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PEAKERS SHOWN ARE MODEL FOUR IN ROSEWOOD FINISH KEE AND UNIC ARE REGISTERED TRADEMARKS INI Q IS PROTECTED UNDER GB PATENT 2: 36929 WORLDWIDE PATENTS PENDING KEF AUDIO (UK) LIMITED D PT HFW3 COLESTON ROAD TOVA MAIDSTONE KENT MEIS 60P TELEPHONE (01622) 6/2261 World Radio History

# THIS MONTH'S WORLD

- Modifying a Pioneer PD-S504, Trichord have produced their first CD player, the Genesis. At £550 could this be serious competition for throne holders Marantz? Page 14 reveals all.
- Orelle have recently updated their integrated SA-100 amplifier, with quite some degree of success on all counts. Discover the result on page 16.
- Highly affordable and with plenty of welly behind them, Wharfedale's Valdus 300s should prove popular with anyone looking for a big sound on a budget. Find out more on page 25.
- One of the most impressive pieces of engineering we've come across, JBL's S2600s set new standards in loudspeaker quality. Learn what's so special about these horn/bass reflex hybrids on page 49.

pigital Video Disc, a system capable of storing nearly eight times as much information as CD on the same size disc, was originally intended for video and multimedia applications. But it wasn't long before the audio fraternity realised the potential for a super high quality music-only format, taking advantage of the extra capacity of DVD discs.

The Acoustic Renaissance for Audio, a team of leading audio engineers, has already proposed a system with 26 times the resolution of 16-bit CD. Now Sony have announced their system, Direct Stream Digital, which was demonstrated for the first time at the Copenhagen AES show in May. Both systems claim such high resolution they won't ever need to be upgraded in future - they promise perfect storage of all music information. These are exciting times for audio; we're at the beginning of a strong drive to improve CD's sound quality.

#### Dominic Baker, Editor

#### TEST EQUIPMENT



- 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.

LISTENING ROOM (TREATED BY RPG ACOUSTIC TOOLS)



#### IN THE AUGUST ISSUE

#### MERIDIAN 557 POWER AMPLIFIER

We caught a glance of an early version of Meridian's new 557 power amplifier at the Sound & Vision show in September. Now it's ready, we take a longer look.

#### SYSTEMDEK 2X2 TURNTABLE

It's not often that a new turntable gets launched these days, so when Systemdek announced the arrival of their all new 2X2 deck, we just had to get our hands on it beforeanyone else. Read the exclusive review in next month's Hi-Fi World.

#### CASTLE HARLECH LOUDSPEAKERS

The Harlechs use the same new proprietary bass driver found in the Isis we reviewed recently, along with a metal dome tweeter. Can this £799 three way design using I/4wave bass loading, tuned to two different frequencies, hold itself together?

#### TANNOY AMS8 LOUDSPEAKERS

Featuring Tannoy's 8" dual-concentric driver in a compact box containing two powerful amplifiers and an active crossover, these loudspeakers were meant for top quality studio monitoring. Hi-Fi World just had to investigate.

#### **DIY SUPPLEMENT NO. 23**

August also brings with it another FREE DIY Supplement full of ideas for the home constructor. We'll be building KEF's K90 kit loudspeakers using their Uni-Q driver, and testing a range of capacitors for loudspeaker crossovers. There's more on AudioCad Pro - a powerful loudspeaker design package - book reviews, all the latest components and kit news, answers to readers' DIY queries and more.



#### AUDIO PUBLISHING LTD 64 CASTELLAIN ROAD, MAIDA VALE, LONDON W9 IEX

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Origination by:

Printed by:

ABC

### THIS MONTH'S REVIEWS

23

30

14

#### AMPLIFIERS

#### ORELLE SA-100

Can Orelle's improved 50watt integrated, the SA-100, score in the big league, or is it headed for relegation? Haider Bahrani referees.



#### GAMMA RHYTHM

With its 211 power triodes and over 1000volts of HT, the Gamma Rhythm looks set to make a real impression. Jon Marks tests his bottle listening to it.

#### QUAD 77/77SA PRE/POWER

Eric Braithwaite listens in with baited breath to this long-awaited pre/power combo from Quad.

#### COMPACT DISC

#### TRICHORD GENESIS

Following on from their Clock 2 CD player modification and Pulsar I DAC, Trichord release their first player, the £549 Genesis. Douglas Floyd-Douglass is there to witness the birth.



#### ROTEL RDD/RDP-980 TRANSPORT/DAC

28

41

33

Eric Braithwaite lends an ear to the latest digital combo to join Rotel's well regarded range of CD players.

#### TUNERS

#### HARMAN/KARDON TU 950

Jon Marks enjoys reading station names with harman/kardon's RDS equipped TU 950, but is he similarly entertained by its sound?

#### CASSETTE DECK

#### **TECHNICS RS-AZ7**

Bucking the current trend of Dolby S use is Technics' RS-AZ7, with its Amorphous-Z head. Noel Keywood examines its credentials.

#### LOUDSPEAKERS

#### 16 KEF CODA 9

Haider Bahrani is the recipient of the Coda 9s from KEF. He delves into the music to discover what a Coda 8 with an extra driver adds up to.

#### WHARFEDALE VALDUS 300

Wharfedale have been building speakers for over 60 years. Jon Marks finds out how history will remember the Valdus 300s.



#### JBL \$2600

49

20

25

We managed to persuade JBL to lend us their huge S2600 'speakers to terrify our listening room, and they did a great job! Dominic Baker takes up a safe position and listens in.

#### **TANGENT MONITOR 2**

65

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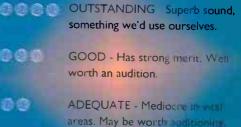
Could these diminutive 'speakers be the next £60 kings of the student system jungle? Haider Bahrani swings with the Tangents to find out.

#### VINYL

#### WILSON BENESCH TURNTABLE, ACT 2 TONEARM AND HYBRID MC CARTRIDGE

Carbon fibre is a material close to Wilson Benesch's heart, featuring in everything they make. Dominic Baker discovers what a highfibre diet can do for his record collection.

## WORLD VERDICT



POOR - Schoude Rowell Not

### REGULARS

3

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#### **NEXT ISSUE**

#### To whet your appetite we have a selection of the goodies coming up in next month's issue.

#### NEWS

Stay ahead of the Smiths, the Jones's et al with all the latest news that's breaking in the world of high fidelity.

#### **READERS' Q&A/LETTERS**

Check out the feedback and the questions from this month's mailbag. Every letter wins a prize too.

#### COLUMNS 55, 62, 63

Find out about the mysteries with Noel Keywood, why Dominic Baker's on the level, and what Dominic Todd's unearthed in retailing.

#### SUBSCRIPTIONS

#### Spare yourself the frenzied riot as you struggle with the hordes to claim the last copy of HFW in the newsagent - subscribe instead.

#### **SPECIALIST HI-FI DEALERS**

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#### WORLD AUDIO DESIGN

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#### WORLD BUYING GUIDE

Culled from the rest, these are the best.

#### DIAL-A-DEALER

Look before you leap, or alternatively listen before you buy. These are the people to talk to.

### MUSIC

**ROCK AND POP** RECORD OF THE MONTH: Wishplants: Daddy Longlegs

DANCE/AMBIENT CORD OF THE MONTH: Orbital: In Sides

#### JAZZ

CLASSICAL ORD OF THE MONTH: Thomas Tallis: Lamentations, Motets, String Music

#### HI-FI WORLD



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#### **AMPLIFIERS** TUNERS CD PLAYERS

hnics

CASSETTE DECKS 🗹 SPEAKERS MINIS/MICROS

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## July 1996

# trade winds

#### CIAO FROM MILANO

Keswick Audio Research of West Yorkshire, which is more than a stone's throw from Milan or any other part of Italy come to think of it, have gone all cornetto. By that I mean they have launched a new 'Italia' series of loudspeakers.

The flagship of the range is the Milano, named after the north Italian city. This is a three-way floorstander, featuring Keswick's very own custom 10" ultra long throw bass unit. Constructed from 22mm MDF, it features multiple radial and cross bracing. Its smaller sibling, also a floorstander, is called Torino after the home of FIAT, and hosts an 8" drive unit. Both speakers are claimed to have 90dB sensitivity, which means they should be compatible with a wide range of amplifiers.

The Palermo is the stand/bookshelf mounter of the family and is designed to be used as a high quality monitor. For stimulating the low notes, the Pompeii is an active subwoofer with a 200watt class A amplifier driving a 15" drive unit. The upper roll off frequency and level can be adjusted to suit a wide range of partnering loudspeakers.

The retail prices for these speakers are; £999 for the Milanos, £799 for the Torino pair, £459 for a set of Palermos, and £999 will get you the Pompeii subwoofer.

#### Keswick Audio Research

Ferrybridge Workspace, Pontefract Road, Ferrybridge, West Yorkshire WF11 8PL 70 01977 671823

#### **UNISON MYSTERY**

The long promised Mystery One valve preamplifier from Unison Research is finally hitting the shops, distribution courtesy of UKD. The pre-amplifier has five inputs and runs in pure class A. It uses one double diode for rectification and three double triodes for amplification. A power supply enabling the use of the Simply Phono module (reviewed in our March issue) is also provided.

Unusually, the DC bias for the valve grids on the Mystery One is supplied by four lithium batteries which, they claim, have a life of between 5 and 10 years. Retail price for the pre-amplifier is £1750.

U.K. Distribution 23 Richings Way, Iver, Bucks. SL0 9DA 20 01753 652669



trade winds

7

# La Dolce Vita

### To go forwards, sometimes you must first

go backwards. This may seem odd in our modern age, but it is certainly true of quality audio equipment. If you doubt that, ask yourself how it is that a good single-ended valve amplifier can beat its solid state counterpart hands down for sheer musical enjoyment, even though the valve design may be forty or more years old. But of course, it is not enough just to revamp old circuit designs. The true genius of Unison Research lies in taking the single-ended



**MYSTERY ONE** by Unison Research

concept, then taming and radically improving it. And finally, turning it into a work of art. Consider our Mystery One preamplifier. It looks like no other preamp you've ever seen. But like all Unison Research products, from the delightful Simply Two to the awesome Absolute 845 (considered by many to be the finest valve amplifier ever made, *irrespective* of price) it is intelligently-engineered, beautifully styled and above all, made to give a lifetime of musical pleasure.



## To build a good loudspeaker, you must

first build a good loudspeaker cabinet. So why do most manufacturers use MDF for their cabinets? The answer, in case you didn't know, is that MDF is cheap. But unfortunately, it's also rather mediocre. At UKD we do things differently. Every model in our Opera range is made by our own craftsmen from solid, acoustically inert, beautiful hardwood. That is the *right* way to build cabinets, and the *only* way to allow drive units to give their best performance. In our own cabinet workshop we handcraft stunning loudspeakers like the Callas, Operetta and Divina. Does any other speaker manufacturer do that? Take a look at our latest creation, the Opera 111. Slim floorstanders in solid mahogany<sup>\*</sup>, they are quite literally in a class of their own. And for only £995 a pair, what you get is a real taste of *La Dolce Vita* 

OPERA III by UKD

### UKD

23 RICHINGS WAY, IVER, SL0 9DA, BUCKS, ENGLAND TEL: 01753-652669 FAX: 01753-654531

From sustainable sources, naturally.

#### TECHNICS MASH IT UP AGAIN

Three new entry-level CD players should now be available from Technics, all employing their now infamous MASH 1-bit digital conversion system. The Super One Chip LSI (Large Scale Integration) used in these players replaces the three dedicated chips previously used for the optical servo control, signal processing and the digital to analogue conversion. This simplifies the audio signal path by isolating the digital section from the analogue, and this, so they claim, contributes to improved sound reproduction.

The three new machines are the SL-PG380A, SL-PG480A and the SL-PG580A, retailing at £119.95, £139.95 and £159.95 respectively.



The latter two have remote control facilities.

Panasonic (Technics) Panasonic House, Willoughby Road, Bracknell, Berks. RG12 8FP 7 0990 357357

#### NEW SYMPHONY

A new pair of Symphonies have come out of the Eltax stable. The Symphony 4 is a two-way shelf/standmounting box with a 6.5" mid/bass unit and a Vifa 19mm dome tweeter. It has a claimed 90dB sensitivity, and retails at  $\pounds$ 189.99 for the pair.

The Eltax Symphony 6 is a two-way ported floorstander. This uses the same drive units as the Symphony 4, with the same claimed sensitivity, and retails at £239.99.

Eltax Electronic 4 Warren Farm, Wolverton Mill, Milton Keynes MK12 5NW T 01908 226464

#### **UP FROM THE SKY**

On the 20th of March this

year the UK's first satellite and cable digital audio service was launched. With 62 channels ranging from Opera to African Rhythms, DMX (Digital Music Express) promise 24 hours a day, DJ free, CD quality music.

Subscriptions to this new service cost  $\pounds$ 6.99 per month with early receivers expected to be priced around the  $\pounds$ 300 mark.

For more information contact the DMX customer service centre:

**11** 0990 818818

# trade winds

#### **SUBSONIC BARKING**

KEF's 30B active subwoofer reviewed in our May issue has a smaller sibling set for battle at the budget end of the market. The new baby boomer has been christened the 20B, and is set to retail at £349. Wearing its bigger brother's hand me downs on the outside, internally the 20B is magnetically shielded, with a 70watt amplifier driving a 10" coated paper cone drive unit. It features both high and low level inputs and outputs, input level control plus 50-150Hz variable roll-off selection.

#### KEF Audio

Eccleston Road, Tovil, Maidstone, Kent ME15 6QP 01622 672261



Harman/kardon claim to have combined

the user convenience of RDS with discrete circuitry in the new TU 950 tuner (reviewed in this issue). It offers 30 presets for each of the FM/MW/LW wave bands, with 10 direct access keys for each. Amongst the RDS functions provided are Program Identification, Traffic Announcement and Alternative Frequency. The latter function scans six alternative frequencies for the selected station and hooks onto the one that offers the best reception. The new unit retails at £199.99. Turn to page 49 for more.

Also new is the harman/kardon HK 3250 receiver. This has a 30 preset AM/FM tuner with an added 40watt per channel amplifier, 3 line inputs and 2 tape loops. Retail price is £249.99.

Harman Audio Unit 2, Borehamwood Ind. Park, Rowley Lane, Borehamwood, Herts. WD6 5PZ T 0181 207 5050



#### **POWER THULE**

A range of new products is surfacing from Thule, the Danish hi-fi manufacturer. Among these is the CD100 CD player, using a Crystal DAC, and is due to retail at £899. Coming in at £999 is their 100watt IA100R integrated amplifier, which is fully balanced and comes with remote control. Designed as a companion for their 200watt PA200 mono blocks (£949 each), the PR200 is a pre-amplifier with 5 line and 2 tape inputs and a set of balanced

inputs and outputs. The MC100 is an optional

fully balanced MM/MC phono stage. The pre-amp is expected to retail at  $\pounds$ 749 and the phono stage will set you back another  $\pounds$ 200.

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## July 1996

#### TWO REMOTELY CONTROL AN AMPLIFIER

The PMA-425R and the PMA-725R are integrated amplifiers with the R indicating that they are remote controllable. Power output is 45 and 65watts per channel respectively.



Incorporating many of the circuit developments of the UK Audiophile series and Denon's S-I high-end range, they feature Signal Level Divided Construction (SLDC), routing high and low level signals for processing in separate blocks following the shortest possible paths. They claim this ensures a minimum of cross channel interference and a maximum of clarity.

The '725 has what Denon are calling a SuperStable-A circuit, with Dual El transformers in the power supply, which are claimed to allow the amplifier to deliver 180 watts per channel into a  $2\Omega$  load. All this for a retail price of £349.99. The 425 retails at £229.99.

Hayden Laboratories Hayden House, Chalfont St. Peter, Bucks. SL9 9UG T 01753 888447

#### **ALBUM SALES FLYING HIGH**

It seems as though reports of the decline of CD have been exaggerated, with sales world-wide continuing to grow last year, rising on average by 11.4%, a figure close to the BPI's for British sales. Although this represents a slow down in the rate of growth, the number of CDs sold reached a new high of two



billion, a doubling of 1991's figure. Almost two-thirds of all albums sold are now on CD, and it dominates the singles market, taking 68% of sales here compared to 1991's 35%.

