at a later stage) the price without ton-earm and with a standard power supply - £775.00

Primare Audio - Is now in-stock and on permanent demonstration the amazing A30.2 remote controlled Integrated Amplifier and the D30.2 CD Player, with the unmistakable Scandinavian styling and build quality. Prices start at £1500.00

We will also be carrying the 20 Series remote system comprising the D20 CD Player the A20 Integrated Amplifier and the T20 RDS Tuner. A DVD Player will also feature in the New Year. Prices start from £600

Sugden - Have re-emerged with some old favourites and two new complete ranges. Well known for their class A designs, Sugden will still be running the A21 Series Class A Amplifier. The A21A Integrated Line Amplifier will retail for £799, a matching power amplifier (so bi-amping can be achieved) will cost £649. An optional phono board MM/MC is available at £99 factory fitted.

The Master Class Series will comprise a pre-amplifier and a power amplifier. The pre-amplifier features gold plated PCB's, balanced inputs and outputs and a fully regulated twin power supply. The Master Class Power Amplifier is a seventy five-watt per channel, pure Class A amplifier. Prices will be £1,995 for the Pre amplifier and £2,995 for the Power Amp. The Master Class Compact Disc Player will feature balanced and single ended outputs and will utilise a Pure Class A Output Stage in a single box. Price to be arranged in early January

Sirius - D 200 Power Amplifier fully balanced studio quality. Precise imagery and depth at a realistic price - £2995.00

Bks - Hybrid 107 Mk II Loudspeakers from Denmark made from the finest granite. Amazing sound from this small floor-standing Ribbon Hybrid - £1500.00

Nagra - PLP Valve Preamplifier uses a battery & fully rechargeable power supply thus making it one of the quietest phono stages around in the vinyl domain the price - £6995.00

Basis - 2000 Series Turntables. A new range from the USA's leading turntable specialist. Prices start at £2000 including the Basic Rega RB300 with fully adjustable VTA. The 1400 series. All new Perspex turntable. An amazing - £995.00

Accessories for the Vinyl Nutter

Audio Prism CD Black light	£39.95
Audiophile Record sleeves	£12.95
Decca CA2+2 Record cleaning brush	£9.95
Densen De-magic	£9.95
Discwasher D4 System	£18.00
Eco 2 Demagnetiser fluid/spray	£29.95
Einstein Octopus mains filter/conditioner	£199.00
Kontak Electrical contact enhancer	£14.95
Last All-purpose record cleaner	£19.50
Last Power cleaner for records	£32.50
Last Record preservative	£32.50
Last Stylast treatment	£27.50
Last Stylus cleaner	£17.50
Michell Record clamps	£19.95
Nagaoka No.102 Anti-static record sleeves 50	£12.50
Ortofon 8 - Nines cartridge tags	£29.95
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Shure Stylus balance gauge	£19.95

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CREEK OBH-12/A43

The Creek A43 power amplifier is paired with an OBH-12 passive pre-amplifier possessing no gain. Consequently gain was low and sensitivity poor at 420mV. This means sources like tuners and cassette decks may not be able to drive the amplifier to full output, since older designs typically produce 300mV or so. The pre-amp is best suited to CD, modern tuners and peripherals, like MD recorders.

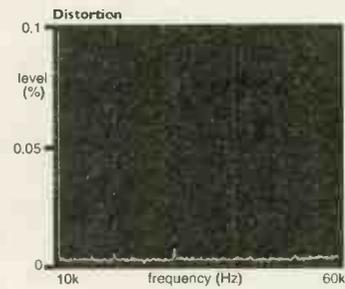
Distortion was low at all output powers and frequencies. There will be little sign of roughness in the sound and a very wide bandwidth should give solid bass and bright, open treble.

The power amplifier delivers 55watts and has good regulation, meaning it can

deliver current and provide decent bass drive. This is sufficient to give high volumes, if not deafening levels, with well-engineered modern loudspeakers in most rooms.

The Creek combination measured well but it is insensitive and this needs to be kept in mind when source matching. NK

Power	55watts
CD/tuner/aux.	
Frequency response	5Hz-100kHz
Separation	80dB
Noise	-102dB
Distortion	0.005%
Sensitivity	420mV
DC off-set	2mV/0.5mV



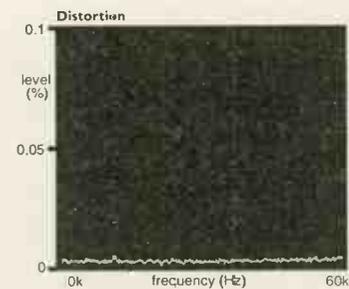
MOTH 30 PASSIVE/30 POWER

The Moth power amplifier works in conjunction with their own passive pre-amplifier which, lacking gain, results in a low sensitivity of 500mV for the combination. This is acceptable for CD players and some - but not all - tuners and other sources. Older cassette decks and tuners are unlikely to match.

Power from the compact power amp was limited, measuring 36watts into 8ohms and 42watts into 4ohms. Power supply regulation was not especially tight, so the Moth is unlikely to have the bass drive of bigger amplifiers. It does produce very little distortion, however, at all

frequencies, and bandwidth was good at 5Hz-60kHz. With little DC off-set at the loudspeaker terminals it measured well but it is a specialised design with idiosyncrasies. NK

Power	36watts
CD/tuner/aux.	
Frequency response	5Hz-60kHz
Separation	80dB
Noise	-108dB
Distortion	0.006%
Sensitivity	500mV
DC off-set	6mV/12mV



ROTEL RC-971/RB-971

Rotel's RB-971 power amplifier produces a solid 91watts into 8ohms, more than enough to drive a majority of loudspeakers to high volumes in any room. Lower loads draw more power; 144watts will be delivered into a 4ohm load by this power amp.

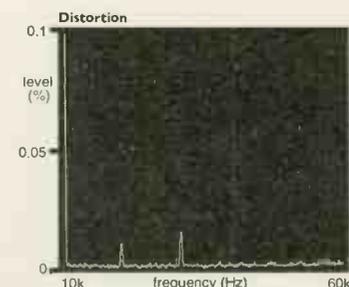
Bandwidth was wide, measuring 5Hz up to 100kHz. This unit will amplify signals from deep bass up to supersonic frequencies. With plenty of gain in the pre-amp sensitivity was high at 160mV, so this combo will work with all normal sources.

The tone controls of the pre-amp possessed excellent lift and cut

characteristics, affecting only frequency extremes.

Rotel amplifiers consistently measure well and the RB-971 was no exception. It has no disc stage, but LP is now a minority interest. NK

Power	91watts
CD/tuner/aux.	
Frequency response	9Hz-95kHz
Separation	60dB
Noise	-97dB
Distortion	0.03%
Sensitivity	160mV
DC off-set	27mV/7mV



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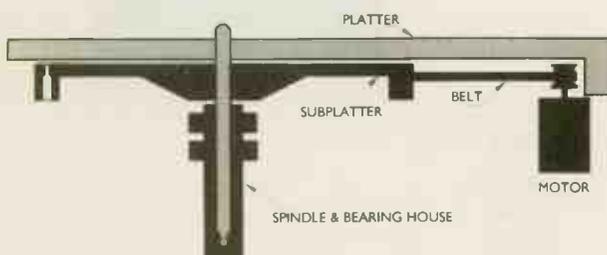
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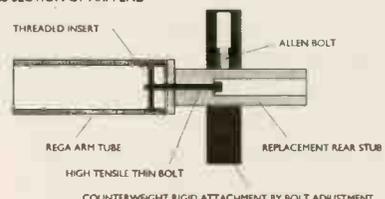
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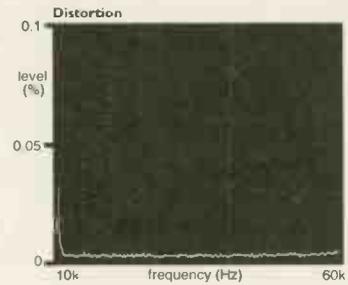


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TECHNICS SU-C900 MkII/SE-A900 MkII

Technics' SE-A900 Mk2 power amplifier produces a healthy 91watts per channel, which rises to 144watts into 4ohms. This is more than enough power to drive domestic loudspeakers. Pity that a cooling fan whirrs noisily into life much above 3watts of steady power though. This could be irritating in use. NK

Power	91 watts
CD/tuner/aux.	
Frequency response	6Hz-33kHz
Separation	70dB
Noise	-95dB
Distortion	0.006%
Sensitivity	160mV
DC off-set	5mV/4mV



LOUDSPEAKERS

PROAC STUDIO 150

The Proac Studio 150 uses a tweeter set between two bass/midrange units in a D'Appolito arrangement. The idea is to eliminate the usual phase suck-out in off-axis response. This gives a more consistent sound around the loudspeaker, making listening position less critical and improving imaging in terms of spaciousness. Measurement showed the Proac 150 had a very smooth off-axis response, unlike most loudspeakers, so they have been effective in achieving this design goal.

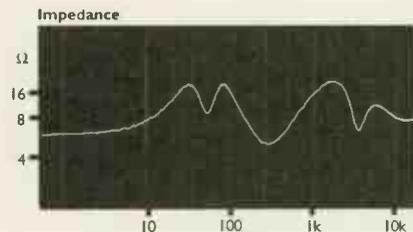
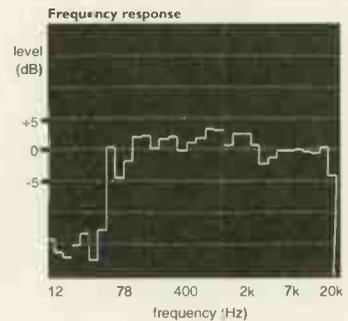
The position-averaged on-axis response, shown in our third-octave analysis, shows a small hump in bass and upper-midrange energy, which will give the loudspeaker a more full, warm sound. Usually, this is a good thing providing it

is not taken too far. The tweeter is very smooth in its measured frequency response and should give a reasonably clean sound free from spit or dullness.

Sensitivity was a healthy 87dB for one nominal watt (2.84V) of input. Since overall impedance was high at 10ohms, the '150 is quite efficient, needing little power to give good volume levels.

It has some sharp amplitude/phase variations in its impedance modulus, but I believe most amplifiers will handle this. The '150s do not demand heavy current delivery so they are unlikely to upset amplifiers.

The Studio 150s are well engineered all-round and should give a wide, open sound stage. NK



WHARFEDALE ACTIVE DIAMOND

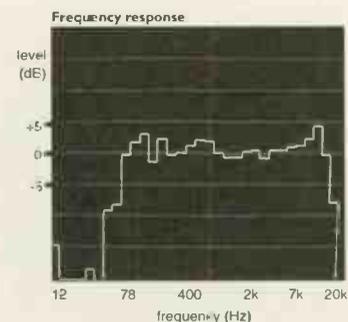
Wharfedale's Active Diamond carries its amplifiers in one loudspeaker, with an amplifier output feed to the second, to avoid the expense of amplifier and supply duplication.

The system's sensitivity was high: an input of just 170mV rms pink noise drove either 'speaker to give 90dB Sound Pressure Level, which is relatively loud. Since the test signal was specified as -20dB (or 10 times) below a CD player's full output of 2V, this is a low level from CD. Rock music runs at around -15dB or so, peaking right up to 0dB nowadays. So with its volume at

maximum, an Active Diamond will run direct from CD and give high levels.

The frequency response here is not as flat as it has been in past models. The tweeter peaks up +4dB at 12kHz and it can be heard. Our analysis clearly shows this effect. The bass unit peaks up too, by around +4dB at roughly 150Hz. This extends output down to around 100Hz before it falls away to -8dB or so at 60Hz.

The Active Diamond has been tweaked to give a lively sound but is not hi-fi accurate as old models have been. It is looking for a different market I suspect. NK



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TUNERS

TAG T20

The T20 tuner produces very little hiss. In this respect it is one of the best I have ever tested, although low-noise circuit blocks have been available for many years. Because broadcast noise intrudes in practice the benefit will not be obvious in most circumstances. Live studio broadcasts on Radio 3 are inherently quietest and most likely to benefit.

As always a strong signal from the aerial is essential for low noise to be achieved. To get the full -78dB of quieting - 7dB quieter than most tuners - a signal of 2mV or more must be available. However, the quieting curve is better than most too, so those without outdoor arrays will still notice low noise. Stereo sensitivity (-50dB noise) was an excellent 20uV.

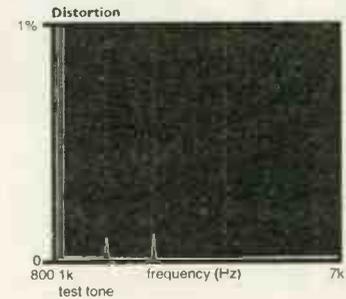
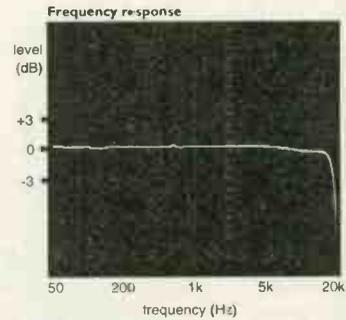
I was glad to see that TAG fit a wide-range signal strength indicator able to show how effective, or otherwise, the aerial is. Its top segment lights at a massive 8mV and anything above 7 on the display

means the tuner is in full quieting. In practice few will ever get the display to indicate maximum signal.

Selectivity was switchable from Wide, which gives best sound quality but poorest selectivity (54dB), to Narrow which will reject close stations very well, offering 78dB alternate channel rejection.

Audio frequency response measured flat and wide, as our analysis shows. Distortion was low at 0.1% and channel separation wide at 50dB. The audio side of this tuner measured well, as did the RF. It offers a very high level of performance. NK

Frequency response	4Hz-15kHz
Stereo separation	50dB
Distortion (50% mod.)	0.1%
Hiss (CCIR)	-78dB
Signal for minimum hiss	2mV
Selectivity, W/N (at 0.4MHz)	78dB/54dB
Sensitivity	



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Keswick Audio Volante loudspeakers, satin black lacquer Compact attractive floor standers excellent with low power valves. Sugden 21 a etc. boxed s/h (£550) £245

Michell Argo line level preamplifier, Good condition s/h (£730) £250

Musical Fidelity Elektra E100 r/control amplifier S/H excellent boxed (£600) £325

Musical Fidelity X-ray CD player ex display full warranty (£799) £640

Pink Triangle De Capo DAC, 1307 chip S/H boxed, perfect £650

Pink Triangle Cardinal CD transport, S/H perfect. No handset £350

Quad 11 Power amplifiers, Excellent, original condition (but IEC mains and phono sockets) sh... £450

Quad 77-1 01 loudspeakers Yew wood boxed, excellent s/h £340

Quantum Minstrel hybrid amplifier S/H Baxed, perfect (£999) £349

Sony CDP XE 320 CD player x/d (£140) £70

Sugden SDD / SDA CD transport / DAC with Audioquest Videa Z s/h (£1625) £995



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...Jason Kennedy Hi-Fi Choice April 97

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COMPACT DISC PLAYERS

QUAD 67 SECOND-HAND

One of Quad's best products for a long time, the '67 is warmer and smoother than most, yet is highly musical and revealing. (May 93)

KENWOOD DP-3080/II £180

Has great clarity and presence for the price. Not as naturally expressive as the CD4SE though. (Feb 98)

CAMBRIDGE CD4SE £200

A touch soft in the treble but outstanding in every other respect. (Feb 98)

ARCAM ALPHA 7 £330

This British-built player is extremely good value. Up-front, punchy. Suits Techno and Rock. (Mar 97)

MARANTZ CD-63MKII KI-S £400

Similar to the CD-63SE but more powerful bass and an all-round smoother sound. The famous KI tweaks pay off again.

PHILIPS CDR 870 RECORDER £500

Replay quality is on a par with £250 machines but analogue and digital recordings on CD-R and CD-RW are outstanding. (Jan 98)

DENON DVD-3000 £699.99

The Denon is a fine performer with CD and better still with 24/96. It's sonically strong with a crisp, clean and involving sound.

ROKSAN CASPIAN £895

The Caspian has a smooth, slightly bright sound with some of the clearest treble in the business. Very engaging, dynamic character. (Aug 97)

PANASONIC DVD-L10 £999.95

This mini-marvel with its built-in screen isn't cheap but it's an outstanding portable and a more-than-capable domestic device. (Nov 98)

MERIDIAN 506 20-BIT £1100

Very detailed and revealing player. More cerebral than visceral sounding, however. (May 95)

MARANTZ CD-17 KI-S £1100

The Marantz excels in all areas. Without doubt this is one of the most involving CD players on the planet. Build quality is also exemplary. (Sep 97)

DENON DCD-S10 £1300

A warm, atmospheric and smooth performer that never fails to involve. Silken musicality par excellence. (Jul 97)

MCINTOSH CDM7009 £2635

A thoroughly inspiring machine. One of the most musical CD players around; sweet, open and detailed. (Dec 95)

COMPACT DISC TRANSPORTS

TEAC VDRS-T1 £550

Not as substantially built as its chunky looks suggest, the T1 is nevertheless a good entry-level transport with a warm, expansive sound. (Feb 95)

TEAC P-30 £2500

Cheap it isn't, but then it sounds like a million digital dollars. Nothing short of superb. (Jun 97)

SONIC FRONTIERS TRANSPORT £6999

Cutting edge design and technology combine to make this one very desirable product. The only problem is the fantasy hi-fi price. (Sep 98)

CD CONVERTORS

MIDIMAN FLYING COW £299.99

Excellent as a DAC and doubles as an ADC for archiving to CDR. (Jun 98) Great value, as is junior version Flying Calf at £109. (Feb 99)

MUSICAL FIDELITY X-DAC £300

A bargain for normal CDs and even better with HDCDs. (Nov 97)

ASSEMBLAGE DAC-2 £400 (KIT)

Takes little building to produce a clean, clear sound. HDCD filter included.