Cassette, which

used to dominate the album market with a 52% share, has slipped back, allowing CD to take over the number one spot. In common with vinyl, a relatively small number of countries account for a large proportion of cassette's sales - just four countries. India, China, Indonesia and Russia, soak up 40% of all cassettes.

While fortune may be smiling on the silver disc, the outlook for the LP is far from bright. Even though Japan, USA and several European countries (including Britain) with their specialist markets still show good sales, world-wide sales dropped by a huge 27.5% and vinyl's share of the album market shrivelled from 7% (1991) to a paltry 1%.

# trade winds

#### SYSTEMDEK SPINS ON...

Continuing their commitment to vinyl in these digital days, Systemdek have released a new turntable. The 2X2 as it is imaginatively named features a fully machined acrylic platter, similar to that which was available as an option on the well known IIX turntable. Drive is transmitted from the high torque, low noise motor via a belt to an ultra rigid hub which rotates on a precision ground 6mm spindle. The subchassis that the bearing is mounted on is fully adjustable for a wide range of tone arms,

including SME.

The 2X2 is available in a range of veneers, including Cherry, Rosewood, Walnut and Ash, and retails for £499.95.

#### Systemdek

34 Kyle Road, Irvine Ind. Est., Irvine, Scotland. KA12 8LD T 01294 71251

#### **TEAC'S GOLDEN WONDER!**

VRDS, DSRLL, ZD-II and it's also available in champagne gold finish. What are we talking about? Well, that's Vibration-free Rigid Disc-clamping System, Digital Servo Ratio Locked Loop and the ZD-II? Um, that's just a distortion-shaping thingy. It uses a technique known as dithering, where it injects a random noise signal prior to D/A conversion and then subtracts it at a later stage. This effectively linearises the signal by reducing distortion caused by quantisation error. All this in a box comes in the form of the new £1299.95 Teac VRDS-25 CD player.

Confused? Well there's more. Teac's latest addition to the VRDS series features four 20-bit DACs and a 25-bit 8-times oversampling digital filter, which they claim, contributes to 'incredibly clear sound reproduction'.

#### TEAC

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#### review

The Genesis CD player has evolved from a Pioneer PD-S504 at the hands of Trichord Research. Douglas Floyd-Douglass monitors its growth.

# GENERIC ENGINEERING

he Genesis makes no bones about being a badge engineered product. In fact the badge is an inexpensive decal type sticker, which rather undermines the sonic value that this player represents. Finish is typically

Japanese; black brushed and shiny fascia holding a host of superfluous programming features. Pioneer's turntable platter style loading tray sits dead centre, solid and smooth in operation. Trichord honourably exonerate the virtues of badge engineering by admittedly supplying an unabridged version of the original instruction manual as a cost cutting exercise.

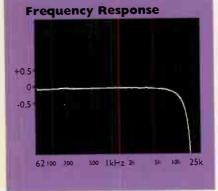
Inside the Pioneer's chassis,

Trichord have implemented their Clock 2 modification. This reduces jitter through improving the accuracy of the master clock, which controls the timing of the digital data. The more accurate this clocking process is, the lower the jitter produced, which is typically heard as a coarseness through the midrange. The Clock 2 has an accuracy of 2ppm (parts per million) whereas in a typical player the clock would be accurate to 50-200ppm.

#### Technical View

Pioneer's PD-S504 CD player, which the Genesis is based on, uses their Legato Link digital processing system. This has some peculiar characteristics that should be borne in mind. The frequency response of conventional players reaches

21kHz, that of Legato link players reaches just 16kHz, as our impulse measurement shows. The audibility of this depends upon programme content. Strong transients, from a closely miked steel-stringed guitar for example, or cymbals, suffer most. Whilst widely praised for some fine properties, these players do sound warm, softening out strong treble. Bear this in mind when auditioning. NK



It's not just the accuracy of the clock that is important though. The rise and fall time (the speed at which the clock pulse rises to its peak and falls again) and noise on this clock signal are also important factors. Trichord's Clock 2 has a rise/fall time of 4ns, compared to 8-10ns for a typically well specified clock of a standard player. Noise is reduced by a further power supply regulator on the Clock 2 board which also has a ground plane on either side. On top of all this, the analogue output stage is improved and biased into class A working.

With Frank Sinatra's re-masters the Genesis displayed great dynamics and a very good impression of stage depth something few players, even at twice this price, are capable of resolving. Sinatra's vocal was smooth, rounded and tonally faithful. The plucked strings of upright bass were captured complete with a lovely woody boxiness and a warm fullness that swelled out across the stage. Capturing the character of instruments is certainly a forté of the Genesis; brushed cymbals were soft with a smooth, even decay realistic enough to have Frank dancing all night.

Enter next, The Big Fat Snake. This album really showed the force and scale the Genesis lends to music. Bass, although emphasised, was tight and powerful with bass drums driving deep and low. On 'Midnight Mission Man' electric guitar sounded raw, rich and loud, contrasting dynamically above carefully positioned backing vocals.

Once again I was drawn by the terrific bass energy the Trichord delivered with Supertramp's 'C'est le Bon'. But that's not to say that the Genesis is unsubtle. With a great sense of space, acoustic twelve string guitar was free to fill the room with its clear and spacious harmonics. Notes were well separated with little blurring, adding to the sharpness and incision with which they were played.

Drummer extraordinaire Dave Weckl, on one of those GRP recordings that often have a harsh dryness, came through full of attack and with fine midband projection. The Genesis made a better stab at this recording than many, giving a more luscious and liquid quality and making the whole a far more listenable and enjoyable experience.

The Soweto String Quartet's 'Shut Up and Listen' convinced me that that was exactly what I should do. Strings, especially in the remarkable cello duets, ooze a tangible timbre. Violins were smooth throughout their range, with harmonics finely extended into the high treble. Bass was again full, but not overbearing, and played with such gusto and rhythm I got a real sense of Paganini meets Pongola.

Church organ made a fantastic début with Head Acoustics binaural recording of Joyce Jones performing works by Bach, Tournemire and Dupre. The 32ft organ at the Cadet Chapel, US Military Academy West Point in New York reconditioned the cabinets of my 'speakers and the carpet received a complimentary dusting. This was serious air shifting.

Trichord's Genesis certainly veers on the side of musicality rather than accuracy. The Genesis is a 'box of electronics' that converts recorded information into a highly listenable and musical performance. In doing so, it preserves all the nuances of the acoustic, timbre, reverberation. dynamics and tone. Other boxes of electronics may perform part of this ritual, but not all - detracting from the original musical signal. In achieving all of these, I have no hesitation in commending the Genesis as one of the most musical players I've heard. It is excellent value. Dynamic, bold and inspiringly musical, with celestial bass to boast of 🖲

#### **Trichord Genesis**

£549

Trichord Research 73 Church St., Malvern, Worcs. WR14 2AE 20 01684 573524

#### WORLD VERDICT 🌰 🗇 🗇 🛱

Conveys music in a powerful and dramatic fashion. Smooth and sweet, with a good sense of depth.

Measured Performance see P103

#### HI-FI WORLD

# LEAGUE LEADER?

Orelle, it seems, have a new star player in their revised SA-100 amplifier. Haider Bahrani goes scouting for sonic talent.

0 44 4 4 4

relle's SA-100 integrated amplifier is fun. The only way it will ever tire you out is from walking back and forward to your CD player, trying to give your entire collection the Orelle treatment. And it's something you'll be doing a lot of.

The black, thick brushed aluminium fascia with its sandblasted stainless steel plaque hides one killer machine. The control knobs, of which there are two, sink neatly and unobtrusively into the front panel, allowing for an elegant if not awe inspiring finish. Features? It has six inputs, all at line level delivering the signal to a stereo 50watt per channel amplifier. A record out and tape monitor are also included. And that's about it.

The picture painted
 by the amplifier was
 so convincing I could
 almost see the video
 where Michael Stipe's
 torso is passed along
 on a sea of hands.

Inside, improvements have been made since this model was first introduced. The main difference is an up-rated power supply; the toroidal transformer certainly looked a beefy affair. Component quality is high for the price, with an Alps volume control and selector switch sitting next to a neat and simple circuit.

With an Audio'ab 8000CDM transport and Pink Triangle Da Capo reading off the CDs, I tried the SA-100 driving a pair of Harbeth Compact 7s to start with. Listening to REM's 'Drive' off Automatic For The People brought a huge sense of relief -I was going to enjoy this one. The picture painted by the amplifier was so convincing I could almost see the video where Michael Stipe's torso is passed along on a sea of hands. In fact his voice was so hauntingly reverberating it gently raised the hairs on my back. Off the same album 'The Sidewinder Sleeps Tonite', which is a little more demanding in terms of tempo, produced quite an impressive response. The bass and midband were open, clean and well controlled, whilst the treble sparkled, if not like a clean cut diamond, then a polished silver nugget all the same.

'Missing You' is the final track off Beverly Craven's self-titled album. The mood is of a wake, and this was captured almost perfectly by the Orelle. Horns and her vocal took control of the stage and whilst cymbals may have splashed a little, that's just a nit picking niggle for which a  $\pounds$ 449 amplifier like this can be forgiven.

Again from Beverly's collection, 'You're Not The First' asked the Orelle to handle transients from brass sections and thundering kick drums. In general, it coped well, exhibiting a sense of space that most amplifiers in its league would be in awe of. With this kind of performance on tap from the SA-100 it's a case of sitting back and enjoying the music.

I was half-way through a song on Sade's Love Deluxe CD when the urge took me to have a change. The Harbeths were put aside and in came Miss on's 752s. With a slightly fuller presentation the already open sound expanded even further

It did also expose one or two minor frailties that were hinted at on the Harbeths though. Upper bass was strong and punchy, but there was little low end grumble, the Orelle being quite dry here. 'No Ordinary Love' off the Sade album is a mellow yet punchy little anthem, but it seemed a tad reserved when asked to really go for it with the seductive basslines. The distorted guitar that normally gives me a warm feeling was lost a bit in the background. Other than this the sound was very lively and wonderfully expressive.

Bjork then took a spin with her post-Sugarcubes CD, Début. If ever a system is capable of delivering a big sound then the recordings on this silver disc show it. 'Venus as a Boy' was huge, with sumptuous strings and a clean and clinical top end. 'Aeroplane' showed off the amplifier's timing which was a good A-grade, and the sparse, brass-heavy 'The Anchor Song' revealed its truthful tone.

David Bowie's 'It ain't easy' from his Ziggy era was a bit dry in places, but very clean with it. 'Starman' too, always manages to arouse the senses and certainly nothing obscured its path here, with a display of good soundstaging and acoustic punctuality.

Mozart's 21st piano concerto with Vladimir Ashkenazy caressing the keys is a disc I'm getting quite used to. My father will be asking for it back soon, I'm sure. But I was glad to have it when auditioning the Orelle; there are few amplifiers at this price that deliver such a convincing display of orchestration.

The Orelle SA-100 finds itself amongst the Newcastle and Manchester Uniteds of its league. Its strip is a bit on the conservative side, but the quality of its game surpasses this. To get better than this you'll have to fork out more, probably quite a lot more

#### Orelle SA-100

Orelle

£449

Unit 12, Imex House, 6 Wadsworth Road, Perivale, Middx. UB3 7JS 0181 810 9388

#### WORLD VERDICT

Clean, open, active sound. Smooth and detailed with good punch too. One of the best at the price.

Measured Performance see P103

# GT AUDIO "BEYOND Hi-Fi"







The "Hyperspace"

The "Illusion"

The "Interspace"

Anyone who has visited the various Hi-Fi shows over the years will know that the most demonstrated turntable is the Nottingham Analogue Spacedeck. Chosen for its outstanding performance and design, and its sheer ability to play music as it was recorded. With the advent of more and more new vinyl pressings becoming available a more affordable audiophile turntable was sort. Based on the Spacedeck, the Interspace turntable was born. The interspace has just received a five star accolade in What Hi-Fi magazine, described as being "Sweet, fluid and supremely musical, the Interspace is out of this world".

The "Illusion" turntable is basically a Spacedeck, only engineered in a conventional marble finished plinth which looks simply stunning. The performance of the Illusion is identical to that of the Spacedeck allowing the use of any of the Nottingham Analogue pick-up arms and cartridges to be used to maximise results.

The "Hyperspace" turntable has been described as a Spacedeck on steroids. Based on the original Spacedeck design concept and sonic virtues, but taken a stage further to improve on the Spacedeck's already outstanding performance.

Nottingham Analogue have also produced a fine range of unipivot and parallel tracking pick-up arms, which together with four moving magnet cartridges complete the analogue chain. The cartridges start with the Analogue Tracer No 1 which can be upgradable to the No 2 and No 3 cartridge at a later date by just simply replacing the stylus. The Analogue tracer No 4 is different and as such represents the pinnacle of cartridge design. The Analogue Tracer cartridges will out perform moving coil cartridges and with the added advantage of having a user replacement stylus assembly. Another advantage if you own a valve amplifier is the ability to connect your turntable straight into your amplifier without the need of a step-up device. This does away with all the extra connections/circuitry required for using a moving coil device. If you own a valve amplifier is a new cartridge then the Analogue Tracer range of cartridges should definitely be on your short list.

If you appreciate the beauty of real music and want to re-create its illusion at home then consult Graham Tricker to arrange a demonstration or information on the following products.

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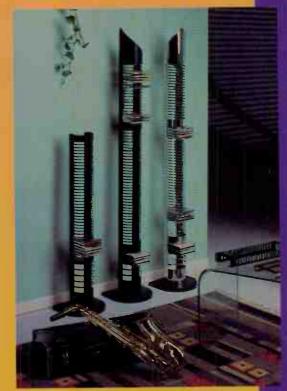
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TOTALE \_

# CODING problems

Haider Bahrani acts as code breaker with KEF's new Coda 9 floorstanding loudspeakers.

he works of great impressionists, like Picasso and Chaggal, are appreciated by most people, yet their interpretations are hardly literal. On the other hand, pictures from a Kodak Instamatic aren't commonly found in art galleries, but accurate portrayals they may be. The KEF Coda 9 loudspeakers, which I am reviewing here, fall into the first of these categories.

The Coda 9 is a three-way, floorstanding 'speaker - a bass driver sits inside in coupled-cavity

#### review

arrangement. The mid and bass drive units are 165mm coated paper types and the tweeter is a 25mm fabric dome design. The box is finished in black vinyl veneer with a moulded plastic face hugging the treble and midrange units as it does the front port in similar style to the Coda 8.

Mick Jagger's 'Sweet Thing' (thang!), from the Wondering Spirit CD, was given life by these 'speakers, with a huge bass that funked and rocked almost out of control. The top end wasn't much better, ringing with every crash of cymbals to blur notes into a mêlée of metailic jangling. It was overly excited with far too much energy. But although these KEFs may at times have thumped and crashed like a PA system, their

 These KEFs may at times have thumped and crashed like a PA system, but their heart is clearly set on hi-fi and they tried hard to impress \*\*

heart was clearly set on hi-fi and they tried hard to impress.

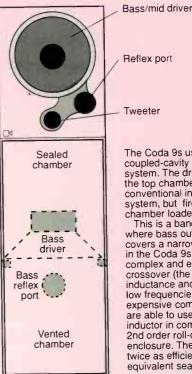
'Don't Tear Me Up', from the same album, brought some breadth to the image which was lacking with 'Sweet Thing'. Here the KEFs opened out well, able to convey a convincingly large sound stage. Bass again hit the listening room like the flood from a dam. This strength of output at low frequencies though did tend to over-shadow the midrange. With strong treble too, this gave it a slightly recessed and hollow nature where I would have liked more projection, especially with vocals.

Our faithful Audiolab 8000CDM transport span the soundtrack of the Rocky Horror Picture Show, with Richard O'Brian singing 'Science Fiction'. A youthful Susan Sarandon seemed too reserved in her vocal delivery on the teasing 'Touch-a, Toucha, Touch Me' - she needed to reach out more and grab for attention. The bass guitar was desperately trying to steal centre stage from her - and at times succeeding. The star of the show, Tim Curry, brought some life back into the listening room on 'I'm Going Home', but this I fear owes more to his powerful delivery than to the 'speaker's.