MARSTON SILHOUETTE £795

With Crystal Semiconductors' 18-bit DAC the Marston produces clean-cut images and a transparent sound stage. Very rhythmic too. (Aug 97)

DPA 1024 £6000

Proof positive that today's CDs needn't sound CD-like! Uses an in-house discrete convertor, and DPA haven't skimped on the build either! (Jul 94)

DCS ELGAR £8500

Future-proof convertor which will handle 24/96 and 24/192. Extremely open and natural performer. (Nov 97)

SONIC FRONTIERS PROCESSOR 3 £6999

Quality never comes cheap! This DAC oozes class and when matched with the Transport 3 is certainly up with the best. (Sep 98)

TURNTABLES

GARRARD 301/401 second-hand

In a decent plinth with an arm of SME 309 calibre, the 301 & 401 have a highly authoritative sound with solid, expressive bass. Very musical, but treble isn't up to modern standards.

THORENS TD124 second-hand

One of Thorens' best turntables. Needs a modern plinth to give its best. Duly installed, it's good enough to face off the Garrards, swapping some of its bass power for a more delicate, incisive treble.

ORIGIN LIVE STANDARD £145 (KIT)

Fine in standard form with AC motor, frighteningly good with a DC motor and battery PSU.

SYSTEMDEK IIX900/RB250 £330

A fine all-rounder and easy to upgrade too. More depth and breadth than Rega Planar 3. (Sep 94)

PINK TRIANGLE TARANTELLA £680

Not only does the Tarantella have more style than a catwalk full of models, it also combines PT's usual clarity with real authority. (Oct 97)

VPI HW19 JUNIOR/RB300 £599

With its control and grip on music the Junior never fails to engage. Set-up is a piece of cake and there's a range of upgrades on offer too. (Oct 97)

MICHELL GYRODEC £875

Stunning looks, build and fine sound. Standard PSU has detailed, architectural, if undynamic sound. With QC PSU, scale and insight excel.

PRO-JECT 6.1SA £999

The Pro-ject places the listener in the best seat in the control room. Comes with Sumiko arm and Ortofon MC 30 Supreme. (Dec 94)

ROKSAN XERXES X £1295

DSU or XPS 3.5 power supply £150/170 extra. Excellent pitch stability from a new Swiss motor and outboard power supply. Very tight bass, fine dynamics and revealing clarity. (Jan 97)

MICHELL ORBE £1995

The Darth Vader of analogue, the Orbe builds on the strengths of the Gyrodec. An ultra-tuneful, expansive sound. (Apr 95)

SME MODEL 20 £3400

Including the excellent SME V tone-arm, the Model 20 is one of the last great turntables, unless you've got £11000 for the Model 30, that is. (Oct 92)

TONE-ARMS

LINN ITTOK second-hand

This early heavyweight arm benefits from fine engineering. Good dynamics and grip.

REGA RB300 £180

Supremely capable at the price, but not quite humankind's salvation. Some may prefer the simpler RB250 at £130. Detailed, tight, rhythmic sound but tonally rather grey and cold-sounding.

SME 3009SII £309

This Paleolithic device is no longer state-of-the-art with frequency extremes or detail, but its legendary serviceability makes it a cult in Japan. Can be picked up for peanuts second-hand. (Jan 93)

World favourites guide

HADCOCK GH 228 SE £595
Venerable unipivot design re-engineered for bang up-to-date performance. Bucks current tone-arm fashions but the sweet sound tells why. (Dec 98)

SME 309 £689
A down-market version of the IV and V with aluminium armtube and detachable headshell. Tight, neutral sound with good tonality, but lacks the IV's pace and precision. (Jan 93)

CARTRIDGES

GOLDRING 1012GX £74
An accomplished MM with a solid bass, slightly forward midband and clean transients. (Jul 93)

ORTOPHON MC 15 SUPER II £140
Not quite as good as the dearer Supremes but the Super II is a splendid introduction to the joys of moving-coil cartridges.

DNM MICA £185
Better Goldring's 1042 and costs only £135 on trade-in. An assured and transparent MM. (Feb 98)

GREGORY MUSIC MAKER £575
When mated with a good quality arm, this hand finished high-output pick-up gives an ear-boggling account of itself. An absolute gem. (Feb 99)

ORTOFON MC 2000 £799
We came across this in an SME IV on a Garrard 401; it gave one of the best results we've heard.

ORTOFON ROHMANN £1000
In a way it's MC 2000 meets MC 7500 with great tonal strengths and a dynamo sound. (Apr 96)

LYRA LYDIAN £649
A truly musical, sophisticated device that makes most other MCs sound frigid. (Jun 95)

VAN DEN HUL MC-10 £840
Fluid bass, finely-etched treble and highly tuneful. The MC-10 is a honey, pure and simple. (Jun 95)

ORTOFON MC 7500 £2000
Conclusive proof that there's hope for the world. CD lovers would die if they heard it. (May 94)

INTEGRATED AMPLIFIERS

MISSION CYRUS I/II S/H
Both versions give a detailed, articulate and dynamic sound. Worth keeping an eye out for second-hand.

DENON PMA-250SE £160
It might not have bags of grunt but the Denon can sound exceedingly natural and open. (Feb 97)

ROTEL RA-970BX £250
With its smooth and powerful sound; sings a seductive song with all types of music. (Oct 96)

PIONEER A-300R PRECISION £399
This is the A-300 tweaked. Rhythm and detail are first-class; the phono stage is not far behind. (Apr 95)

AUDIO ANALOGUE PUCCINI SE £595
This superbly-built Italian integrated has a lucidity and control which leaves others nowhere. Sound stage a wow. (Dec 97)

ROKSAN CASPIAN £695
Smooth, warm integrated with remote control that works happily into most 'speakers. (Dec 97)

SONNETEER ALABASTER £995
Builds on the strengths of the Champion with ample control, colour and drive. (Oct 97)

UNISON SIMPLY 2 £995
This single-ended valve amplifier is smooth, sweet & open. An extremely musical performer. (Oct 95)

UNISON SIMPLY 4 £1495
Sonically similar to the Simply 2, but with more power and control. (Oct 95)

MCINTOSH MA6800 £3735
The MA6800 not so much plays music as takes control of it, with effortless bass drive. (Sep 95)

PHONO STAGES

QED DISCSAVER £35
A true bargain that offers a cohesive, musical sound but avoid using it in thin sounding systems.

NAD PP1 £39.99
An unassuming little box that nevertheless gets on with it. Comes complete with wall-plug power supply. No provision for battery power.

ROTEL RQ-970BX £130
Superb-value entry-level phono stage with audiophile quality components and clear sound.

LFD MISTRAL PHONO STAGE £300
The Mistral has a warmth and involvement that make many pricier stages sound overpriced.

LEHMANN AUDIO BLACK CUBE £395
Capable of involvement, neutrality and insight normally the preserve of phono stages three to four times the price. (Oct 98)

SONNETEER SEDLEY £399
Combines transparency and fine dynamics with excellent rhythmic ability. (May 98)

ROKSAN ARTAXERXES X £950
With the Atessa PSU the Artaxerxes X MM/MC stage still shines. Great stage depth, neutrality and tonal colour. (Oct 97)

PRE-AMPLIFIERS

AUDIO ANALOGUE BELLINI £475
Showcases AA's characteristic mix of clarity and musicality and blasts the competition. (Apr 98)

XTC PRE-1 £1000
Almost valve-like in its smoothness, the line-level Pre-1 is warm and seductively clear. (Nov 96)

CHORD CPA1800 £1800
Clarity, insight and control are second to none - an addictive mixture. (Mar 98)

MARANTZ MODEL 7 £3500
A Sixties reissue, the Marantz pre-amp still sounds superb. Great phono stage. (Mar 97)

POWER AMPLIFIERS

QUAD II second-hand
Classic valve monobloc with many thousands still in use. Archetypal warm, smooth valve sound.

LEAK STEREO 20 second-hand
The Stereo 20 can sound impressively up-to-date, although power and detail are ultimately limited. The TL10, TL12 and TL12+ monoblocs are also very worthy contenders.