Over the past few months the marketing department of China Records have been pestering me about an EP called Witchetty Grubs. My home system has been enjoying its eccentricities ever since. This CD has been excellently recorded, with some amazing effects. On simpler tracks the KEFs were fine with the imaging; in fact the guitarist playing just ahead of the left 'speaker was so strongly located I kept turning to look at him. Despite this the Coda 9s still showed their overly excitable character. Dynamics on tracks like 'Pigman' and 'Nibbs Crabbs' sent the speakers into a frenzy; they lost their grasp of the image and instruments became confused and jumbled rather than distinctly separated.

Pulling the speakers, which have rear ports, further away from the wall a little did reduce their overwhelming bass, but this exposed deficiencies in the lower midband. It lost more of its punch and drive, sinking down with the midrange and giving them a slower, thinner balance. Tori Amos' 'Hey Jupiter' was interpreted well though and few people will find listening to her through these floorstanders discomforting. The piano perhaps lacked body and her voice was prone more to shouting than singing, but with this quite midrangy recording the KEFs gave one of their best and most entertaining performances.

Ricky Lee Jones' acoustically cool 'Easy Money' was in much the same vein, presenting a reasonable image, but struggling a tad with depth. With some splashiness at the top and lightness in



The Coda 9s use KEF's coupled-cavity bass loading system. The driver is sealed into the top chamber like a conventional infinite baffle system, but fires into a second chamber loaded by a reflex port.

This is a bandpass system, where bass output from the port covers a narrow band - 90-40Hz in the Coda 9s. So, instead of a complex and expensive crossover (the large values of inductance and capacitance at low frequencies mean bulky and expensive components) KEF are able to use just a single inductor in combination with the 2nd order roll-off of the enclosure. The system is also twice as efficient as the equivalent sealed box.

the midrange the performance thinned out, but was crisp and open at least. 'Coolsville', which reminds me of a hot summer twilight with a gently fanned breeze, had a hint of autumn chill in it. Ricky sounded like she'd sung it just one too many times.

As impressionists go the KEF Coda 9s are in an early stage of development. They've got talent, but it needs nurturing. In the mean time, part with your money with care

#### KEF Coda 9

£299.00

KEF Audio Tovil, Maidstone, Kent ME15 6QP 7 01622 672261

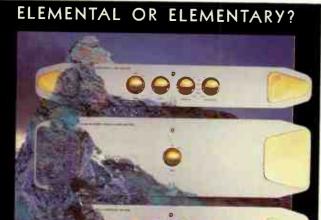
#### WORLD VERDICT

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Strong bass can get out of control, as can treble. This tends to overpower the midrange reducing projection. Reasonably open and spacious with simpler pieces though.

Measured Performance see PI03





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# SEISMIC SCIENCE

The new Rhythm amplifier from Gamma Acoustics features the 211 triode. Jon Marks sets up his seismograph for some serious listening.

he Gamma Acoustics Rhythm is an integrated line level amplifier, using a 211 power triode in each output stage in what they claim to be a zero feedback topology able to deliver up to 18watts of single-ended power. The smaller valves almost hidden in the shade of the hulking 211s are the ECC83 double-triodes of the line stage, ECC81 double-triodes of the drive stage, and the 5687 regulator.

The presentation of the 211 is very different from that of the 300B valve, which is famed for its silky, creamy delivery. What you have with the 211 and this was immediately obvious from the first moment music started coming through the Rhythm - is a more forceful rendition, with real depth and power in the bass, allied to great control and dynamics.

The Rhythm was partnered with our own KLS3 'speakers, for the simple reason that they were deliberately engineered to have the kind of smooth impedance curve that zero feedback amps function best with. Having an idea of what the 211 is capable of with bass, I started off listening to the CD 101 Damnations by Carter The Unstoppable Sex Machine, spinning on our Audiolab 8000CDM/Pink Triangle Da Capo combination.

'Sheriff Fatman' was my first port of call. The bass line that bounces along throughout this song had real authority, control and drive, and the Rhythm even managed to reproduce the feeling of space around the notes of the bass guitar and drum tracks. It was a tonic compared to some of the rather effete (or gutless?) valve amps that have passed my ears. Detail and separation were good across the whole frequency range, bass in particular. Jim Bob and Fruit Bat were obviously on lead and backing

emerged clean and powerful from the soundstage.

The Rhythm's presentation as a whole could be described as clean and powerful, in an appealingly natural way. It never became overwhelming or 'loud'.

Trying a change of direction, I slipped Bonnie Raitt's country-bluesy Luck Of The Draw CD into the player. I was impressed to find that the Gamma had no trouble whatsoever reproducing the smokey bar room feel of this album, regardless of the tempo of the songs. The great bass weight and control of the 211s helped to paint a very realistic picture on a deep, wide soundstage.

Vivaldi's Four Seasons really had me on the edge of my seat, especially the storm of Summer. This demonstrated the reserves of power the Rhythm seemed to possess, even when dealing with a truly tempestuous piece of music.

In fact, whether it was the string quartets of Ravel or Debussy, Alanis Morissette or Joni Mitchell being fed into the Rhythm, what emerged always impressed with its natural, easy power and control. For those in search of an alternative to the 300B, one which couples the organic feel of valve amplification with a rather un-valve-like ear-opening bass extension and control, the Rhythm is definitely worth audition

#### Gamma Rhythm

£2499

Gamma Acoustics Ivy Lodge, 81 Sussex Place, Slough SLI INN 77 01753 526939

WORLD VERDICT

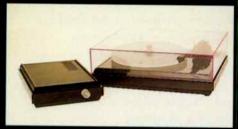
Measured Performance see p103

vocals respectively, and lead guitar





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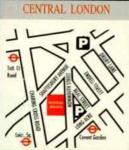
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review

BUDGET BATTLER

Wharfedale's Valdus 300 battles it out in the budget loudspeaker market. Jon Marks referees.

Standmounting against a wall is the way to go if you want to hear Wharfedale's new Valdus 300s at their best. Early listening made it clear that bass was on the light side with the speakers a foot or so into the room.

With John Lee Hooker's Boom Boom LP, played by our resident Garrard 401, SME312 and Goldring 1042, feeding an Aura VA- 80SE-x amplifier, it was obvious the cymbals had an attractive metallic sheen to them, and were well detailed, easily marking out the rivets in the rim. Reverb on the guitar also stood out clearly, although the guitar itself seemed to be a little further back in the mix than normal. John Lee Hooker's vocals growled convincingly, but kick-drum lacked the weight necessary to really make its presence felt. The detailing was good, and the speed of upper bass meant the 300s had a fast, rhythmic delivery that kept both music and feet tapping along.

With Bob Marley's Exodus album the rhythm was there, but it was more of the foot-tapping than the dreadswinging variety. Ultimately, Bob Marley through the 300s didn't grip me in the same way that John Lee Hooker had done.

Our Audiolab 8000CDM/Pink Triangle Da Capo combination was pressed into service as a CD source. The first movement of Rimsky-Korsakov's Scheherazade swelled out of the speakers, the orchestra spread evenly across the soundstage. The slow majesty of the piece was nicely captured, as were the crescendi, which had a palpable sense of anticipation in their build up.

There wasn't quite enough depth to the bass to produce the kind of weight that orchestral works really need. Also, while Samuel Magad's solo violin fared well, there was a sharp edge to the string section as a whole. especially noticeable on louder sections.

The Valdus 300s need partnering with sources and an amp possessing a warm, full sound, like Aura's VA-80. Then they turn in a satisfying performance at the price

Wharfedale Valdus 300

£149.95

Wharfedale International Ltd. Sandleas Way, Crossgates, Leeds LSIS 8AL 0113 2601 222

#### WORLD VERDICT 👘 🗑 🗑

Can work well, if partnered to give weighty bass and smooth treble.

Measured Performance see p103

# COMPOSITE

Dominic Baker auditions Wilson Benesch's turntable, ACT2 tonearm and Hybrid cartridge - all using carbon fibre in their construction.

ilson Benesch developed this, their first and only turntable to date, in 1990. It is a suspended sub-chassis design, the main component being a thick carbon fibre plate linking main bearing to tonearm rigidly. Carbon fibre can attain a modulus of stiffness five times that of steel and is half the weight of aluminium. Seven springs are used in this suspension system which is finely adjusted to control each degree of movement.

#### review

The Quartz referenced power supply provides two pure sine waves at exactly the right voltage and phase orientation to both windings of the motor to achieve a speed accuracy of 0.1%. The motor itself is a high quality hysteresis type fitted to the plinth via its own suspension system which minimises transmission of energy into the platter. The power supply also provides a DC supply to the plinth to power the optional Stage One phono amplifier.

Wilson's ACT 2 tonearm uses a moulded single component arm tube, which they claim is typically ten times stiffer torsionally than conventional types, three times stiffer in bending and an order of magnitude better in damping through the audio band. The arm tube is formed from two counterwoven helixes of carbon fibre giving it its unique pattern.

Unusually, the ACT 2 uses a kinematic bearing. Unlike a unipivot or bearing race, this uses three ball bearings in a triangle, with a fourth bearing sat on top. This allows the arm to move freely in any direction with extremely low friction. The low slung counter balance is located using four carbon chrome balls, and also permits fine adjustment of azimuth as it is rotated from side to side.

For our review, at the end of the ACT 2 tonearm sat Wilson Benesch's Hybrid cartridge. The body, shell and cover are made from, you guessed it, carbon fibre, and the stylus is a highly polished elliptical diamond. Dropping it gently into the groove of Massive Attack's 'Better Things', Tracey Thorn's vocal had a wonderfully deep, rich texture to it, flowing gracefully and smoothly through the lyrics. Percussion was sharply defined and snappy in its delivery with a crisp transient attack that gave a real sense of precision and insight.

Beneath all this though there was an underlying smoothness and ease to its rendition that made everything liquid in a way only top flight turntables are capable of. Couple this with the lavish layers of detail and texture that the Wilson Benesch portrays, and the whole becomes an involving and intricate web drawing you into the music.

Bizarre's 'Keep the Music Strong' had dub bass sounding tight and forceful, the tempo caught and tracked religiously. With its ability to dredge up a surprising amount of low bass, the Wilson creates a large and weighty sound. Further up in the bass, although timing was stable, I did find myself yearning for a more explosive kick, something to really drive the energy and feeling of the music forwards.

 Throughout the listening tests I was continually impressed and surprised by the super clean midrange and its superb neutrality of tone 99

But again vocals were deliciously projected, full, but not too warm. Throughout the listening tests I was continually impressed and surprised by the super clean midrange and its superb neutrality of tone. There's a real sense of clarity and insight here, and in this respect the Wilson is one of the best I've heard.

Up top, treble was sweet but a little closed in with it - more so than my own combination of SME IV and Ortofon Rohmann mounted on a Systemdek IIXe900. By the year 2000 I should have saved just about enough for a Model 20. The Hybrid cartridge does need to see a load of  $47k\Omega$  though I found, the more normal 10-100 $\Omega$  for MCs curtailing upper treble early. This arrangement was possible with the DPA phono stage I used, but others may need minor modification.

With Nirvana's 'Dumb' from In Utero, things opened out to create a far wider soundscape. Cymbals were now brightly lit within the soundstage, which itself created a wide and deep image of the performance. Again the midrange really shone, with guitar strings richly captured along with their deep and softly decaying harmonics.

REM's 'Radio Song' had Michael Stipe's vocal as clear and well conveyed as I've heard. The depth of emotion and feeling he puts into his lyrics came across well to produce a strong sense of realism. Cymbals had fantastic extension to their harmonics, fuelled by a strong, if not completely solid feeling, initial crash.

All along though I wasn't quite convinced. Concentrating less on its performance during the evening when it was used for background music, the Wilson failed to really grab my attention. I wouldn't call it bland, that's too strong a criticism, but dynamic contrast is certainly not one of its fortes. Things rarely propelled themselves forwards out of the soundstage, preferring to stay tightly interleaved with the rest of the mix. It is undoubtedly one of the most neutral set-ups around, especially through the midrange where tonally it is spot on. But it's a little detached and uninvolving with it.

I suppose that against CD nowadays, one of the most appealing things about a turntable is its characterful presentation. Perhaps for me then, the Wilson was just too neutral, and while I could certainly appreciate its strengths, I still craved a little more zing and life. Please don't dismiss this combination on my personal feelings alone though, have a listen for yourself. In many areas, it is still one of the very best

Wilson Benesch turntable	£1,775
ACT 2 tonearm	£1,199
Hybrid MC cartridge	£968

Wilson Benesch Falcon House, Limestone Cottage Lane, Sheffield S6 INJ 201142 852656

#### WORLD VERDICT

Gives a technically excellent rendition but fails to really communicate the emotion in music.

Measured Performance see P103 Rotel's RDD/RDP-980 CD transport and convertor come in at under £1,000 for the pair. Has Eric Braithwaite stumbled across a crock of gold?

The arrival of Rotel's new RDD-980 transport and RDP-980 DAC coincided with the start of the hay fever season. Streaming eyes don't stop you hearing, but they do reading, so it was a while before I focused on the instruction leaflet and noticed Rotel call their transport a 'Digital Drive'.

What with traffic pollution, the shambolic sell-off of British Rail and Eurotunnel's enormous debt, could it be the word 'transport' is becoming politically suspect? Casting one slightly puffy eye over the book of words for the RDP-980 told me that it is not a 'digital-analogue converter' either. It's a 'Digital Processor'. Oh, well, they're only words. Sixteen-bit words, in a way. Count the letters. .

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Both Rotels are standard hi-fi black; what with an Audiolab 8000DAC, an Audiolab 8000A, a pair of Sugdens and a couple of Denon CD players, the hi-fi corner of the room looked like a black cat in a coal cellar at midnight. Fortunately, the lights give an inkling of how to tell one from t'other. The Processor has quite a range of them, in orange, red and green. Orange for whichever of the three sampling frequencies is locked on, phase inversion, co-ax input and output, red for on and mute and optical in and out and green for tape monitor and each of the four source inputs. All the functions are duplicated on a remote. At £450, this is quite impressive proof we are in a digital age.

#### review

If four digital inputs sounds a lot, remember we already have DMX satellite receivers with a digital output and next year will see the first Digital Audio Broadcasting receivers given a bit of luck. A wicked thought springs to mind: if Rotel had slipped in a level pot, you wouldn't even need a pre-amplifier. Unless you wanted to play those antediluvian round black things, of course.

Speaking of which, The Band's latest CD looks like a black vinyl seven-inch EP. Apart from two tracks, with that album they need all the helpful nostalgia they can get. It wasn't Rotel's fault that their version of 'Forever Young' sounded pensioned off. Better was an '86 live recording of 'She Knows' with Richard Manuel's vocal chords straining on the odd note while he concentrated on a very clubby atmospheric piano. Even better was the coarse, hoarse voice of Champion Jack Dupree later.

• One evening turned into a real Mozart session, with an excellent round tone from a clarinet in the K.581 Quintet and splendidly smooth and accurate tone from the violins and viola.

The Rotel did a grand job on pianos altogether, with Barenboim and the ECO apparently in excellent form in the lilting 'Romance' movement of Mozart's K.466 concerto. One evening turned into a real Mozart session, with an excellent round tone from a clarinet in the K.581 Quintet and splendidly smooth and accurate tone from the violins and viola. Both were rhythmically right on the ball, too, with this listener happily chuntering along to one melodic line after another.

And so it went on, through Terrorvision and re-hashes of Buddy Holly classics. Looking back, a couple of very happy evenings later, it suddenly became obvious that not a single question mark had arisen over the Rotel's treatment of instrumental or vocal tone. Even Gerry Mulligan's baritone sax, a weird range for anything digital to cope with, had been quite incredibly realistic. As was the drummer's gentle brushing and rim shots, and the total cohesion with Chet Baker and John Scofield, whose guitar fingering was unmistakable.

A casual listen would have shown little obvious difference between the Audiolab 8000DAC and the Rotel RDP-980. Certainly not to the tune of another 300 guid. The devil, of course, is in the detail, but the Rotel wasn't missing much. Certainly, in tonal integrity there wasn't much to choose between them. Most noticeable was a clearer ambience in the Kingsway Hall recording of Tchaikovsky's Sixth, where through the Audiolab converter, the venue was unmistakable. It was less obvious through the Rotel, and there was more fuzziness over the string sections which were less sharply focused. Sinead O'Connor's 'Fire on Babylon' also had a more sharply etched vocal through the Audiolab, while Gerry Mulligan's baritone sax on the Sony reissue of the Carnegie Hall concert acquired a cleaner-outlined shape too.