ARCAM 9 £400
With 70watts on tap, the 9P will drive most loudspeakers with a spacious and detailed sound. Good bass welly too. (Dec 96)

MISSION CYRUS POWER £450
This power amplifier is a real honey. Rich and smooth, but with a firm grip.

SUGDEN AU41P £530
Extremely competitive at the price with 100W of unusually smooth, full-bodied sound.

MUSICAL FIDELITY X-A200 £1000/PAIR
200watts of high-end monobloc power in a grooved tube. (Aug 98)

NAIM NAP180 £1060
Partnered with a NAC82, this has classic Naim control, and a superbly rhythmic presentation.

MICHELL ALECTO £1989
Crisp, clean and beautifully controlled. Partnered with the £1650 Orca a winning combo. (Oct 98)

CHORD SPM400 £1400
There's a sense of effortless power to the Chord that gives music real scale and presence. (Mar 98)

World favourites guide

- CHORD SPM1200** £2995
Like the SPM400 but loads more power on tap. Will drive just about anything. (Mar 93)
- XTC POW-1** £2000
As smooth and composed as the Pre-1, the POW-1 has bags of power and refinement. (Nov 96)
- MARANTZ MODEL 9** £8000
Authentic reproduction monoblocs still more than cut the sonic mustard. (Mar 97)
- TUNERS**
- LEAK TROUGHLINE** second-hand
Our favourite way of listening to the wireless. A deliciously mellifluous sound will have you junking your transistor radio in seconds.
- NAD 412** £190
The 412 is remarkably musical and natural sounding. Rich sound and full bass. (June 96)
- SONY ST-SA3ES** £250
Beguiling RDS tuner for the sonically discerning. Good ergonomics and sensitive too. (Apr 97)
- MISSION CYRUS FM7** £300
Clear and lucid sound puts it up with the best. Superb build too. (Apr 94)
- CREEK T43** £399
Excellent detail, separation and dynamics. A great little tuner and unbeatable at this price. (May 98)
- ROTEL RT-990BX** £500
High-quality Michi-based tuner with a sophisticated, forward sound with great imaging. (Apr 95)
- NAIM NAT03** £595
The NAT03's warm, atmospheric sound is further proof of Naim's proficiency with tuners. (Sep 93)
- FANFARE FT-1** £1295
In its native US the FT-1 is no mere tuner but a 'broadcast monitor'. Clear and powerful. (Mar 93)
- NAIM NAT01** £1380
Perhaps the best solid-state tuner available. For better radio, go and live in the studio. (Sep 93)
- CASSETTE DECKS**
- KENWOOD KX-3080** £160
A simple deck, but excellent-quality head and transport give top quality sound. (Oct 96)
- AIWA AD-S750** £200
Sonically a very decent machine at the price. Comes fitted with Dolby B, C and the dead handy Dolby S. (Apr 96)
- YAMAHA KX-580SE** £250
The 'SE' tag is more than a marketing gimmick. Sound is solid and clear with Dolby S. (Sep 97)
- AIWA AD-S950** £300
A stable transport, superb head and Dolby S make the AD-S950 an excellent all-rounder. (Feb 95)
- PIONEER CT-S740S** £430
A great piece of engineering from Pioneer, with first-rate sound. (Jun 96)
- NAKAMICHI CR-7** second-hand
Kills all other tape deck and stamps on the graves. Like all Naka decks, sadly discontinued. (Aug 93)
- LOUDSPEAKERS**
- TANNOY MERCURY M2** £140
A true audiophile bargain which embarrasses many more expensive boxes. Never mind the price, let your ears decide. (May 97)
- KEF Q15** £199
These stand mounters offer impressive bass and excellent clarity but need a powerful amplifier to perform at their considerable best. (Feb 97)
- MISSION 771** £170
Characteristically fast, punchy Mission sound from the Aerogel mid/bass and silk-dome tweeter. (Jul 98)
- B&W DM 602** £300
Deep, strong bass, pure, projected and uncoloured midrange. Treble quality is a little metallic, imaging is precise. A lively, enjoyable sound. (Nov 96)
- REL Q-BASS** £350
Few subwoofers match the Q-Bass at the price. The tuning controls can be a bit of a fiddle, but once set up the rest is pleasure. (May 96)
- CASTLE EDEN** £469
Impressively vice-free 'speakers that offer great transparency and involvement. One of a select band that simply makes music regardless. (Mar 97)
- EPOS ES12** £495
Strong, punchy bass is allied to finely detailed, articulate midrange and sparkling treble. (Oct 96)
- REL STRATA** £500
The Strata subwoofer is not a toy. It offers superb, true hi-fi bass depth and power, and opens up the sound stage depth in particular. (Mar 94)
- HARBETH HL-P3ES** £799
A fine example of good loudspeaker engineering. The top of the mini-monitor league. (Feb 96)
- KEF REFERENCE SERIES ONE** £995
Combine pin-point imagery and detail with a smooth, polite balance. Good, agile bass. (May 95)
- HARBETH HL-K6** £1049
Clean, musical and classy - Harbeth have done themselves proud again. (Dec 96)
- JAMO CONCERT 8** £1365
With their inch-thick cabinets and fabulous drive units, the Concert 8s are the most transparent stand mounters around. (Jun 97)
- BKS D107 HYBRID MK II** £1500
Unusual design with reflex loaded bass/mid driver and a ribbon tweeter. Granite side panels and a perspex/MDF sandwich for front and back. Can be a demanding load for an amp but natural sound of great clarity. (Dec 98)
- EPOS ES25** £1505
Epos' best. Combines near-uncoloured tonality with characteristic fireworks in the rhythm department. Superb by any other name. (May 95)
- TANNOY AMS8** £2700
Bold sounding pro active monitor with solid bass, clear midrange and delicious treble. (Aug 96)
- QUAD ESL 63** £3450
A reference against which all other loudspeakers are judged, the '63s have superb imaging and genuine transparency.
- KEF REFERENCE SERIES FOUR** £3299
Superb bass and near-electrostatic sound staging make these involving loudspeakers a reference for others. Need a strong amplifier though. (Oct 96)
- JBL S2600** £3500
Smooth, detailed and spacious with great dynamics and fine imaging. Capable of producing a superb performance when used in a big room. (Jul 96)
- TANNOY WESTMINSTER ROYAL** £14920
An incredibly dynamic, detailed full-range horn design with a rich sound.
- MINIDISC PLAYERS**
- SONY MDS-JE510** £300
An impressive sound and unmatched convenience make this MiniDisc player an excellent buy.
- KENWOOD DM-9090** £500
One of the best MD players yet. ATRAC 4.5 gives clean and very musical recordings from this Kenwood. (Jan 98)
- SONY MDS-JA50ES** £1300
The Sony can put the wind up Nakamichi cassette decks when used with better blank MDs. (Apr 98)



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AUDIO LAB 8000CD cd player	EX/DEMO	£1,000	£700
AUDIO LAB 8000CDM cd transport	EX/DEMO	£1,400	£975
AUDIO LAB 8000Q pre amp	EX/DEMO	£1,250	£950
DENON PMA Q5 10II amp	EX/DEMO	£1,800	£1,200
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EPOS ES 12 light cherry speakers	EX/DEMO	£500	\$375
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LINN MAJIK/PHONO amp (MINT)	S/H	£800	£500
LUMLEY VTP1000 pre amp	S/H	£1,000	£500
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ONKYO-TXSV 919 a/v amp & ED901 AC3 processor	S/H	£2,800	£1,000
PINK TRIANGLE NUMERAL cd player	EX/DEMO	£1,050	£850
PINK TRIANGLE-LITAUROAL cd player	EX/DEMO	£2,100	£1,575
PROAC STUDIO 150 walnut speaker	EX/DEMO	£1,400	£1,000
REGA EOS ATD15A MKII phono stage	S/H	£500	£200
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ROGERS-AB33 black speakers	EX/DEMO	£400	£200
ROGERS-LS33 black speakers	EX/DEMO	£280	£140
ROGERS-GS5 black speakers	EX/DEMO	£380	£190
ROGERS-GS6 black speakers	EX/DEMO	£430	£215
ROGERS-E20a valve amp	EX/DEMO	£1,230	£700
ROKSAN RADIUS turntable (MINT)	S/H	£620	£500
ROKSAN S1.5 silver power amp	EX/DEMO	£1,495	£1,150
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VECTOR ENHANCEMENT

Dynavector's radical DV505 brought a unique solution to the problems of tone-arm design, says David Price.

Cast your mind back to the high-end vinyl scene of 1977.

Analogue addicts wanting a top-class tone-arm were hardly spoiled for choice. In Britain there was SME's venerable 3009 S2 and unipivots from Hadcock and Mayware; from Japan the highly conservative Grace G707. Add a handful of Audio Technica and Technics arms, plus the ever popular Acos Lustre, and that was your lot.

So imagine the reaction when a small Japanese engineering outfit called Dynavector launched the stunning DV505. Rather than the usual sales spiel, Dynavector released their extensive engineering research findings into tone-arm geometry and resonance characteristics. It didn't take the world long to sit up and take notice, and the DV505 went on to win that year's Design And Engineering Award at CES Chicago, and then again five years later!

Looking at the DV505, you can't help thinking it's the work of an eccentric genius. The arm's appearance is striking even today, so what people must have made of it in the mid-Seventies is anyone's guess. With a total length of 335mm and weighing a massive 1.25kg, it was a true giant. In fact, its proportions prevent it from working properly on most suspended sub-chassis decks. Even Michell's gargantuan Orbe is only really happy with arms under a kilo, so what the '505 would do to lesser decks doesn't bear contemplation. In truth, Dynavector had massive unsprung direct drives like Technics' SL-1000 in mind when designing their baby.

For all its apparent complexity, it's surprisingly simple to mount, with just four screws securing the baseplate. VTA is easily adjustable by means of two knobs, one for sliding the whole arm assembly up and down, the other one for fixing it at a desired position. On an unsuspended deck you can do this even while playing a record. Tracking weight adjustment is dynamic, meaning you level the (sub) arm with a counterweight and adjust it with a spring dial à la

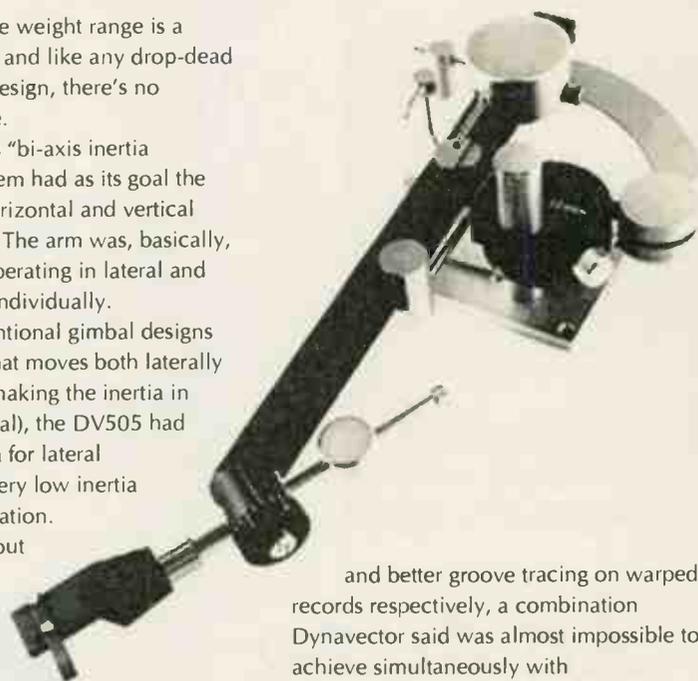
SME V. Cartridge weight range is a massive 23gms, and like any drop-dead cool high-end design, there's no lift/lower device.

The DV505's "bi-axis inertia separation" system had as its goal the separation of horizontal and vertical moving masses. The arm was, basically, two sub-arms operating in lateral and vertical planes individually. Whereas conventional gimbal designs have one arm that moves both laterally and vertically (making the inertia in both planes equal), the DV505 had very high inertia for lateral operation and very low inertia for vertical operation.

It was all about reducing resonance. Conventional tone-arms have their vertical and horizontal pivots in close proximity to one another, causing two resonance sources to vibrate at the same frequency, making the resonance greater and much harder to damp. But by separating one pivot from the other, the DV505's two resonance peaks were smaller and could be damped more effectively.

To this end, Dynavector used an elaborate double-damping system with both electro-magnetic and inertia-controlled dampers. The former applied eddy currents generated from a conductor moving in a magnetic field, and was claimed to be highly efficient at reducing resonances. The second inertia-controlled dynamic damper was incorporated into the main arm and consisted of a pair of carefully-matched springs and weights that oscillated only in the horizontal plane where the arm's main resonance mode occurred.

By locating the shorter, lightweight vertical arm at the end of the horizontal arm, a combination of very high mass and good damping in the horizontal plane, and very low equivalent mass in the vertical plane was achieved. This made for superior information retrieval



and better groove tracing on warped records respectively, a combination Dynavector said was almost impossible to achieve simultaneously with conventional arms.

Sound was excellent. At the time of its launch it was undoubtedly the best sounding arm around, providing it was properly partnered and set-up. Extremely clean, smooth and open, it was nevertheless impressively musical and dynamic with rock-solid tracking. Moreover, it could be optimised to get the best out of almost any cartridge, which it usually did. By modern standards it lacks the Linn Ekos's punch or the SME V's detail, but it can certainly teach a good mid-price arm like an Ittok LVIII a thing or two.

The DV505 was discontinued several years back, to be replaced by the DV507. Visually similar, it's a smaller, more sensible evolution of the concept and an even better performer. Dynavector are famous for their superb after-care and servicing facilities, rather like a Japanese SME. The arm isn't so common in Britain these days, but there are plenty in Germany floating around for about £300-£400, depending on price and condition. If you're after the most exquisitely esoteric tone-arm around, the DV505 is your man ●

A selection of our ever changing offers for sale (all fully guaranteed)

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Spendor SP.2 (walnut) (vgs) s/h	450.00	229.95
Tannoy 603 inc stands (mint) s/h	200.00	139.95
Tannoy 625 ALP 100 watt active sub (vgs) s/h	600.00	299.95
Lots of L.S. stands in stock including Target/Alphonso etc:		

TAPE DECKS/TUNERS ETC.

Denon DRM.700A 3 head/MM Pro etc. (g.c.) s/h	250.00	159.95
Denon DRM.MX cassette deck / 3 motor / HM.Pro etc. (vgs) s/h	-	119.95
Denon TU.260L Digital Tuner (vgs) s/h	120.00	79.95
Leak Troughline 3 stereo valve F.M Tuner (vgs) s/h	-	95.00
Pioneer F.203 R.D.S. Digital Tuner (vgs) s/h	140.00	99.95
Quad FM.3 F.M. Tuner (2 in stock) (both mint) s/h	-	99.95
Teac A.33405 high speed / 4.track / 4. channel reel to reel with simul-sync (vgs)	loads	399.95

COMPACT DISC PLAYERS/TRANSPORTS/D.A.C.S.

Arcam Delta 250 transport/Black Box 50 DAC (mint) s/h	1250.00	795.00
Audio Innovations Alto (black) remote (mint) s/h	400.00	249.95
Cambridge Discmagic I / Dacmagic I (vgs) s/h	500.00	269.95
Denon DVD-2000 (region 1 conversion) full remote DVD player (mint)	600.00	429.95
DPA little bit 3 D.A.C. (vgs) s/h	350.00	199.95
Kenwood DP 3060 remote (g.c.) s/h	200.00	119.95

Equivalent New Price Sale Price

A selection of our ever changing offers for sale (all fully guaranteed)

Marantz CD 42 (l.c.) s/h	250.00	119.95
Micro Mega CD3 top loader transport (Acrylic) (vgs) s/h	1500.00	795.00
Musical Fidelity X-Ray 24/96 player (superb player) (new)	799.00	-
Musical Fidelity X.24k DAC 1 (new)	-	300.00
Musical Fidelity X-Act Dac (new)	-	130.00
Musical Fidelity X-Dac (HDC) DAC (new) (ex-dem)	300.00	200.00
Musical Fidelity X-100 (missing Link) CD/Line buffer (ex-dem)	120.00	90.00
Philips CD1 210 (interactive) (mint) s/h	400.00	109.95
Pioneer PDS 703 (stable platter) remote (vgs) s/h	450.00	179.95
Pioneer PD.7100 (no remote) (vgs) s/h	-	99.95
Technics SL PS 7700 remote (mint/as new) s/h	250.00	189.95
Technics SL PG 520A remote (vgs) s/h	200.00	119.95
Technics SL P550 remote (vgs) s/h	-	129.95
Teac VRDS.7 (mint) s/h	600.00	379.95

OTHER ITEMS OF INTEREST

Airpod AP2 airbag isolators (mint) s/h	320.00	129.95
Alphonso Glass 4 shell mini stand (ideal for X Series) (mint) s/h	100.00	69.95
Mordant Short Decoder One (Dolby Pro Logic Processor) (inexpensive route to have cinema) (mint) s/h	400.00	149.95
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Technics SB G350 remote Pro Logic tuner amp (mint) s/h	330.00	199.95
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SPECIAL INTERNET OFFER SEE PAGE 138 FOR DETAILS