Some of this is down to the transport and why I never felt entirely convinced by it, I don't know. Mind you, there's only one other around at this price, and after that we talk about double the money. Hand on heart and hanky to eyes, it didn't altogether slaughter (oops! another politically incorrect word thanks to BSE) a Denon DCD-625 used as a transport. The Denon sounded brighter and a touch faster, though admittedly the soundstage had less depth. The RDD-980 certainly improved on this Denon's own DAC, with an altogether sharper focus and finer detailing. It's obviously worth considering as an upgrade to some single-box players: better than the Audio Alchemy DDI; up against tougher competition, except in facilities, faced with DPA or the QED Reference Digit.

The Rotel combination, however, does stand up pretty well against singlebox CD players like the Marantz CD-17,



Ouad 77 or Teac VRDS 10. It's a spot more dynamically robust and forceful than the first, but not as delicate; not as pure and tight in the mid as the 77, though it has a better integrated midbass; it doesn't have the Teac's touch of grittiness in the treble. Dynamically, although it had done so well otherwise with the smaller ECO and jazz guartets, the Rotel was just that bit more constrained when a grand orchestral climax popped up than the Quad 77 that was to hand. It just goes to show how good some £900-ish integrated players are these days. Well, three, at any rate. Make that four. A single-box player doesn't have the flexibility of Rotel's converter, and at £900 the RDD-980 and RDP-980 are welcome co-members of the under-£1000 club

#### Rotel RDD/RDP-980

£450/450

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Gamepath 25 Heathfields, Stacey Bushes, Milton Keynes, Bucks. MK12 6HR 20 01908 317707

#### WORLD VERDICT

One of the more affordable routes into two-box CD players. Good, clean dynamic sound with a neutral and pure mid-range tone.

Measured Performance see PI03

# **At Sixes and Sevens**

Replacing the 66/606, Quad's 7741 pre-amplifier and 7767 power aim to bring greater flexibility. Haider Bahrani and Eric Braithwaite are first to command this new pairing via the remote system console.

ot on the heels of the mains powered 77 CD player, Quad's latest addition is a new pre/power combo. Built in similar style to the 77 integrated, appearance is smart and tidy. Adding to the sophistication factor, the pre-amplifier comes complete with a remote system console, allowing you to command its functions alongside the 77 CD player and the soon to be launched 77 tuner.

The new pre-amp adds a selectable MM/MC phono stage and sees the welcome return (via the remote control console) of the treble tilt and bass step controls beloved of previous Quads. New is the ability to set sensitivity for each input, allowing the 'loudness' of different sources to be equalized and in the case of the phono stage, a wide range of cartridges to be matched. The AV friendly power amplifier can be stacked to be used in a full surround system, with switchable outputs for dedicated rear speakers or a subwoofer.

#### **Haider Says**

aannan a.

Total Eclipse Violent Relaxation is a new Trance/Ambient collection from the Blue Room Released label (of B&W fame). 'Virtual Terminal Energised' is a track driven by a TR-909 kick drum and a TB-303 type acid bass line, pumping at around 140bpm. Well, an impression of how I recall these sounds at least was presented to me by the Quads. The sound was tight and well controlled in the mid band, enhanced by a hard thumping bass.There was, however, a hint of accentuated treble. The track 'Chaotic Circus' pulsed and beeped with the madness of a drunk R2D2, showing off perhaps the crisper nature of the pair.

Moloko's 'Day for Night' was a great deal more encouraging. The sound of the vocoder just tickled the senses from the inside, whilst the drum and bass sounds were a lesson in control and precision. The sparser sound of 'Dominoid', also off Moloko's Do You Like My Tight Sweater album, was even more appealing, opening up what had, until now, seemed a slightly confined soundstage, but the whole production still gave the impression it was in overdrive.

Garbage's 'Stupid Girl' was a little less forgiving, with Shirley Manson's vocals coming out rather too dry and crisp. Guitar tweaks and riffs were also slightly exaggerated and the soundstage was confused. Having said that though,

#### review

what the Quads presented they presented with clarity and strong treble energy.

Alanis Morissette's Jagged Little Pill was a good exponent of this energy, especially on 'You Oughtta Know'. This was the Quads on speed. Production was solid, with plenty of oomph and drive culminating in a good, clean if dry sound. The irony is that this very same energy assisted in pouring a bucket of water over Mariah Carey's rendition of 'Without You'. The highlighted reverberation on her vocals really overran the performance and distracted me from the rest of the song.

Ravel's String Quartet in F major, elegantly played by the Chilingirian String Quartet, brought everything back into line again. The sounds of the first movement were almost clinical, with plenty of attack. The fuller violins of the second were nicely rounded and clean, if slightly hard at the top.

Though the new 77 pre-amplifier takes the facilities a step forward from the integrated 77, soundwise it's no change

Next I switched to LP with our Garrard 401 turntable and Goldring 1042 MM cartridge attached to SME's 312 arm. Via the console, I set the sensitivity to low (7.75mV). Tracy Chapman was first on the platter with her Crossroads LP. Most of the amplifier's clean, tight presentation was retained, with some good detailing coming off the title track. The loss of lower end response on the other hand brought the crispness of the amp's behaviour more into prominence.

Fleetwood Mac's Rumours produced a more open soundstage on tracks like 'Dreams' and 'Go Your Own Way', but overall things were unfortunately uninspiring. Swapping over from the Garrard to the Wilson Benesch set-up reviewed in this issue didn't bring much of an improvement. I took John Lee Hooker's Boom, Boom out of its sleeve and let it spin, hoping its fulsome bass would help to balance things better. This escapade turned out to be as fruitless as JLH's vocals, which had an obvious lack of colour and depth.

Fed by line sources the pre-amplifier offers a clean enough sound with good detail, and the power has speed and control on its side. As far as the phono stages are concerned though, enough said.

#### Eric Says

Down at Huntingdon, Quad has been dancing the two-step: two steps forward, one step back. Though the new 77 preamplifier takes the facilities a step forward from the integrated 77, soundwise it's no change.

Richer and more fulsome than a 34/306, the new pairing might have been expected to attain equal standards of tonal purity and precision of imagery, but even applying an Argo pre-amplifier to the power amp didn't tighten up what was a somewhat diffuse central image by comparison. String tone also lacked 'body' and seemed thinned out next to the bigger sounding midrange. Nor, vice-versa, did applying the preamplifier to other power amplifiers change anything. The 77CD player is actually capable of more tonal subtlety than either the new pre-amplifier or power amplifier would let through.

Take Gerry Mulligan's baritone sax for example, which had a good blowsy sound to it, but one which was in essence, for a pre/power combination costing £1450, a blowsiness that was really a bit over-blown. The drummer's kit suffered too, lacking some of the finer elements of the wire-brushing and stroking that in the last analysis make the recording entirely credible.

The phono stage, alas, didn't come up to the quality of previous Quad disc inputs. It was stubbornly uninvolving, with instruments lacking true body and scale throughout. Violin tone had a thin and slightly papery quality, cellos and double basses a diffuse warmth which was short on attack. In Vivaldi's mandolin concerto, the tonal colour of the two mandolins had a gulf fixed between them, the one sounding steely, the other more like a guitar. In reality they should sound much closer tonally to each other, but still be definable as different instruments

00000

I sound a bit disillusioned, but the 7741/7767 are, really, only the 77 integrated with a phono stage and tone controls, which means the price is hardly competitive and they are sonically outclassed. Perhaps that's to misread the design aim; if that was to add flexibility above and beyond the integrated, then so be it

#### QUAD 7741/7767 £849

£849.95/599.95

Quad Electroacoustics St. Peters Road, Huntingdon, Cambs. PE18 7DB 11 01480 433777

#### WORLD VERDICT

#### 7741

80

Bright and detailed, but phono stage inadequate at this price. Flexibility is no excuse for mediocre sound.

Measured Performance see P103

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# TECHNICS?

The replay head fitted to Technics' new RS-AZ7 cassette deck features "thin film' technology developed for use in DCC recorders, but is it state of the art? Noel Keywood explains.

he technology behind the replay head of Technics' new RS-AZ7 cassette deck is fascinating. It has also given Technics the opportunity to let their professor of acronyms try for his Masters, sprinkling terms like MR, AZ, BBP and such like liberally through their literature on the subject. So revolutionary is the head that Technics took the time and effort to fly two Japanese engineers to the UK (and doubtless to the rest of Europe and the U.S. at least) just to explain what it's all about. And to make sure potential buyers don't miss the point, the motorised cassette draw has an illuminated window behind which the new AZ head sits bathed in lurid green light. Technics probably pinched this idea from Luxman, who once put a valve in a window on the front of one of their amplifiers, of all things. Perhaps their engineers were inspired by a night out in Amsterdam

One thing the Lalis did that few other speakers do was make listening to music fun. Chris Beeching, Hi-Fi News <sup>5</sup>95



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#### review

Whilst the packaging has been designed to draw attention to the RS-AZ7's main feature, I noted that otherwise the specification is modest. The transport is a single-capstan type, of so-so performance it turned out. There's tape tuning, which makes the deck flexible in terms of tape choice, but it lacks Dolby S. These deficiencies are significant when the price of  $\pounds 299$  is taken into consideration.

•I noticed early on that the lower octaves of piano sounded natural, possessing firmness of delivery and freedom from emphases."

Switching on, the RS-AZ7 cassette compartment lights up that aforementioned attractive shade of green. To the right sits the fluorescent record level display which is on the small side. This shows tape type selected (automatically), as well as Dolby (B&C), which I really had to peer at to read. The record level part of the display has OVU set at Dolby flux which is normal enough, even though the record head can get quite high levels onto tape.

The deck itself works slickly, especially with its DAT-like dual-speed fast-wind and the cassette lifter that operates when the draw opens to make retrieval easy. While the standard of finish is good, build quality can only be described as lightweight, and Technics are outclassed by their rivals in this respect.

#### SOUND QUALITY

Tests showed the RS-AZ7 can handle metal tape, so I tuned in TDK MA and set about recording with peaks on the level meter just hitting the red. With rock music in particular, which commonly has a lot of treble, innately bright recordings became thin sounding and sharp. No matter how many times I used the tune system, it consistently yielded a bright tonal balance (tune systems are not always consistent, but this one was). My treble torture test, Steve Earle's Someday, didn't sound happy through the RS-AZ7, coming across as splashy, coarse and sibilant. Some of this is down to the treble lift of the tune system - ferrics and chromes sounded balanced and altogether smoother although flutter also plays a part.

Conversely, recordings with strong bass energy were handled very well. I noticed early on that the lower octaves of piano sounded natural, possessing firmness of delivery and freedom from emphases. Although cymbals and percussion were rather bright on 'The Sound of Drums', from Angelique Kidjo's Fifo album, the walking bass line was prominent and impressively solid. It potently underlined the fact that this deck has superb bass.

Because the transport held speed tightly (i.e. low drift), subjectively it didn't slur or wander when reproducing piano. I couldn't fault it in this difficult area; not for one small second did either Ashkenazy or Perlemuter sound drunk! However, there was on occasion some pitch pollution caused by capstan wow, which tainted instruments tonally.

With prerecordeds, the RS-AZ7 did a reasonable job but head azimuth error and resultant treble loss was audible as dullness. James Brown's 'Gravity' sounded fine, apparently possessing clean bass and midband along with soft treble. My Nakamichi ZX-9 showed, however, that the Technics was rounding leading edges and flattening dynamics.

For a reason I don't understand, Technics claim this deck is good with old tapes. This promise wasn't fulfilled



with the wonderful River Deep, Mountain High, where again the Nakamichi sorted it out far better. I should point out here that NADs, Yamahas and Pioneer's FLEX machines can all beat the Nak. in terms of replay quality, so it is not an unrealistic standard to use.

The replay head of the new RS-AZ7 does a fine job and confers some useful benefits, but there's more to cassette than replay head performance alone. Technics need to do a better job of addressing its weaknesses, then the RS-AZ7 will become a more balanced and successful design 🤎

Technics RS-AZ7	£299.95
Panasonic	
Willoughby Road,	
Bracknell,	

Berks. RGI2 4PF 7 01344 862444

#### WORLD VERDICT

Tuning system prefers ferrics and chromes to metals. Excellent bass but mid and treble lack dynamics.

**Measured Performance** see pl03

Таре

# THE TRICKS OF TAPE

**Bias Conductor** 

Playback Yoke MR Element

Insulator

Technics have just launched their RS-AZ7 cassette deck using a special head developed from Digital Compact Cassette players. Noel Keywood investigates what this new technology has to offer.

echnics have taken the thin-film head technology developed by Philips for Digital Compact Cassette (DCC) and, with Japanese ingenuity, turned it into a head suitable for steam-driven analogue cassette. Technics make many claims for this clever new head and my tests validated all of them. Their new Amorphous Z-head replay head works well. But will it transform cassette performance?

When put into context, it seems unlikely. This is a replay head; it is not a record head. The crucial difference is that record heads carry a higher flux density, especially when recording onto metal tape - and this is a key issue in tape recording. As it stands the fine structure of the AZ-head is unlikely to be able to handle the flux required to make analogue recordings.

Digital recordings, for which thin film heads like this were developed, don't demand high flux levels. They need only record two signal states (0 or 1 for digital); level is not an issue. The thin film head is a high technology, mass production item designed to avoid the limiting cost of the conventional record/replay head, with its miniature coil, bulky magnetic circuit and narrow gap that demands precision machining. Thin film was designed for digital, where precision must be accompanied by cost effectiveness. In the RS-AZ7, however, I believe Technics have not used it to save money, because they must still fit an expensive conventional record head. Instead, it's a unique selling point.

So the AZ-head will not find its way into more common usage on budget decks that first record, then replay, using the same "combination" head. It seems unlikely to become the saviour of analogue tape recording, nor an item that will give Nakamichi owners sleepless nights. But this ingenious head could well become common on three-head decks, because it meets Technics' claims and works well enough to justify its existence. It's an ingenious piece of engineering. Here are the issues.

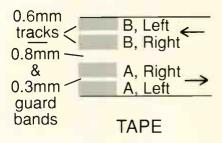
#### DYNAMIC RANGE

Amorphous Z-Head

Substrate

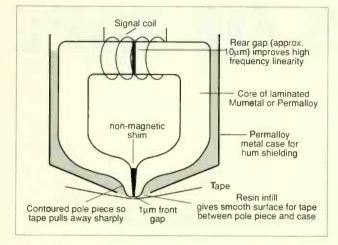
Analogue cassette has a very narrow track width of 0.6mm. To give long recording times from as little tape as possible, it moves at a snail's pace, at "one and seven-eighths" inches per second (or 4.75cms/sec), the slowest speed commonly used in tape recording.

At this slow speed and narrow track width insufficient volume of tape passes over the record head to



Compact cassettes use thin tape and slow speed for compact size/long playing times. But the low volume of tape passing the head limits dynamic range to around 55dB.

#### feature



Conventional record and replay heads are much alike, except the record head has a wider front gap and must accept a higher magnetic flux. The coil induces (record) or senses (replay) a magnetic flux in the core.

At the front gap the magnetic flux takes the path of least reluctance, through the magnetic tape, which it magnetises. The assembly is very hum sensitive, so it must be shielded. Contouring the front pole for sharp tape pull away minimises low frequency response undulations. The front gap tapers down toward the front to concentrate flux.

achieve adequate dynamic range for music reproduction. With cassette, ferric tape offers around 55dB dynamic range, chrome 58dB and metals can get to 61dB or so. Around 70-80dB minimum is required, so at a fundamental level, cassette still needs an extra 15dB or so dynamic range before reaching modern expectations, amongst which are absence of hiss.

At present Dolby makes up the difference, Dolby B giving 10dB improvement, Dolby C 19dB and Dolby S 24dB.

Dolby apart, expanding dynamic range demands either the upper

recording limit be raised, or the noise floor be lowered. To expand upward higher coercivity tapes are needed. These in turn demand record heads capable of generating yet higher magnetic flux densities.