KEF REFERENCE Model Four in Classic Rosewood £2290, Meridian 557 power amp £850, Meridian 566 20bit DAC £490, all can be delivered, all have original packaging, manuals etc. Tel: 01622 844 556 home, 0973 899 651 mobile (Mar/I)

ROGERS LS5/8 BBC professional monitor loudspeakers in black ash, mint condition. Includes two Quad 405 power amplifiers with active crossovers and ST76 stands. £3531 new, will accept £1750. Tel: 01233 750 407 (Mar/I)

IMF TLS 80 (pair) Transmission Line speakers with 4-way KEF drivers, walnut finish. £750. Tel: 01233 750 407 (Mar/I)

SD ACOUSTIC. SDI speakers. Excellent working order, large two way floorstander. very transparent, very efficient, matched pair £495. Tel: Mike 01246 209 578 day, 01246 280 755 eve (Mar/I)

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REVOX B77 MkII 1/2 track, 7 1/2, 15 ips. Completely reconditioned machine, recently bought from Ramtek, superb condition, still 8 months warranty left. £575. Genuine reason for sale. (re-advertised due to wrong phone number) Tel: 01780 764 149 or 01780 754 694 (Mar/I)

NAIM 72 £400, Naim 180 £625. Both boxed, mint. Chord Cobra Inter & Naim A5 4x6m bi-wire £75. Tel: Jon 0121 778 5812 (Birmingham) (Mar/I)

GARRARD 401 with SME 3012 arm and B&O MMC20CL cartridge on SME plinth £200. Quad mono tuner and Leak Stereo 30 amplifier - offers. Tel: 0114 230 3515 (Sheffield) (Mar)

SONY CDP 337 ESD compact disc player, battleship build, boxed £100 ono. Marantz LD50 loudspeakers on Target sand filled stands £50 ono. Tel: 01625 610 981 (Mar/I)

PROAC RESPONSE Three loudspeakers, walnut £1250 (£3250). Morel 704, small floorstanding loudspeakers, black £450 (£1000). Both excellent condition. Superb sound. Owner upgrading. Tel: 01623 798 210 (Mar/I)

ROTEL RB 981 power amplifier - 163 wpc 8 ohms 1128 wpc dynamic power into 1 ohm. New. boxed, bargain powerhouse £200. Cambridge Audio A3i amplifier, 60 wpc, superb sound, boxed £120. Tel: 01706 345 418. e-mail: Rtheo56182@aol.com (Mar/I)

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AUDIOLAB 8000A amp good condition £200. Naim 32-110 pre & power £275. Hitachi 5500 tuner good condition £60. Tel: 0114 221 5271 (Mar/I)

WANTED, GALE GS 302 or GS 402 speakers. For sale, Snell J 11 speakers bi-wireable, light oak excellent condition, £250 Leak Stereo 70 £30. Tel: 01202 429 353 (Mar/I)

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AUDIO TECHNICA 160ML cartridge wanted. Good price paid for a sample in good condition. Tel: 01752 266 753 anytime (Plymouth) (Mar/I)

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LINN AKITO 1B tonearm, boxed with cable, excellent condition, £125. Tel: 01522 694 871 (Lincoln) (Mar/I)

TANNOY D100 compact loudspeaker. 6.5" dual concentric drive units. Rosewood real veneer cabinet. VGC - complete with cartons. These speakers offer exceptional performance. Retail price £690. Yours for £290 ono. Tel: 01494 716 474. (Mar/I)

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NAIM CDX CD player, new, receipt and warranty, genuine reason for sale, cost £2300 will accept £1800. Also Puccini SE amplifier, unused, £450. Tel: 01491 412 538 or 0836 202 078 (Mar/I)

MAGNUM BI-AMP setup, 2xME300 stereo power amps (100wpc), P200 preamp/power supply £600, Rega Ela Mk1 speakers £135. Audio Innovations Alto integrated £200. Tel: Chris 0467 773 037 daytime (Brighton) (Mar/I)

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GARRARD 301 in oak plinth with
original instructions. Decca arm,
Decca FFSS Mk3 cartridge £160.
Tel: 01924 892 699 Mar/I)

WANTED: MISSION 752/752f
speakers, not black. Wanted:
Audiolab 8000 poweramp
P/PX/SX. Wanted: Chord Solid
interconnects 0.5/1 Metre. Tel:
Mark 01482 871 498 evenings &
weekends (Mar/I)

AUDIO RESEARCH SP9 MkII,
boxed, mint £900. Audio
Research SP11 MkII, inc P/S, mint
£1450. Audio Research D240,
boxed, as new £1200. Krell
KPS30i, mint as new £2250.
Audio Research LS2, balanced
O/P and RCA, as new £1200.
DPA Renaissance CD, boxed as
new £600 ono. Tel: Jules 01792
280 061 ((Mar/I)

ORELLE SP-150 power amplifier.
75W per channel. Boxed and in
mint condition £275. Tel: 01483
420 660 (Guildford) E-mail:
m.attard@btinternet.com (Mar/I)

LOWTHER ACOUSTA Twin
speakers wanted, made 1960s.
Also wanted: working drawings,
leaflets etc. Also Lowther speaker
drive units wanted, Lowther
speaker feet and drive units
screws. Tel: Jeff 0181 924 0207
(Barking) (Mar)

STANDS UNIQUE Sound Tower
in light ash, boxed, ready to post
£100. Furukawa FS2T35P speaker
cable 2x2.5m spade terminated
£40. Tel: 01904 763 157 (York)
(Mar/I)

KRELL KSA150 Power amp
£1950 ono (£5500) Audioquest
video Z Digital interconnect 0.5m
£25 (£65) Cabeltalk 2.1 biwire
2x4m £50 (£120) Original
Marantz CD52II £50 ono. Tel: Bill
(Oxford) home 01993 851 508
work 01865 792 020 (Mar/I)

LINN LP12 (Afrormosia) Ittok,
Audio-Technica OC5 £350. Linn
Asak £25! Audio-Technica AT31E
£20. SME Series IIIIS, Shure V15V,
Damper, Flexible Link £50. Tel:
01404 815 033 (Devon) (Mar/I)

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Unisis £850 W.H.Y.
Electrocompaniet EC1.2 £550
W.H.Y. Albarry 1008 mono's,
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Want large quality power amp,
Swaps, W.H.Y. Tel: 01626 774
246 (Mar/I)

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October £625. Audiolab 8000P
100 watt power amplifier, boxed,
excellent condition £325. Tel:
0181 467 6220 (Kent) (Mar/I)

HARBETH HLK6 speakers,
walnut finish £475. Tel: 01628
626 085 (Mar/I)

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£350. Sugden A21a amplifier
(phono). Also boxed and like new
£400. Tel: 01664 823 424
(Leicestershire) (Mar/I)

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Revox A77 £150. Leak Troughline
3ST/ST70 £50 (2). Rotel Michi
phono (red sides) £500.
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7463 (Mar/I)

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INTERCONNECT Cables.
Emerald 0.5m £80. Two sets.
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Sounds 12/3 £50. Tel: 01902 675
045 (Mar/I)

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units £300: Hitachi AM/FM tuner
FT5500 MkII £50. Tel: 01507 601
096 (Lincolnshire) (Mar)

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and power amplifiers £395 the
pair. Tel: 01834 860 681 (Mar/I)



“Don’t Murder the Music”

A one act short from David Chessell

ACT 1 SCENE 1 “THE PLAYERS”

Music; All music contains certain basic elements. These are rhythm, harmony, melody and form.

Rhythm: involves time--the duration, or length, of musical sounds. Tempo, the speed at which a piece is played, is sometimes associated with rhythm.

Harmony: concerns the building of chords--tones played together--derived from the scale on which the music is based. It also involves the order in which successions of chords accompany a melody.

Melody: probably derives from the inflections of the human voice. It involves pitch, or the relative highness or lowness of tone. When pitches are musically organized, they are referred to as scales.

Form: results from the way in which rhythm, melody, and harmony are put together. Good music has unity to satisfy a listener's ear and variety to maintain interest.

ACT 1 SCENE 2 “THE CULPRITS”

To re-create musical performance in a home environment attention has to be paid to the following:

The Rhythmic timing: The fundamental foot tapping element often lost in slow amplifiers due to over engineering and over control in search of lab results, “a high damping factor may dampen your enjoyment”

Harmonious integrity: this poor fellow is lost in amplifiers unable to reproduce not only the notes but the subtle shapes and harmonics present between, these harmonics tie the notes together to produce the layering and interaction of tones at all frequencies. *(low frequencies are included)*.

Melodic interaction: The interaction of rhythm and harmony (the love scene) a flattering affair and when lost the love affair dies and the soul of the music is gone.

Form the dynamic structure: Many amplifiers flatten dynamic structure to achieve uniformity and softness, *(invariably with feedback)*, where music produces uniform dynamics *(expressive)* in an unstressed form

ACT ONE SCENE 3 “ AFFAIRS OF THE HEART”

suspect 1: Many designers undertake a love affair with design and not music, in a bigamistic fashion, over engineering using sub-circuit upon sub-circuit to try and fool the music into submission, the use of many (sometimes hundreds) components all worthless on their own to produce a result which passes the white coat test completely avoiding the subject of fidelity.

Suspect 2: others design in a similar fashion with exotic parts all carefully matched (not a bad thing) this expensive and time consuming exercise does reap some favor but at a price, whilst still providing a long path to fidelity, This path however is fraught with difficulty and not a good basis for a relationship.

The heroin: This honorable gentleman keeps his fidelity selecting just a few prize components for which to entice *music* (she is fickle) a simple yet elegant fellow amazes with truthful reproduction and entertains with his dynamic character and gentle heart above all he avoids loop feedback (a nasty fellow) altogether.

ACT1 SCENE 3 “THE MARRIAGE ”

The service: we are gathered here to join a simple elegant fellow with an outstanding character, a dynamic personality and above all a gentle nature, together with a young vibrant girl full of life, with a harmonic nature and sensuous seductive manner.

We wish them all the best for the future and above all fidelity, hopefully a high one.

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LINN LP12 Akito £400. Leak Sandwich speakers £80. Stereo 70 amp £40. Stereofetic tuner £30. Goldring Lenco GL75, ebony black OFC leads, new cartridge £75. Tel: 01422 846 582 (West Yorks) (Mar/I)

AVI S2000 Line preamp £500. Monoblocks (pair) 150wpc £700. FM tuner £400. Amazing sound, 16 months old, mint, boxed. Tel: 07957 802 463 day or 01524 400 642 evenings (Lancashire) (Mar/I)

LINN 'ACTIVE' Kabir system, mint, immaculate condition, Karik, Numeric, Kairn, 3xLK 100 amps (inc. cards), Kabir speakers, (rosenut). All cables inc boxes, manuals & warranties. can demo, may split RRP £10,000 - £6,000 ono. 'Audiolab' monoblock amplifiers, mint, immaculate condition, 4x8000M's inc. Ixos Studio interconnects (offers) inc. boxes, manuals etc RRP £1800/pr - £1300/pr ono. Tel: day 01792 651 532, eves 01792 798 253 (Mar/I)

LINN LP12, Ittok, LVII, Asak, Afro, excellent condition (£1700) £410. Tel: 0161 764 8888 (Mar/I)

TECHNICS SUC 2000 preamp, Technics SEA 2000 poweramp, mint (£1850) £850. Alphason rosewood 4 tier hi-fi rack, 220mm height each shelf, mint (£280) £160. Luxman PD131 turntable £100. Luxman TI tuner £70 from 1979, Micromega Stage 1 £170. NAD 1000 and 2100 PE monitor pre/power amps £175. AVI remote £20. Tel: 0121 742 2015 (Mar/I)

MUSICAL FIDELITY E300 power amp and E200 pre-amp (incl. Elektra Phono Input m/m and m/c) £1360 new. Nearly 3 years old, not boxed, but in mint condition £550 ono. Tel: 01254 771 556 (Mar/I)

GYRODECK + GYRO Power + RB300 + Eroica LX £800. Audio Research SP8 Mk2 £750. Quad 2's £400. Rogers LS35/A + stands £300. Tel: Andy, day 01924 324 309, eves 01484 721 091 (Huddersfield) (Mar/I)

ACOUSTIC ENERGY AEI Mk2 piano black, 3 months old, boxed and guaranteed with Acoustic Energy Reference stands lead filled £750 ono. (cost £1300). Tel: 01908 502 795 after 7pm (Milton Keynes) (Mar/I)

LINN KAIRN Pro SPS preamp with latest slimline power supply remote control £950. Mint condition, boxed, little used due to upgrade. Tel: 01785 823 104 eve & w/end (Mar/I)

CREEK CD 43 CD player, boxed, still under warranty. cost £600, bargain at £300. DPA 200S power amp, 2 years old £250 ono. Tel: 0151 336 2469 (Wirral) (Mar/I)

NAKAMICHI 700ZXL cassette, fabulous sound and build with 3 mic inputs, pitch control, RAMM indexing, IR receiver and Dolby C unit, mint, worth £2000+, sell for £900 ono (serviced). Also Kenwood DPX 9010/'Clock 2' Mod./Mission DAC 5; worth £900+, sell for £380 ono. Tel: Leonel 0118 941 0771 or 0973 459 984 (Mar/I)

SPECIAL VERSION of SME Five with gold plating and silver wiring. £1300 (£2400) or Five with gold wiring and silver wire £950 (£1860). Both one year old. Sell one. Tel: 0181 325 2585 (Mar/I)

LP12, LINGO, Ekos, Klyde, custom built as new £1800. Kairn phono preamp £750. Karik III Numerik SPS £1500. Kabers walnut special finish granite stands £750. All in pristine condition. Musical Fidelity amps Nu Vista preamp + spare Nu Vistas. XA200 monoblocks pair as new both only 12 weeks old £2000. Monitor Audio 20 ES rosewood special finish £1400. Tel: 01438 359 600 (Mar)

MERIDIAN M60 MkII active floorstanders. 541 Dolby/Music Surround preamp, 506 20 bit CD, 504 tuner, Kef C100 centre channel, 2x Quad 303 power amps to bi-amp centre and Yamaha rears. All excellent condition, worth new over £5700. Sell complete system for £2950. Tel: day 07771 508 444, eve 01205 722 000 (Mar/I)

LP12, CIRKUS Trampolin, Ekos, Lingo, rebuilt Troika £1150. Mordaunt Short decoder Pro Logic £70, Mission Cyrus 2 Mk I £40. Audio Innovations 800 MC transformer £40. Tel: 01295 257 191 (Banbury) (Mar/I)

MUSICAL FIDELITY P270 power amp 135 watts per channel Class 'A' cost £1350 new, accept £495. Pink Triangle Da-Capo DAC with 1307 filter cost £1650 accept £595. Tel: 01634 387 686 (Mar/I)

NAIM NAC72 inc MC board (£450), NAP140 (£425), HiCap (£450) - All new style, Epos ES11 biwire walnut with stands and 10m NAC5 cable (£275), Meridian 566 (20 bit) DAC (£495) Arcam Delta 270 CD player (£275), Soundstyle 4 glass shelved black triangular table (£120). All boxed and in excellent condition. also Heybrook HBS1 speaker stands (£20). Tel: 0411 407 135 or 01844 353 741 (S.Oxen - 2 miles JN6 M40) (Apr)

LINN LP12 Lingo, Cirkus, Ekos £1500. Linn Kairn preamp phono £900. Exposure 8 monoblocks £600. Impulse H6 black horn floorstanders (£1350) £600. Mana wall shelf £100. 5 tier metal rack £50. NAD 514 CD (£300) £125. All boxed. Tel: 01234 240 280 (Bucks) (Mar/I)

ATC 50 ACTIVE Monitors. Fine appearance/performance. £1990. Krell KSP7B pre-amp. Balanced/Phono/PSU. As new £850 Krell KSA50 power amp, good £900. Modsquad passive preamp, immaculate £200. Genuine sales. Reasonable offers only. Demonstrate/deliver M40 area. Tel: 01494 866 320 (Mar/I)

QUAD COMPLETE valve/electrostatic stereo system: Quad 22/II (GECKT66)x2/FM1 (original stereo decoder) ESLx2 amplifier/tuner all original vgc. ESL's recently (Sept 98) completely overhauled (£316 spent on refurb) in excellent condition. Truly beautiful sounding system! Only sold together. Price £1195. Tel: 01203 713 501 (Mar/I)

KELLY KT3 loudspeakers, modified with audio grade caps, £500 ono. Aiwa silver mini separates C50 pre, P50 power, T50 tuner, surprisingly good £120 the lot. Ferrograph S1 monitors with stands. Twin transmission line design, very transparent £300 ono. Technics SP10 Mk2 BBC version, upgraded with copper screening, superb sound, slightly scruffy £275 Technics ST3500 tuner £50. Tel: Jon 0181 904 8023 evenings (Mar/I)

DENON DCD1700 CD player, heavyweight build, would make good transport. (£650 when new) £225 Rega RB300 arm £85. Castle Chester loudspeakers, mahogany £365. All excellent condition, boxes, manuals. Also Michell Gryopower bronze, offers. Tel: 0171 473 3818 weekday evenings, 01844 216 706 weekends (Mar/I)