More coercive metal tapes continue to appear, the most advanced being Sony Metal ES, with its visually distinctive white ceramic shell. This can accept enormous signal levels, but only top Nakamichis can exploit it. When

considering dynamic

range, tapes are not the limiting factor. It is record heads that, for the time being, have reached a practical limit and with the advent of the new AZ-head this limitation has become more conspicuous.

#### LOWER REPLAY NOISE

Signal coils generate noise, from the Brownian movement of atoms within their wire, especially where many coil turns are used to generate a usable output from a weak magnetic field (amplifier input noise does not predominate, as is commonly thought).

I measure replay noise by inserting

an empty cassette into a machine, selecting Play and measuring the noise of the replay chain, CCIR weighted, Dolby out. This is consistently -61dB (ref Dolby flux). By using an empty cassette, i.e. one without tape in it, 1 eliminate tape hiss (this is a test of underlying engineering quality rather than one intended to represent real life performance).

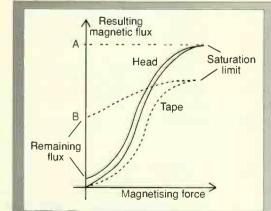
By using a low impedance Magneto-Resistive element that changes its resistivity under the influence of a magnetic field, Technics have done away with the replay head's coil and the noise it generates. The RS-AZ7 measured -65dB, usefully lower than usual.

However, in use this benefit is swamped by tape hiss (bias noise) which, for the quietest tape available (TDK SA-X), measures -56dB. On the RS-AZ7 it measured -57dB. So the actual noise improvement is small. Tape hiss dominates during replay, not noise from the head or replay amplifiers.

#### **HEAD DISTORTION**

Strong distortion is produced in tape recording by magnetic overload, termed 'saturation'. The force needed to magnetise a tape is greater than the flux that results. As a consequence, the replay head encounters a lower magnetic flux than the record head. It has an easier life, but not that easy. It can still experience a strong enough flux to suffer core distortion.

This was another problem Technics faced when adapting the thin-film head to analogue use. What we have to be aware of here is that a hi-fi deck like the RS-AZ7 should, for example, be able to replay a recording made on a Nakamichi.



The head must use a core that is highly permeable (ratio of magnetic flux in material to that in free space, for a fixed magnetising force), but does not retain magnetism (low remanence & coercivity). It must have a high saturation limit too.

Special materials such as heat compressed ferrites, Permalloy, Crystalloy, Sendust, etc are used. Metals are laminated to minimise eddy currents and improve high frequency performance.

Tape must also have a high saturation limit but, unlike the head, have high remanence in order to retain a strong magnetic signal. This means it will also have high coercivity (the force needed to reduce the remanent flux to zero).

A recording head must develop as strong a magnetic flux as possible (A). A replay head sees only the remanent flux of a tape (B) - always lower.

Permalloy (0.1mm thick)	Sendust (0.2mm thick)	Ferrite (0.6mm thick)
40,000	30,000	10,000
20,000	11,000	10,000
6,40 <mark>0</mark>	3,000	10,000
1,500	600	9000
7,000-9,000	9,000	5,000
130	500	650
	(0.1mm thićk) 40,000 20,000 6,400 1,500 7,000-9,000 hard / soft	(0.1mm thick)         (0.2mm thick)           40,000         30,000           20,000         11,000           6,400         3,000           1,500         600           7,000-9,000         9,000           hard/soft

 $\mu$  = flux in medium / flux in free space G = flux in Gauss

Trouble is, with a coercive metal tape like Sony ES this can be anything up to +8dB above usual, enough to overload many conventional heads I've found from experience, let alone a thin-film type.

In counteracting this problem Technics' engineers have been astonishingly ingenious. During their visit they explained to me that head distortion was counteracted by feedback, but I admit to having difficulty fully understanding the details, explained in broken English with great difficulty but valiant effort by the Japanese engineers. A permanent magnet is used to align the field through the MR element and additionally, I believe, to establish a flux through it to avoid distortion. However, a controllable bias flux is applied through one conductor, and a signal flux applied through another conductor to provide an element of linearising feedback.

Distortion tests showed the RS-AZ7 can record and replay high signal levels well. For example, at 40Hz, Dolby flux level, the RS-AZ7 managed 2% - a relatively low figure (good recorders commonly produce around 3%-6% distortion on metal tape). So Technics have combated this problem successfully.

#### HEAD CONTOUR EFFECTS

As tape pulls away from a replay head the recorded field progressively weakens as a function of distance. It still retains an influence, however, especially if the head has a smooth contour around the gap, for easier fabrication. At low frequencies, where wavelengths are long, the waning flux of tape that has left the head gap interferes with that moving across the gap, generating low frequency undulations. Screening and ensuring the tape pulls away from the head gap at a sharp angle minimise this (see head diagram), but make fabrication more difficult and the head more expensive.

Technics use a sophisticated magnetic circuit where permeable yokes conduct field changes in the head gap back to the MR element. The tape moves away from the front yokes at a sharp angle and this does, as Technics claim, eliminate low frequency undulations. My analysis of low frequency response clearly shows how the head rolls off smoothly below 40Hz, measuring -3dB at 20Hz. This is an unusually good result and, with low distortion, should contribute to clean sounding bass.

#### HEAD AZIMUTH ERROR

If the replay head does not match the vertical alignment of the record head (azimuth) its fine magnetic gap will straddle the short wavelengths of high frequency signals, causing severe high treble loss. It's a common problem, a primary cause of dullness and muffling. The cassette was never designed to record up to 20kHz, at which a wavelength measures just 2.3 µm (two thousandths of a millimetre) and head azimuth error has proven an intractable problem - even for the lapanese.

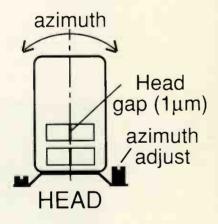
Technics claim that by reducing the height of their head gap (not width) from 600µm to 489µm makes the AZhead less sensitive to misalignment. Trouble is, in our review sample deck

Permalloy is popular for heads, but it is soft and wears quickly and unevenly. Hard Permalloy resists wear better but has lower saturation. Permeability falls off rapidly with frequency, ameliorated by using thin laminations.

Sendust has better wear resistance and a high saturation limit, but is difficult to machine and fabricate. Ribbon Sendust can be laminated down to 20µm (0.02mm) for good high frequency performance.

Ferrite cores exhibit very good high frequency performance and are wear resistant, but don't have the highest saturation limit.

> the AZ-head was still sufficiently misaligned to suffer significant high frequency loss, even if the rate of treble roll-off was slower than usual, as they predict. Technics still need to sort out this problem, which bedevils them. If Nakamichi can do it, so can Technics, although I suspect Japanese production speeds/build times come into this, making it as much an economic problem as a technical one.



#### SUMMARY

The new AZ-head is undoubtedly a clever piece of engineering. But until it can record as well as replay, its impact will be limited. Perhaps Technics should consider extending it into this role by using Dolby S, which offers overload protection. It could do with a better platform in which to operate than the RS-AZ7 deck too, whose transport was mediocre. All the same, the ingenuity behind this new head is impressive. I hope Technics will continue to use it ●

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#### review

TWO TONE

he harman/kardon TU 950 is one of those rare beasts in the world of hi-fi tuners that seems to possess more buttons than available features. The purpose of most of them is obvious, but the functions of some of the eight buttons that sit below the display are a little more difficult to fathom at first glance.

Memory is pretty much selfexplanatory, but it was RDS, AF, Display and PTY that really drove me to the user manual. RDS toggles the Radio Data System on and off, while AF will automatically scan up to six alternative frequencies for the best reception. Display shows the information available, and PTY can be used to search the various stations for a particular Programme Type, such as news or sport.

I felt more in control now, so with RDS on I homed in on the 'Classics' of Radio 3, featuring the works of Szymanowski. The playing of the Silesian Quartet was smooth and dynamic as it emerged from the 'speakers, flowing along easily. I had little trouble differentiating between instruments; each of them seemed to have its own realistically 'woody' sonic signature intact, thanks to a taut and weighty bass.

Unfortunately, the quartet sat in a soundstage which couldn't qu te shake itself free of the 752s' cabinets, and the subtle details that flesh out the shape of the recorded acoustic were veiled, giving a rather vague impression of the venue. Stravinsky's Concerto in D minor performed by the Basle Chamber Orchestra moved powerfully and rhythmically, but for all its gusto still

#### remained rather box-bound.

harman/kardon 70.550

Tonally, h/k's TU 950 struck a nice balance compared to a lot of others in its price bracket, which tend to have engineered treble lift to add artificial insight and detail. It didn't have quite as broad a palette of tonal colours to work with as the NAD 412 reviewed in June's issue, but it certainly painted a better picture than most.

Manic Street Preachers with 'Design For Life' and 'Heaven' by Sarah Washington punched along foottappingly, even though the 950 did a good job of showing up how heavily processed Radio 1's signal was. The same could also be said for commercial stations, where its truthful presentation of a broadcast never really detracted from my enjoyment.

AM reception with the loop aerial supplied turned out to be a bit of a disappointment. Capital Gold genuirely sounded as though it was being transmitted from the bottom of a bucket, and Richard Skinner on Virgin was constantly plagued by background hum and warbling. For most people, AM quality is almost incidental, but it was still a bit of a shame that the performance here wasn't as good as it might have been. For £199.99 the TU 950 is sitting close to the top of the class. It has an impressively dynamic, rhythmic presentation free from the kind of response tweaking that leaves most sub-£200 tuners with a sterile sound and bright treble. However, for a tenner less, the NAD 412 provides even better tonal colour and a broader, deeper soundstage

#### Harman/kardon TU 950

£199.99

Harman Audio Ltd. Borehamwood Ind. Park, Rowley Lane, Borehamwood, Herts. WD6 5PZ 0181 207 5050

#### WORLD VERDICT

Sound quality is generally impressive. Let down by a rather constricted soundstage, but still good value.

Measured Performance see P103



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#### LETTER OF THE MONTH

#### LAZY DAYS

One lazy Sunday afternoon I decided to remove the front grilles from my 'speakers while listening to my system, consisting of Naim NAC 72/NAP 180 amplifiers with Hi-Cap, Meridian 506 CD player with Chord Solid interconnects and Royd Prior loudspeakers with Chord Twin Flatline 'speaker cables.

I can honestly say that the difference was amazing. The whole system opened up - it was like opening a cage for an animal to escape, the sound stage was as never before. My system was just sitting there waiting to be unleashed. But how come removing the grilles is never really mentioned by you in the pages of your excellent magazine? Am I doing something wrong? Apart from the obvious reason of little ones putting their fingers through delicate parts, are there other reasons?

Also, may I ask why you have never written a review on the Royd Prior 'speaker? I know a lot of people find that their bass rather booms, but in my listening room all the speakers that I auditioned with my system sounded bright or laid-back. The Priors seemed ideal partners for the Naim equipment. They really are a good 'speaker.

Why do I listen to the system rather than to the music? I mainly play well-produced music that sounds good through my hi-fi. I'm probably missing out somewhere along the line. Is this normal for a budding audiophile? **Anon'** 

Well, Budding Audiophile, I think you've been caught in the great hi-fi enthusiastunfriendly net that we all get tangled up in every now and then, and from my own experience, it's not easy getting out. Once the grilles are off the speakers, that's it. It's a life long struggle to appreciate music without craving for that niggling criticism of the system.

Why do hi-fi magazines not tell you to remove the grilles? Quite frankly it's taken for granted, perhaps unwisely, that people just do. In some cases, the grille does act as a good diffuser for tinny tweeters, and more recently I have come across a couple of pairs of speakers that seem to be designed for use with them kept on - the Rogers LS33s (reviewed in our April issue) are one good example. But in general, they exist as dust covers and because some people find them more aesthetically pleasing than looking at exposed drivers and tweeters. Of course they also work as a front-line defence against curious younger and older fingers.

Some speaker designers may argue otherwise, justifiably perhaps, but I lost my grilles a very long time ago. HB

Most loudspeakers do tend to sound better with the grilles off because they have been designed like that. The vast majority of designers will work without the grilles on - in fact, at the development stage, the grilles may well have not even been designed. When you are modifying crossover components and experimenting with drivers, grilles are a pain. So most loudspeakers give their optimum response without grilles; Royd confirmed that the Prior was designed to give best results without grilles.

In production, the box is finished, fitted with a grille, and boxed up for sale. The grille is normally a fine cloth with a soft surface, one that will absorb more treble than bass. This will cause the top end response to roll-off, making them sound duller and more closed in, as you have experienced with your Prior loudspeakers.

Some manufacturers design their loudspeakers for use with the grilles on, Harbeth for example, where removing the grille will unbalance the sound. We try and give advice on this in our measured performance section, where we measure with and without grilles to find the best response. Most manufacturers, however, are good enough to include a brief note on this in their instruction manuals. DB

#### **IULY 1996**

## World Mail

#### LIGHTEN UP!

I have just purchased an Audio Innovations L1/P1 combination to complement my First Audio power amp. Although I'm generally quite happy with the sound of the system, I believe it's a little dark and generally rough overall.

My speakers are Triangle Comets on MAF speaker stands and my front ends consist of a Voyd turntable with SME V silver-wired and Goldring 1040, and a Cambridge CD2 Clock 2-ed. The system is wired up with Audio Note silver cable and Audio Note copper speaker cables. I feel the SME series V is the reason for the lack of a musical sound, bordering on the mechanical.

Would a complete change of amplification to an Audio Note OTO SE be a possible solution, or should I look at the front ends or speakers? J. Manders Edgbaston, Birmingham.

Nobody I know has ever accused the SME V of being inadequate, and certainly not in the manner you describe. It's most likely that your stylus is worn and needs replacing. I've heard systems go very flat when the cartridge conks.

The Triangle Comets are bright and on the hard, mechanical side we've found. They can be a bit remorseless. It's also possible that they could be loading down the First Audio power amps. Unfortunately, with a limited 7watts or so from your amps you haven't got

Tn a cartridge replacement to hear your SME V at its best

so much choice in speakers. Bear in mind that big

floorstanding speakers are usually more sensitive than small boxes, a fact that surprises people. I'm going to be totally partial and suggest you consider our own KLS3 kit speakers, which were designed for low power valve amps, having high sensitivity (90dB) and flat  $8\Omega$  impedance. Commercially there's little else like them. NK



Have a listen to what your SME V is really capable of with this Mobile Fidelity Sound Lab LP.

#### **STUDYING FOR HI-FI**

I am a sixth form student studying Maths, Physics and French, and I have applied for and had offers from Salford and Surrey Universities for courses in electroacoustics and electronic engineering with French respectively.

I would really like to work in the hi-fi industry when I have the necessary qualifications, but I am at odds as to which course ! should accept.

Salford's course is excellent and contains lots of acoustical theory, but Surrey is extremely friendly (and nearer) and has an

outstanding reputation, thus making me more

employable when I graduate. I would really appreciate some advice. Which would be of more benefit?

Secondly, I have about £500 to spend on an amplifier. Some possibilities on my mind are the Naim Nait 3, Sugden A21a, Cyrus 3 and the Aura VA 80.

I have a NAD 501 CD player, an old Pioneer amp and JVC S-66 speakers (which I intend to replace in time) with Sonic Link silver Pink interconnects.

l listen to all kinds of music, from classical (mostly choral) to rock and jungle (yes that dreaded word!), so I require something elegant and yet powerful with a good pumping bass. My listening room is about 11 x 12ft. **Daniel Lewis** Dorchester, Dorset.

other things to bear in mind. Every student hates their course, so it's the veople you meet and make friends with that make it all worth while. It doesn't matter if the university has got a good or a bad reputation, if you don't like the place/people you'll have a miserable time anyway and probably quit. Better to go somewhere where you'll have a really good time, enjoy yourself and work better, even if its reputation isn't as good it's all snobbery anyway.

If you intend to take your system with you, get it insured against everything from theft and fire to beer spillage. It took me several days and a lot of money (in student grant terms) to repair a large power amplifier of mine that suffered from spillage damage when a friend



For medium sized rooms and sensible volume levels there's little to beat the Sugden A21a.

It is always difficult to advise someone which course to go for. I'd recommend you go to Salford, but I'm biased that's where I went. It's a lively place, very close to the centre of Manchester which is full of students/pubs/clubs and all the other things that go with it. There are some really good record shops too, and plenty of opportunities to check out live gigs.

There are a couple of

World Radio History

dropped a can of Coke on it. It is also quite common for things to go missing - two of my friends had their rooms burgled and I had a bag complete with Walkman Pro stolen off the train on the way home once

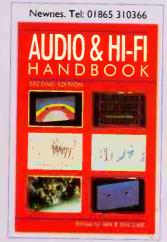
Assuming that electricity will be included in your rent, as it is for most university-arranged student accommodation, I'd go for the Sugden A21a.

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JULY 1996

I use one all the time in my system and find its combination of fine detail resolution, smoothness and deep, rich bass superb. It's found its way into a wide range of systems, most recently driving JBL's horn hybrid S2600 loudspeakers where it certainly wasn't ont of place; in fact the combination worked better than anything else I tried.

The only draw-backs with the Sugden are its limited power output of 20 watts and the heat it generates. When you audition amplifiers, try to hear the Sugden with a pair of Tannoy's D100s as the loudspeakers should be your next upgrade. These are excellent little 'speakers; efficient, punchy, clear and with super imaging. They're compact too, so will suit a bedroom or small living room well. DB

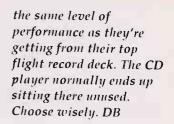


Try a bit of light reading at university with the Audio and Hi-Fi Handbook

#### IN THE NAIM OF UPGRADING

I am writing in the hope you can give me a little advice with the upgrade I'm planning for my hi-fi system. Unlike most of your readers' queries, I am very happy with its sound quality, merely wishing to add a CD player to the system. Unfortunately, this is where the problem lies. All my Naim 62's inputs are spoken for, with my LP12, cassette deck, tuner and Nicam video used through the aux input playing into a NAP 90.

Common sense tells me to purchase a Naim 72 preamp for its better sound quality and extra input, but there again I've never heard my 62 working at its best because I've not added a HiIf you are already happy with the sound of your system, I'd tend to suggest you leave well alone. Against your LP12, you are likely to find CD a bit cold and bland. Cheaper players especially tend to underwhelm when set up alongside a high quality turntable. I'd direct funds towards this area and get the best CD player you





You can continue to enjoy the sound from your LP12 with this top quality LP.

#### **BAD DREAM**

For almost as long as I can remember I've had a dream a hi-fi one that is. It's of owning a Linn Sondek on which to play my records. Now, after five years of looking at the picture on my notice board, I am in a position to fulfil this dream. So what is my problem? Well, I am getting worried about my ears!

I picked out some of my favourite albums and went to listen to the object of my desire, an eight-year-old LP12, Valhalla, Ittok and AT OC-7. This was feeding Naim amplification (power and preamps) which was driving some small Linn speakers (I didn't note the name).

I was not overwhelmed. Good, yes; overwhelming, no, even taking account of the listening room - 13x18ft, with the speakers firing across the width and therefore sitting about six feet away. On returning home, I decided to give my ageing system a careful audition. It comprises Dual CS505 turntable with AT95E cartridge, Audiolab 8000A amplifier acquired earlier this year (with the front-end upgrade in mind), Heybrook HBIs on HBSI stands linked by Naim NAC-4 cable, all in a room

Cap or Flat-Cap to it. Would adding either of these first be the best way to go, thus making the most of what I already have as I've not got the CD player yet, or should I go straight for the 72?

60 1

l've also thought about Naim's new 92 remote preamp. This would give me all the inputs I require, plus remote operation. Decisions, decisions. Can you help?

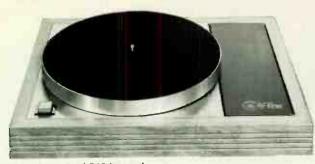
It's also nice to see you changed the prizes for readers letters, as not all hifi systems' amps (mine included) have phono connectors or have CD players installed within them, which made your old prizes totally redundant for people like me. A real change for the better I'd say. **Kevin Kelly Dundee, Scotland.**  can afford - Naim's CDI would be a fine choice.

Want to add a CD player to an LP based Naim system? The Naim

CDI is a fine choice.

This still leaves you with the problem of inputs though, but there is a simple solution. QED make a range of input expansion boxes which allow you to plug two pieces of equipment into one input socket via a switch box. They come with good quality phono sockets and switches, so will have minimal effect on sound quality.

You can then choose whether to replace your 62 with a 72 or 92 at a later date, which will remove the need for this switch box. But for the time being, I'd spend your time and effort on finding the best CD player you can afford. We hear of too many readers who add a cheap CD player to their systems and expect



The long running LP12 is worth an audiophile audition.

15x15x10ft, with the

speakers about 13 feet from the listening position.

This system sounds excellent. Yes, I could pick out the bass lines on a 1961 Dave Brubeck album and, yes, they sounded musical. Admittedly. the lower piano notes did not reach the depths heard in a live recital, but then nor did the Linn I had just auditioned.

So my question is: an l wasting my time or should l continue? I listen to a wide variety of music (jazz, blues, classical, rock). Perhaps I should concentrate on upgrading my CD player (a rather ancient Sony multidisc) which doesn't come close to the Dual.

Incidentally, I also heard a Linn Karik while listening to the LP12 and was again disappointed, in that it sounded rather too analytical and lacking in warmth and feeling. Help! K. R. Hill Bristol.

Your audition of the Sondek was carried out in an unfamiliar system where every other component was alien to the one in your home. The only real way to test a new component is as part of a familiar system. The fact that you weren't overwhelmed could be due to any single one or a combination of the other components you auditioned. Also, the LP12 requires careful set-up and tuning by an experienced

Linn dealer to give of its best. I'd suggest auditioning the Linn in your own system making sure that it is well set-up and the cartridge isn't worn. HB

As Haider says, you have been clobbered by a perceptual problem, akin to assuming an antelope and a rhino might be similar because they both happen to have horns. It sounds as though the 'small Linn speakers' might have been Kans, and the combination of an AT-OC7, Naim amplification and these is going to sound an awful lot brighter and probably harder than your home system.

Any number of vinyl addicts will have an alternative turntable suggestion to a Linn, but no-one has ever suggested it was really inferior to a Dual. Just to add to the potential for being misled, if the cartridge was as old as the deck, or if the deck has not been serviced in its eight years, it could certainly sound pretty dire. Don't let all this put you off your dream. Audition other Linns. In the meantime, replace the cartridge in your Dual. The AT-95E was a good, but cheap 'n' cheerful affair. One of the Goldring moving magnet cartridges (the 1012 is a good choice) will be a considerable improvement. And do swap your CD multiplayer. Early examples were not the best-sounding by any stretch of the imagination. Listen to a Denon DCD-315 or preferably DCD-825. EB

Audiophile Int. Tel: 01276 855578



Here's another record for your collection, while you're waiting for your new turntable.

#### A BETTER CLASS

I have noticed in recent editions of your magazine several letters proclaiming the virtues of valve amplification over solid state amplification. Could I add the virtues of a valve DAC?

My system started with a Marantz CD-63 player, Denon



For the money, Denon's DCD-315 has a surprisingly smooth and musical sound.

PMA250 Mk3 amplifier and Monitor Audio Gold I speakers. Almost immediately interconnects were upgraded, which made an improvement.

Still finding the overall sound unsatisfactory, the Denon amplifier was replaced with a second-hand Musical Fidelity A100 amplifier. Things started getting better. More detail, more bass and a fuller, more rounded sound were obvious.

But the break-through really came when I purchased an ex-demo Audio Note DAC I from The Powerplant, Brighton, on their recommendation. Merely added to my existing system, this valve DAC has made an incredible difference to sound guality.

Suddenly, extra detail, previously submerged, poured through with instrumentation more natural and realistic. Additional bass was apparent and soundstaging very much more clearly defined. But above all, the previous sharpness and glare of my system before adding the DAC has largely gone.

Two queries. Firstly, the DAC I boasts a Class A valve output stage. My Musical Fidelity A 100 is billed as a Class A integrated amplifier, but appears to have no valves fitted. What exactly is Class A and how do valves fit in with it? And secondly, why is Class A not more popular today? James Fraser Glasgow.

The A100 is a transistor amplifier, and as you quite rightly say has no valves associated with it at all. Class A refers to the bias used, rather than the type of components employed, so amplifiers can be found using bipolar transistors, FETs or valves in Class A configurations at their output stages.

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#### S TUPENDO U S Stimulation **STRAIGHTAWAY!** STRATA ΙΙ TORM S ST A D I U M II E NTO S Т R

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As to why they aren't as common as, say Class B, the answer is that they simply aren't as efficient. Anyone with enough experience of Class A amplifiers will have noticed the fact that they could fry eggs on the amplifier. Class B on the other hand wastes less energy, transferring a greater share to the amplifier's load.

In Class A amplifiers, whatever the type of amplifying components used, they both handle the full swing of the signal. In Class B configuration, however, the positive and negative portions of the cycle are split between the two devices, and so only one device need be working at any one time in the cycle. This theoretically gives a 50% improvement in efficiency.

Although less efficient than all other operating modes, Class A forces a designer to optimise a lot of ancillary circuits, especially the power supply, that are less critical with Class B. It also lessens thermal cycling by running everything flat out! For these reasons amongst others, it usually gives best sound quality. HB.

Dare I say that not long ago I reviewed the Woodside valve-output-stage DAC in Hi-Fi News. Different convertor chips, as I pointed out then, have markedly different signatures, and one needs to be wary of attributing a particular sound quality to valves alone.

True, valve output stages do have a reputation for added smoothness, but I suspect in your case some of this is due to the MF amplifier. The improved detail is due, simply, to inserting a higher-quality DAC and output stage than the on-board Marantz one into the chain. Now look for a separate CD transport. EB



Hook up your Musical Fidelity amplifier and Audio Note DAC with this Chord Co. Chrysalis interconnect.

#### ADDRESSING ANGELA

I refer to a reply which Andy Grove gave in December's Supplement. He mentioned the Tube Amp Book by Groove Tubes and a company called Angela Instruments.

l would be most grateful if you could provide addresses for these companies. Kevin Flannigan, Portsmouth.

You can contact Groove Tubes at: 8 Barn Green, Bradmore, Wolverhampton WV3 7AY. TO1902 620156 Fax: 01902 620207

And Angela Instruments can be found at: 10830 Guilford Road, Suite 309, Annapolis Junction, Maryland, USA 20701. To 001 301 7250451 Fax: 001 301 7258823

Weighing in at £250 the

Aura VA 80 is an

impressive amplifier,

possessing a smooth

and musical sound.



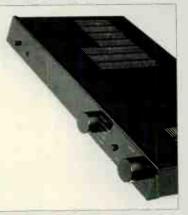
Here's a copy of the Audio and Hi-Fi Handbook to go with The Tube Amp Book.

#### UPGRADE UPDATE

I am in the process of the first major upgrade to my system since it was originally purchased in the early eighties. Since those days, my knowledge of individual units and matching separates has become totally outdated, and I would appreciate your advice on the choice of a replacement integrated amplifier.

Currently my system comprises NAD3020i amplifier, Dual CS505 turntable, NAD 402 tuner and TDL RTL 3 speakers. Room size is 14x13ft, but 1 hope to be moving somewhere larger soon. My budget for the amp is £300-£400. After hearing the superb Arcam 5+ amplifier on my system, 1 think the Arcam 6 CD player would be ideal to replace my ageing Philips CD720. A good choice?

l listen to a wide range of



music, ranging from female vocalists (Tori Amos, Tracy Chapman, Alanna Myles) through harder rock such as Nirvana, Rage Against the Machine and guitar indie bands like Oasis, Cure and Pulp.

I would be grateful for any suggestions you can make to advise me. Are there any other system weak points I ought to be aware of? Mike Kenna Newbury, Berks.

If you've read the January '96 issue - and I'm sure you have by now - you would have seen the review of the Arcam Alpha 6 CD alongside its amplifier brother the 6+. They both fit neatly into your budget and are suitable for your purposes.

Other models worth auditioning within your budget are the Alchemist Axiom and the Aura VA 80SE-x. I've given both some time and they do fare well in their price range. Not only that, but they look good too. HB.

I wonder if combining an Arcam CD player and an Arcam amplifier might not, added to the TDLs, prove too much of a good thing in the amount and quality of the bass. Both have a 'richness' to them at the bottom end. Since you liked the amp, give it a try, but don't forget the current lower-end CD players from Sony and Denon. I certainly wouldn't like to run the TDLs off a 3020i; I'd replace this first. EB



Whatever amp and CD player you choose, this Chord interconnect will work well between the two.

#### **BAG END SUBWOOFERS Probably the best on the planet**

22"x22"x19" Box with 18" Driver = 90Hz to 8Hz flat response = the smallest box with the lowest subwoofer response in the world - with proper dynamic agility!

The De-Regle Group proudly introduce to the UK the fabulous BAG END sub-woofer system.

The USA's famous Stereophile magazine awarded this American system the 1995/6 prestigious and coverted Class 'A' Recommendation. Stereophile, whose contributors number well-known UK reviewers, qualifies its Class 'A' rating as:

"Best attainable sound for a component of its kind, without any practical considerations; "the least musical compromise". A Class 'A' system is one for which you don't have to make a leap of faith to believe that you're hearing the real thing."

The superb **BAG END S18/ELF1** received this distinguished Stereophile 5-Star endorsement, accorded only to 'state of the art' - world class equipment, with Reviewer, Larry Greenhill, enthusiastically summing-up by saying:

"If you're considering adding a sub-woofer system to a first-class, dynamic stereo loudspeaker or Home Theatre system, make sure you audition the **Bag End S18Es** and **ELF1** before anything else."

Absolute Sound magazine said: "ELF Bass is the finest I've heard in my system or elsewhere.... Articulation and transients of low-frequency bass notes were positively astounding." Equally glowing reviews for Bag End speakers come from: The Audio Critic, Home & Studio Recording, Professional Sound, Recording, Bass Player, Mobile Beat, Car Stereo Review, Guitar World, Electronic Musician, The Music Paper, Illinois Entertainer and Modern Drummer.

A truly professional sub-woofer system equally at ease in home cinema and Hi-Fi listening rooms, the **BAG END** system is probably the most flexible available at any price. Widely used in the professional-audio field e.g. Disney, ABC Studios, MGM Grand, and Todd-AO Studios with over 60 systems in their dubbing and digital recording studios, and seriously endor ed by "musicians" musicians such as Herbie Hancock, Chick Corea, Allan Holdsworth, to name a few famous users. Ideally used by owners of Quad ESL and Ribbon/panel speakers. Flexible enough to by-pass existing bass unit.

The BAG END system offers 10" to 18" drivers, mono or stereo (dual-integrator) outboard electronic crossover. System based on sophisticated Extended Low Frequency technology using two forms of overload protection - concealment for the sub-woofer and continuously variable recovery (CVR) for the satellite speakers. Separate amplifier power required - up to 400 watts continuous each 18" driver. Input impedance 25K ohms. Nominal input level required 750mV. Distortion 0.005%. Signal/noise ratio 110dB. ELF and high-pass dynamic ranges 110dB (20Hz-20kHz). Ninety independently selectable switches (45 per channel) to control settings for gain and crossover frequencies (20-205Hz) for high-pass roll-off for satellite loudspeakers; low frequency cut-off (8-70Hz) and gain (+/- 15.5 to 31 dB total range) for subwoofers. High-pass slopes 12dB/octave.

Professional and domestic options include single sub-woofer systems, near-field and time-aligned monitors, range of finishes, metal grills, wheels, handles and System Interface Adapters (balanced to single-end), stainless spikes. Subwoofer system prices £1,500 to £4,500. Copy of reviews, with full specification and price list, from sole importers:

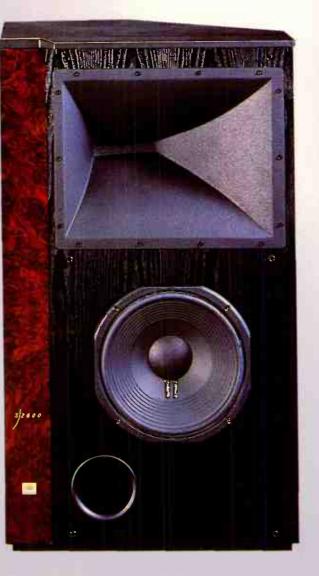
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8 JULY 1996

# HARMONY from a HORN

JBL show that a horn midrange/treble and reflex loaded bass can work in harmony in their \$2600 loudspeakers. Dominic Baker comes away impressed.