EPOS ES22, rare chance to buy these superb floorstanders in light cherry finish £795 ono. Tel: Jon 01992 578 964 (Epping) (Mar/I)

NOTTINGHAM ANALOGUE Paragon 1 parallel tracking tonearm (£1600) £675. FR64S £250. SPU Gold £350. Wanted: Old style Naim NAP110/140, NAC42, 5/32, 5/62/HiCap. Tel: 01203 713 501 (Mar/I)

LEAK ST20 refurbished £215. Goldring 1042, very little use £55. Wanted: Linn Kan I with Kan2 stands. Naim Nait I. Alphason Sonata with arm/cartridge. Must be in xc good cartridge. Tel: 01203 713 501 (Mar/I)

WANTED: SME 3009/3012 (ser. 1&2). Garrard 301/401. Thorens TD124. Tannoy GRF/Autograph. Leak 12.1. Quad 22/II (orig. cond. only) ESL. Ortofon SPU and 12" arm. Technics SP10II. EMT 930. Tel: 01203 713 501 (Mar/I)

LOWTHER ACOUSTA speakers, PM6's £275. Lowther PM7 drive unit, boxed £75. PM6 drive £60. Thorens TD124 with SME arm £200. Ferrograph Logic 7 tape recorder, 1/2 track, including spare headblock £190. Ferrograph tuner, amplifier + speakers also available. Tel: 0191 281 0260 (Mar/I)

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QUAD 77 amp, Quad 77 CD. Quad 77 remote, boxed, mint £895. Epos ES14 with stands, mint, £425. Audiolab 8000T tuner, mint £500. Marantz ST17 tuner, mint £325. Tel: 01606 862 175 (Mar/I)

MICHELL ORBE with SME V (bold lettering), Ortofon MC30 Supreme, used £2750 (£3950). Transparent Music Link interconnect, one metre pairs £95 (£149) Tel: 01797 253 073 (East Sussex) (Mar)

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GAMMA ACOUSTICS Space Reference power amplifier Mk3 and ERA preamplifier, very little use £4450 (list £7999) Pioneer DVL700 Region I LaserDisk/DVD player £425. Tel: 01726 824 114 (Mar/I)

LEAK STEREO 20 and pre-amp £250. Rodgers Ravensburn £15. Wanted: Pioneer 606 amp. Tel: 01228 74537 (Mar/I)

QUAD 34 Pre-amp, 306 power amp, FM4 tuner (all phono) complete with Quad rack £595 ovno. B&W DM330i 3-way floorstanding speakers in black £125 ovno. Tel: 01844 208 494 (Mar/I)

NAIM CD2, 2.5 years old, vgc £1200. Tel: Quentin 01865 201 054 after 6pm Apr/I) KRELL KSL line level preamp £895 (£2300). Linn LP12 Basik plus arm K9 black £450. Trio KT9XL tuner £30. Boxes, manuals. Tel: Maz 0161 873 5020 or 0161 330 7912 evenings (Mar/I)

TUNERS FOR Sale: Naim NAT02 new style £525. Meridian 104, brown case £100. Tone arm Mission 774 £75. Tel: Ray 01889 882 656 (Stafford area) (Mar/I)

QUAD 606 power amp, mint, boxed £300. Meridian 206 CD, mint £300. A&R Cambridge A60 amp £45. QED amplifier switching unit £10. Tel: Dave 01703 616 284 (Mar/I)

AUDIO RESEARCH D125 amplifier wanted. Tel: Mark 01222 520 022 (work) 01495 243 258 (home) (Mar/I)

AUDIO ALCHEMY DDS3 transport/CD player (£699) Audio Alchemy DDE 3.0 HDCD DAC with (£899) Power Station Three MIT digital interface 1 mtr cable (£325) £975 ono. Tel: 01638 661 671 (Mar/I)

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MUSICAL FIDELITY Nu Vista limited edition, remote control, Class A tube preamplifier: offers? also DPA DSP 200S preamplifier £275 & Audio Pro A-14 active loudspeakers £325 ono. Tel: 0181 567 4839 (Mar/I)

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RECORD COLLECTION, mostly unused/sealed. JAPS, RR, DCC, MFSL etc. Prize to be discussed. Circa 500 discs. Dualik coffee/cappuccino machine, Krups coffee grinder, used 10 times, value £200, £120 ono. Tel: Jonathan 01245 495 225 eves (Mar/I)

SHAHINIAN ARC, wonderful speakers, walnut, (1996) £1350. Naim72 (1997) £450. Naim 32.5 £200. Naim Snaps £200. Marantz CD10 newly serviced at Grahams £450. (new £1100) Tel: 0181 445 3768 (Mar/I)

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GOLDRING Lenco CL85 PC turntable £50. Cambridge P50 stereo amp £60. Technics SU600 amp £60. Leak Troughline mono tuner £60. QED headphone amp £30. Leak Delta 70 stereo amp £55. Tel: 01372 467 264 (Mar/I)

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Bang & Olufson	AV-5	Television - CD & radio	X	1	£4,650.00	£3,000
Bang & Olufson	Beocentre 930	CD/radio and cassette	X	1	£1,650	£1,300
Bang & Olufson	Beolab 2000	Active loudspeaker	X	1	£550.00	£400.00
Bang & Olufson	Beolab 3500	Horizontal active speaker	X	1	£900.00	£650.00
Bang & Olufson	Beolab 4000	Active loudspeakers	X	1	£1,100.00	£800
Cambridge Audio	C70	Preamplifier	S	1	-	£70
Cambridge Audio	DAC Magic	Digital to analogue converter	S	1	-	£100.00
Castle	Avon	Loudspeakers - Cherry	N	1	£730.00	£550.00
Castle	Howard	Loudspeakers - Cherry	N	1	£1,200.00	£850.00
Castle	Isis	Loudspeakers - Mahogany	N	1	£250.00	£190.00
Castle	Tay	Loudspeakers - Walnut	N	1	£350.00	£250.00
Celestion	100	Loudspeaker - Mahogany	N	1	£540.00	£350.00
Celestion	300	Loudspeaker - Walnut	N	2	£1,100	£500
Celestion	251	Loudspeakers - Black	N	3	£400.00	£250.00
Celestion	CSW	Subwoofer	N	3	£300.00	£150.00
Denon	DCD 520	CD Player	S	1	-	£90.00
Denon	DRW 580	Twin Cassette Deck	X	1	£200.00	£150.00
KEF	104	Loudspeakers	S	1	£2,300	£750.00
Kenwood	CS6	Centre Speaker	S	1	-	£70.00
Meridian	518	Digital Audio Processor	S	1	£985.00	£585.00
Meridian	565	Dolby Prologic Processor	S	1	£2,250	£1,400.00
Meridian	500 + 566 DAC	CD Transport + 20 Bit DAC	S	1	£2,425.00	£1,400.00
Meridian	565 7 1 AC-3	AC-3 Dolby Digital Processor	S	1	£2,850.00	£1,900.00
Meridian	A500	Loudspeakers	S	1	£750.00	£400.00
Mission	703	Loudspeakers	N	2	£300.00	£250.00
NAD	910	Processor	S	1	-	£100.00
NAD	5320	CD Player	S	1	-	£90.00
Ovad	10L	Loudspeakers	N	2	£600.00	£325.00
Quad	77 Amp	Amplifier - Nextel	N	3	£700.00	£300.00
Quad	77 Amp	Amplifier - Carbon	X	1	£700.00	£300.00
Rotel	RA 921	Amplifier	X	2	£125.00	£100.00
Rotel	RCD 970 BX	CD Player	S	1	£300.00	£125.00
Sony	TAF 248 E	Amplifier	N	2	£200.00	£150.00
Sony	TCKE 400 S	Cassette Deck	X	1	£180.00	£150.00
Spendor	2040	Floor Standing Loudspeakers	S	1	£900.00	£500.00
Yamaha	AV 1	Prologic System	N	2	£650	£500.00
Yamaha	CC75	Mini System	X	2	£600.00	£400.00
Yamaha	CDX 499	CD Player - 5 stars What Hi-Fi	N	6	£180.00	£150.00
Yamaha	CDX 510	CD Player	S	1	-	£50.00
Yamaha	DSPA 3090	AV Amplifier	S	2	£1,600.00	£750.00
Yamaha	DSPA 492	AV Amplifier	N	6	£250.00	£140.00
Yamaha	DSPA 592	AV Amplifier	N	6	£330.00	£290.00
Yamaha	GX70	Prologic Mini System	X	2	£500.00	£300.00
Yamaha	KX 493	Cassette Deck	N	3	£180.00	£160.00
Yamaha	KX 580 SE	Cassette Deck	X	3	£250.00	£200.00
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