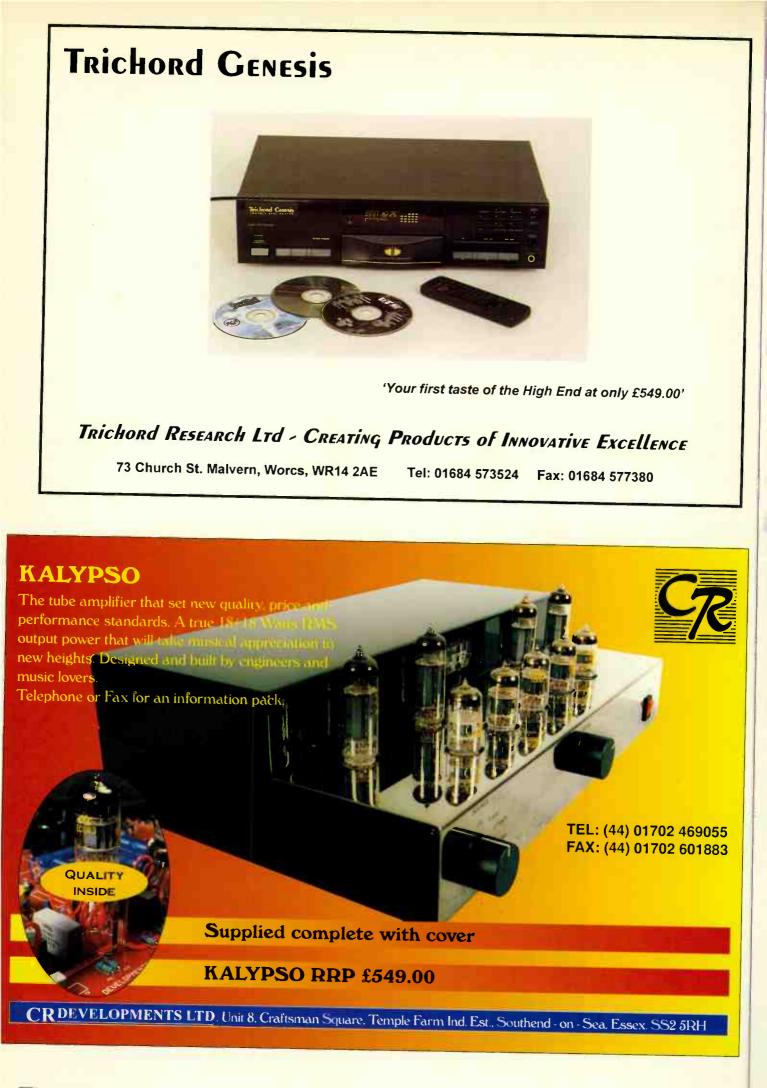




I've been spoilt recently. First Sonic Frontiers' HDCD CD player arrived, then Wilson Benesch's turntable, now these JBL hybrids. If my insurance brokers knew how rapidly the value of my system has escalated, they'd be 'phoning Lloyds about shipping cover. Using a horn for midrange output, from 800Hz upwards, and a conventional reflex loaded driver below, the S2600s are an interesting concept. I'll keep details brief here though, as there's a full description of the S2600's technical side following this review.

The S2600s draw on technology developed from their professional side, where JBL's horn systems are regarded by many as the best available. The professional compression driver - not commonly seen in hi-fi - is fixed to a horn. The latter delivers equal sound pressure level across a wide horizontal listening plane, rather than over a frontal hemisphere. JBL claim that because of this the stereo pair create a consistent stereo image over a wide area. A custom made 12" bass driver completes the package, reflex loaded by a large, front firing port.

Like any good horn loudspeaker, the JBLs have an immediacy to their sound and the way it is projected. It's very free, open, with a great sense of scale and dynamics. Overall, the S2600s are



#### review

one of the best balanced horn loudspeakers I've heard. Treble is smooth, sweet and has enough extension to bring atmosphere and spaciousness to music. They are impressively fast and clean. Percussion on The House of Love's 'In a Room' sent a crisp leading edge striking out into the room. Decay was beautifully captured too; after the initial transient strike it faded gently back into the soundstage.

The JBLs gave a thoroughly convincing performance with PJ Harvey's 'Down by the Water' too. Treble sounded solid and powerful; not bright, just realistic and with the kind of dynamic contrast you rarely get a hint of from conventional loudspeakers. A bum note, a chord struck too hard, are sounds the S2600s capture and accurately relay to the listener. Not that they only emphasise mistakes you understand, but everything is so ruthlessly exposed that the music becomes a living, breathing performance.

A crescendo really is a crescendo with the JBLs behind it. Musical peaks were conveyed with terrific power and authority, rather than blurred by confusion and compression.

With such a wide open sound stretching well beyond the loudspeakers, the S2600s can certainly create the scale of a performance in a thoroughly realistic fashion. Their hybrid design works especially well. Through the midrange and treble there is a solid presence; singers really sound six foot tall - not midgets squeaking at you from a tiny box in the corner. And the 12" bass driver packs impressive upper bass punch, combined with a solid lower end kick.

Bass was deep and taut in the right room, but I must stress that these 'speakers need space to be expressive. In a large room bass extension was superb: deep, powerful and with strong control. There was some colouration of the upper bass, with a warmth that gave cellos a pleasant bloom, although this wasn't strictly accurate. But musical it was, so much so, that this small gripe was quickly forgotten and forgiven. In fact, it lends a richness to the presentation which is more captivating to listen to, even if it does in theory represent a detraction from truthfulness.

A bum note, a chord
 struck too hard, are sounds
 the S2600s capture and
 accurately relay to the
 listener. Everything is so
 ruthlessly exposed that the
 music becomes a living,
 breathing performance. \*\*

The IBL S2600s are certainly the best loudspeakers I've listened to since - well - the S3100s, a few weeks ago at the Paris hi-fi show. These are essentially very similar, but use a 15" bass driver. Both have qualities that place them on a par with Quad ESL 63s in my opinion. They are completely different from the Quads, their strengths lying in other areas, but the overall level of fidelity is similar. Both the S2600s and the Quads image especially well; both are a reference to others in this respect. The Quads have transparency, but the JBLs have the raw detail, scale and power that makes a live performance so much more believable.

Lou Reed's 'Perfect Day' was an absolute pleasure. Piano sounded pure and graceful, vocals intimate, strings smooth and rich in texture. Imaging was fantastic; I loved the way the JBLs painted a clear, stable and convincing picture that precisely pinpointed where everything was located on the stage.

Such was the force behind bass guitar on Garbage's 'Stupid Girl' I could have been in the studio, working on the master through a pair of top monitors, so convincing was reproduction. Portishead's 'Strangers' was just breath taking. The level of detail resolution coupled with such a massive and convincing sound was astonishing.

I have a new favourite loudspeaker - and that's something that doesn't happen often. I used a wide variety of amplifiers, from single-ended 300B valves to 100watt solid state. Nice thing is, with such efficient loudspeakers - as these are - quality, not quantity, is the issue. For the majority of the time the S2600s were driven by a Sugden A21a - a 20watt Class A integrated. Many more expensive amplifiers struggled to improve on this combination.

The JBL S2600s gave such a totally believable sound, that it will be difficult to live with anything else once they're gone. I'd buy a pair if I had anything like the kind of money they cost. . . but I don't. Instead I'll have to content myself with memories of their short visit, topped up by annoying local dealers by booking demonstrations every weekend. "I'm not really sure yet, could you just play this for me, and this. . . and this?" "No, I think I'll need to come back next week for a longer listen"

#### JBL \$2600

#### £3,500

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#### WORLD VERDICT @ @ @ @

Smooth, detailed and spacious with great scale, dynamics and imaging capable of producing a real performance. One of the very best.

Measured Performance see p103

#### feature

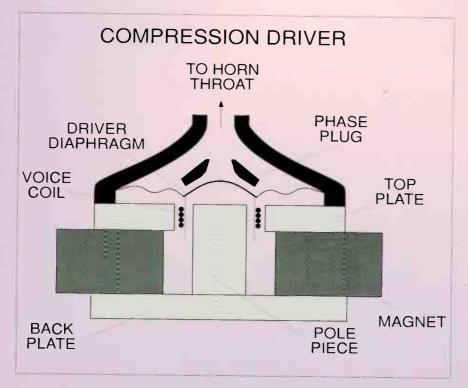
# WHAT'S IN A HORN?

JBL's \$2600 loudspeakers use a horn loaded midrange/treble driver. Dominic Baker discusses the principles behind their design.

BL's S2600 loudspeaker is a bit of a rarity amongst mainstream loudspeakers; it combines a horn loaded compression driver, which covers midrange and treble frequencies, with a large reflex loaded bass driver. There are many advantages to this approach, the main ones being the seamless quality of midrange and treble and the high sensitivity.

#### **The Compression Driver**

Compression drivers are used mainly in the professional loudspeaker market where high power handling and efficiency are paramount. A compression driver is basically a tweeter housed inside a chamber that has an opening smaller than the diameter of the dome. This narrow opening is connected to the throat of the horn. Inside the chamber there is a



In its basic workings a compression driver is similar to a normal dome tweeter. Fitting it with oversized magnets and a horn greatly increases its efficiency. phase plug which controls the flow of energy from all parts of the diaphragm to the throat, ensuring proper phase relationship.

#### **How a Horn Works**

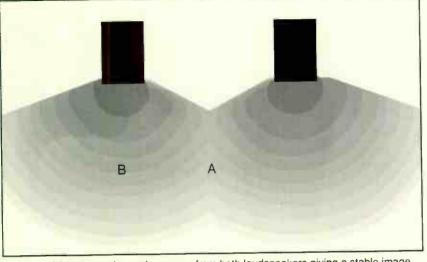
In a conventional loudspeaker efficiency is very low, typically in the region of 1-2%. This is because there is a mis-match between the high impedance, high pressure situation at the driver's surface and the low impedance, low pressure required to drive the air in a room. A horn acts as an acoustic transformer in that it more effectively couples the air load in the room to the drive unit. This improved matching allows some horns to reach efficiencies of 50%.

So, with a horn not only is the driver better able to drive the room, but it is also far more efficient. This leads to lower distortion, increased dynamic range, greater headroom for transients and lower power input for a given volume level.

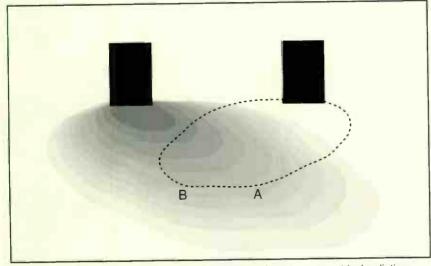
So why aren't horns used more often? The size of the mouth of a horn determines its lower limit. A horn to reproduce bass frequencies down to 40Hz in free space say, would need a mouth diameter of 8.5m, which is large enough to be impractical in most domestic situations.

Through the midrange and treble, horns are much more practical, indeed many manufacturers use a shallow horn around their tweeters to boost efficiency. Here though, the horn profile becomes much more critical. Whereas in the bass flat sided panels can be used with a high degree of success, more complex flares like hyperbolic, exponential and tractrix are needed for an even response at higher frequencies.

#### feature



Listener A hears equal sound pressure from both loudspeakers giving a stable image. Listener B hears more level from the left hand loudspeaker, destroying image focus. As well as this the frequency response from each loudspeaker will be different because the listener is placed further off axis from the left loudspeaker than the right.



In JBL's S2600 system the midrange/treble horn has an asymmetrical radiation pattern, so that our listeners at A and B hear the same level across a horizontal plane and therefore from each loudspeaker. JBL have also taken care to maintain a flat frequency response off axis.

#### **JBL's Stabilized Imaging Horn**

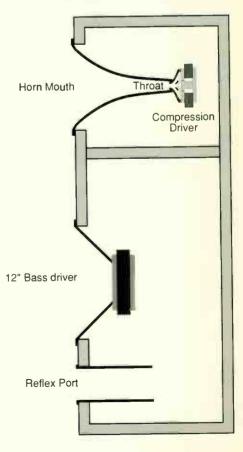
In the S2600s JBL have developed a special horn flare that distributes sound asymmetrically in the horizontal plane to increase the area over which a stable image is held. With conventional loudspeakers if you sit off axis (ie. closer to the right than the left) the image will not be maintained because the output from the right loudspeaker will be louder. The frequency response you hear from each loudspeaker will also be different - normally as you move further off axis treble output falls. In the S2600s the horn has been designed to direct sound more strongly towards the listener as you move further off axis. So, for example, as you move towards the right loudspeaker the output from the horn of the left one gets louder to compensate. Care has also been taken to ensure that this off axis response stays as smooth as possible, so that differences between the two loudspeakers, even for a wide range of listening positions, are kept to a minimum.

#### The \$2600

JBL's S2600 loudspeaker combines this asymmetrical dispersion horn midrange and treble unit, which runs down to 800Hz, with a powerful 12" bass driver. The light paper cone is reflex loaded, making the driver efficient enough to keep up with the output from the horn.

Paper, although generally regarded as a cheap cone material, does have a natural tone to it which is well suited to the qualities of the horn. It doesn't have to go up the scale too high either, so cone break-up isn't a problem. All in all, the JBL S2600s are a very interesting design. Clever and careful engineering and choice of components allow them to reach a level of performance few others can match. I am sure that they will be regarded as a landmark product in years to come ●

#### JBL S2600 CUT AWAY VIEW



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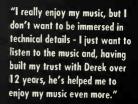


We think you should listen to our customers. Because they are fairly restrained and completely unbiased when it comes to compliments. And they are all pretty complimentary about our service and the way in which we sell hi-fi.

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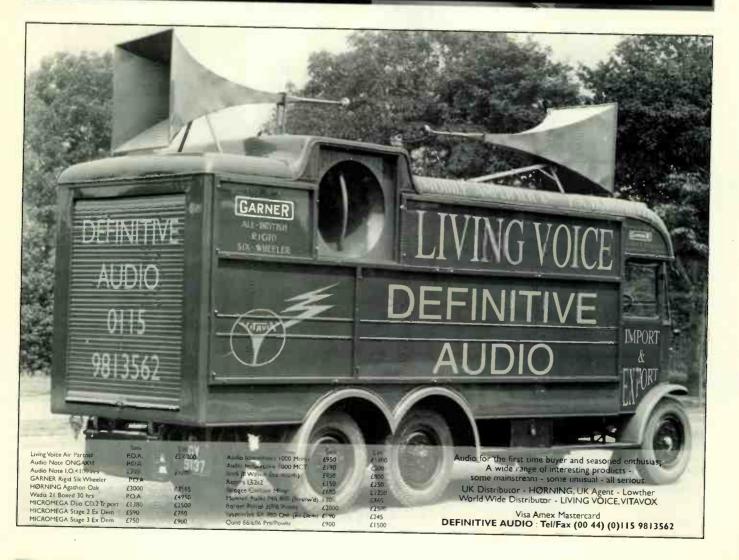
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1 DE



opinion

There's no doubt in my mind that a good valve amplifier is hard to beat. Their deceptively simple circuits do, however, conceal some tough problems and we're no closer to solving them in 1996 as we were in 1946. As a result, too many commercial valve amplifiers suffer weaknesses that obviously colour their sound.

This gives critics especially those who assume that because valves predate transistors they must be worse - a field day. It appears to confirm that colouration is the main attraction. But that's not the case. When the awkward technical problems are adequately dealt with, the resulting amplifier is often a wonder.

We've got two problems here. One is purely technological: valve amps are peculiar beasts to engineer, simple in pure



everyone rates highly. A Pink Triangle Da Capo CD convertor was used as a source (also universally admired). Through our KLS-3 loudspeakers Fifa sounded shrill and mechanical - I got up and took it off. This system just didn't work.

Dedicated hi-fi enthusiasts - including

 a pair of Quad II power amplifiers displayed the sweetest, easiest sound I've ever encountered, but it was a long way from being accurate

electronic terms, difficult to the point of impossible in transformer technology. As a result, many suffer all the drawbacks their critics recite - in spades full.

The other problem lies in the opposing camp, as it were. If many people are happy to listen to even a poor valve amplifier - and often they are - we need to consider why. The answer to this struck me forcefully the other day.

I bought Angelique Kidjo's Fifa album, at London's thronging Portobello Road market - a great place to be on a sunny Saturday. At home the hi-fi was in bits, as always after a busy week, so I connected up a top quality, British made solidstate integrated amplifier that I've spent little time with to date, but which reviewers - often look for ever more detail and "speed". Trouble is, there's only so much you can get out of a recording. If there's no more in there and current 16-bit digital in particular has a strict limit then the rest is artifice. A bright, forward sound emphasises both detail and speed, but it isn't easy to live with. Ordinary listeners, as opposed to enthusiasts, are put off by this.

By way of contrast, when valve amplifiers especially old ones - sin, they commonly become soft and warm sounding. I can't say I'm especially impressed by this sort of presentation. For example, many years ago I owned a pair of Quad II power amplifiers. They displayed the sweetest, easiest sound I've ever encountered, but it was a long way from being accurate. In the end I sold them. All the same, I could listen to music through the Quads, but with the modern solid-state amp I've mentioned above I could not. I'll leave you to draw your own conclusion as to which I would choose between the two.

Mysteries

from Noel

Keywood

But back to valve amplifiers. Extreme warmth in their sound invariably comes from limited power bandwidth. This prevents full treble output being delivered so, say, a crash of cymbals will be muted, its full power lost. The phenomenon will sometimes be accompanied by falling treble output, which limits top-end frequency response. Both are attributable to poor transformer design, where the output valve struggles to supply current into unwanted leakage inductance or winding capacitance.

Keeping both these parameters low requires a lot of sectionalising within the transformer, careful control of a stack's aspect ratio, precision winding and, finally, tedious connection of all the sections such that reactances cancel rather than add. Whilst this is at heart a cost problem: good audio transformers take a long time and a lot of skill to make, these days it's also become a lost art. Few people understand the problems any more, nor



how to overcome them. As a result, overly warm sounding valve amps are common and the reason is blindingly obvious from measurement. It serves to give valve amps a bad name.

I know from my own experiences with valve amplifiers that, with a good output transformer, frequency response, distortion and power bandwidth can all be quite sufficient for high fidelity. I expect, for example, a good design to be able to swing full output at 40Hz and 10kHz, quite good enough even for the most difficult modern rock music. The result is interesting. As you might expect, much warmth and softness disappears. However, at the same time the intrinsic smoothness and liquidity of sound offered by valves becomes even more apparent, especially with string instruments, which display texture and bite, whilst not possessing that peculiarly flat and grainy sound of solid-state, which on occasion can be offensive as I found with Angelique Kidio

Whether the dying art of audio transformer manufacture will ever be fully revived I don't know. Until it is, I fear too many valve amps will only serve to prove their critics right. My advice is to be very careful when auditioning. I hardly need to say that, in my view, valve amps are wonderful; it's too bad so many are awful ●



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#### feature

# THE SUN GOES DOWN ON NAKAMICHI



The Nakamichi model 1000



If you want definitive sound quality from cassette, the name is Nakamichi - but not

for much longer, I was saddened to hear from their importers, B&W UK, that they are ceasing production of all hi-fi products, including cassette decks. These were the pinnacle of Japanese ingenuity and engineering skill.



Etsuro Nakamichi, founder of the company in 1948.

Like so many of Japan's electronics companies, Nakamichi arose from the ashes of the second world war. Chiyoda Riken was founded in 1948 by Etsuro Nakamichi. It designed, developed and manufactured electronic entertainment products for other companies, who badged and sold them. This is a popular practice in Japan. Their first tape deck



Niro Nakamichi, who joined his brother as the company expanded.

Famous around the world for their astonishing cassette decks, we were surprised to learn recently that Nakamichi have called it a day. Noel Keywood looks at the company's history, and its most famous products.

was an open reel design, produced in 1951, selling under the brand name Magic Tone.

Later, in 1957, the company developed and manufactured their first magnetic heads. Head technology in particular has always distinguished Nakamichis, so it hardly seems surprising that their first efforts netted many orders from Japanese tape deck manufacturers. The following year the company's name was changed to Nakamichi Laboratory.

Etsuro's younger brother Niro Nakamichi had stayed out of the business, even though he studied physics and in 1964 claims to have lodged a patent, in Japan, for a cassette system that ran at 3inches per second, using 1/4in tape. However, beaten by Philips, it was dismissed.

By 1967 the company, just four years after the introduction of the cassette, was awarded a contract to design and manufacture cassette decks for Harman

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#### feature

Kardon of the U.S.A. As business increased, Niro joined his elder brother but as a subcontractor their name was still little known.

This changed in 1972 when Nakamichi launched The bit their first own-brand deck, the head re Model 1000. It was both innovative and visually impressive. As a dictation medium, Philips had made provision for two heads only with cassette. On the Model 1000 Nakamichi used a third head, together with record head azimuth adjustment, to get a frequency response that reliably extended to 20kHz. It was launched in America, under marketing manager Takeshi Nakamichi, son of founder Etsuro.

The Model 1000 was followed by the Model 550/350 and 250 portables, and later the 600 series, especially distinctive because of their sloping fronts.

The 1980s saw a new Model 1000, the ZXL. It had computer tuning, a dualcapstan transport, record head azimuth adjustment, three heads and numerous other refinements. It was accompanied by the simpler 700ZXL, as well as the manually adjustable ZX-9 and 7. Less ambitious were LX-5/3 and the BX-2/1, domestic machines most likely to be found second hand.

Most amazing of all is the Dragon.



The CR-7E with manual azimuth adjustment



The balletic RX-505, featuring Unidirectional Auto Reverse - the head remains stationary while the cassette pops out & pirouettes.

This has automatic replay-head azimuth adjustment, the first time ever for any cassette deck. In fact, only Nakamichi have ever sought to alter replay head azimuth, using a motorised head platform. The later CR-7E is, in my view, the ultimate in this respect. Simpler than the Dragon, it lacks the auto-sensing head, having instead manual adjustment accompanied by remote control.

Seduced perhaps by the market impact of products like the Model 1000 and Dragon, Nakamichi have produced many other astonishing devices, like the RX-505/303/202 auto-reverse cassette decks that physically spin the cassette around, the T1000 turntable that centres records to eliminate low rate wow produced by eccentricity, the OMS-1000 optical disc system and finally the 1000 DAT recorder.

Couple all this with a very broad but, in the UK at least, none too successful hifi range comprising power amplifiers, preamplifiers, tuner amplifiers, CD players, CD auto changers, tuners, AV units and a host of accessories and it starts to look as if Nakamichi have spent huge sums in research and development, inventory, marketing and all the paraphernalia needed to support such a large range. The Kodaira plant, whose senior managing director, Osamu Nakamichi, is another brother of the founder, employs around 200 people, but Nakamichi have other plants, and manufacture computer peripherals in America. As the 1990s started, sales of upmarket hi-fi slowed around the world. The cassette went into decline some time ago, prompting Philips to launch DCC and Sony their MD.

Both these significantly undercut DAT, leaving Nakamichi's

expensive 1000 recorder out on a commercial limb. It looks as if this combination of events has been particularly cruel to Nakamichi, who have over the years invested enormously in highly complex top-end products. Now, all production of hi-fi has ceased, leaving only the 1000 DAT recorder for professional use, semi-professional CD-R recorders and computer peripherals.

#### BUYING A NAKAMICHI CASSETTE DECK

Nakamichi have traditionally offered a good spares and backup service to avoid early obsolescence. The factory supplies spares for 8 years after a model has ceased production and B&W UK stock enough to extend this period further.

They told us they have all spares for all cassette decks, with some exceptions for early models. For the Model 1000 and 700 Tri-tracer, including MkIIs (over 20 years old), only belts and heads are available. Similarly, for the 600, 550, 350, 250 models (early 1970s), certain spares are now unavailable.

Note that parts like belts and heads are more likely to be available than trims.

For recent models, like 1000/700ZXL, Dragon, CR/DR series, all spares are available. For more specific information, phone Nakamichi Service Dept 01903-750750 01903-750694

#### WHAT TO BUY

Later model cassette decks are a much better bet than early ones, but if early ones are wanted for a collection, make sure they are cosmetically in good condition, since trims are unavailable. Internal parts are easier to replace. For normal use I found from tests that the budget three-head decks, e.g. LX-5, Cassette Deck 1/1.5, CR-4/3, DR-1/2 offer best value. Upmarket models like Dragon, ZX-9/7, CR-7/5 are the cream, but they are complex and may be more expensive to repair/service. All two-head models are unremarkable.

I bought a ZX-9 in 1983, for tape testing. It has worked perfectly since, with the exception of regular bulb failure (end-oftape sensing). BASF (Germany) didn't believe my tape overload figures, so they sent over an engineer from Germany. I was told later that when he returned they went out immediately and bought ZX-9s! Nakamichi's reputation was well earned in my view •

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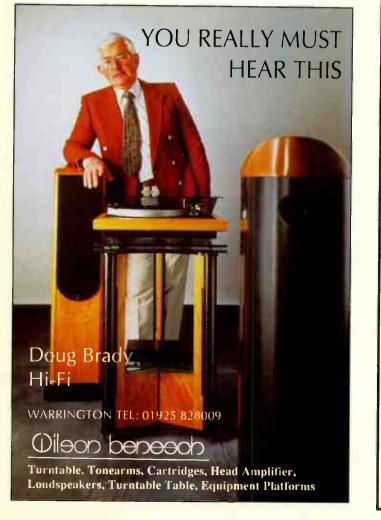
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# 



had to think long and hard before writing this column. The question 1 kept asking myself was, "do our readers really want to know about another new format to rival CD and the battle that will undoubtedly ensue?" Aren't things already confusing enough, now that there are 6 digital formats present and projected (CD, DAT. DCC, MD, CD-R, DVD) and 2 analogue?

CD and DAT. as most engineers now agree, are already outdated. In fact, many are of the opinion that they were never good enough right from the start. DCC and MD sought to tackle the market for home recording. offering the ability to record a digital or analogue source. but compromised quality further; neither have been especially successful. CD-R, recordable CD, is used mainly by the Pro industry cost and copyright problems have prevented this system making major inroads into the domestic scene

**DVD** (Digital Video Disc) is intended as a medium for video and multimedia, where far greater storage capacity is required (DVD can store nearly 8 times as much information as a CD on the same size disc). It is this DVD disc that has stirred the audio industry, which quickly realised that here was a carrier suitable for a greatly improved digital format. Because the DVD discs will be used by the

Dominic Baker

film and computer industries too, there is a good chance that the discs/players will be affordable as well - the economy of scale and all that.

DVD is a 'high-density' disc using smaller pits read by finer lasers to give 4.7Gigabytes of storage space compared to CD's 0.6Gigabytes. The Acoustic Renaissance for Audio, which was founded by Professor Hirokazu Negishi of Canon and includes Bob Stuart of Meridian and Professor Malcolm Hawksford of the ideal for archiving.

In fact the need to archive music was what inspired DSD in the first place. Having recently bought Columbia, Sony face the task of archiving a \$2 billion back catalogue, which as you can imagine is a lot of music. Their engineers readily admit nowadays that 16-bit digital is insufficient to capture all of the information from an analogue master tape. So before the archiving process could begin, they had first to come up with a system that was 'transparent'.

"CD and DAT, as most engineers now agree, are already outdated"

University of Essex, has already proposed a 24-bit 96kHz sampling system. Now that Sony have their own system, DSD, the battle begins.

Visitors to room C1P5 at AES Copenhagen in May will have been able to listen for the first time to **Direct Stream Digital** (DSD). It was demonstrated against 20bit 44.1kHz digital audio with a 1/2inch 2-track analogue tape running at 30ips as a control (interesting that analogue is still chosen as a reference). The specification, Sony claim, is so high that it won't need improving in future (unlike CD) and so is

Sony's DSD was developed primarily for two track mastering, but there is also good potential for audio, multichannel and surround sound applications. The provisional specifications for DSD are far higher than the 16-bit CD system we use now. The sampling frequency is 64 times higher, bandwidth is 100kHz compared to CD's 21kHz, and dynamic range 120dB (up to 20kHz). At this sampling rate DSD produces four times the digital data of CD.

Direct Stream Digital captures the output of a modified Delta-Sigma convertor as a single-bit high-density pulse train.

The analogue signal can be easily reconstructed by passing the DSD datastream through an analogue low-pass filter. This high-density datastream can also be down-converted to a variety of the other industry standard data formats (such as 16-bit 44.1kHz) allowing backwards compatibility which is going to be an important factor for any new system.

As a final note, it must be said that it is the hardware manufacturers of the hi-fi industry who are pushing for higher quality digital audio. The software suppliers, record labels, are not so keen. As far as most are concerned, there is no need for a CD replacement; the consumer is more than happy with the quality of CD, they say.

Looked at in this way, it appears unlikely that any new super quality digital system will ever be introduced, but as DVD takes off in the computer and video markets. perhaps the convenience for pressing plants of being able to run production of DVD discs for computers, video and audio with no different processes involved will be a strong lure. Hardware too could be standardised, the laser mechanism for all three areas being identical. This would push production runs upwards and cost downwards. In theory too, there's no reason why your computer shouldn't function as a multimedia station, playing video, audio and computer DVD discs. For audio it would act as a computer controlled CD transport, supplying digital data to your outboard DAC to feed to the hi-fi system.

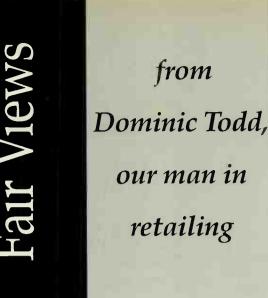
It sounds like an impossible dream at the moment, but perhaps in the next 5 years or so we'll see a super-CD system with fantastic sound quality. Better still, the players and discs may be no more expensive than they are at present, bringing the consumer a real and worthwhile benefit •

oes hi-fi have to come packaged in boring black boxes? The debate as to whether hi-fi should be more outlandishly designed continues to rage. You may have noticed in our recent Letter pages it's a subject that many of us feel strongly about, one way or the other. It's something I've written about in previous columns, usually lambasting manufacturers for not being more adventurous. After all, if companies such as Michell and Audio Innovations can produce genuinely different and stimulating designs, why can't other manufacturers?

The reason, I feel, is not as clear cut as it first appears. Although I would be the first to argue for more adventurous hi-fi design, there are compelling arguments for the 'black box' that need to be heard.

Looked at in a Germanic, practical fashion, black boxes make a lot of sense. Firstly they are relatively unobtrusive. A stack of black separates may stand out in a room. but it won't shout at you like a stack of chrome or Ferrari red separates would do. Many may rather their hi-fi is attention grabbing, but over time the novelty can wear off. Also the colour scheme and styling of the unit may act as a positive distraction whilst listening to music. You don't believe me? Then just try listening to a Michell Gyrodec, placed in front of you, without becoming hypnotised by its revolving platter weights!

Black is usually resistant to marking and dust (depending on the finish) too. An Audio Innovations chrome Alto amplifier may be striking when lifted out of the box but, believe me, the novelty soon wears thin after cleaning off dozens of smeared finger prints daily. The matt black Alto amplifier, on the other hand, will look good for weeks without the need for constant attention from the duster. Black is also a verv safe colour that doesn't



date as other hues do. A ten year old Nakamichi, for example, still looks good today, which is more than can be said for a ten year old component in 1986. It would no doubt have been silver, wrapped in fake wood reminiscent of a school desk, and of fifteen years ago, you'd be able to buy a CD player for it today that would match. Then there is the box shape itself. Despite there only being a loose standard for width or depth, different manufacturers' units seem to quite happily stack one on top of

• Somehow the black box is the iconoclastic symbol for all that is hi-fi.\*

gargantuan proportions.

Being a boring black box also means that when the time comes to buy another, it will usually fit in with the rest of the system. I say usually as I'd be the first to admit that no one manufacturer uses quite the same finish, or the same texture for that matter. Yet the end result is usually harmonious enough.

There's much to be said for sticking to the same shade over the years, too. Whilst other manufacturers wavered from silver to black, and maybe experimented with champagne gold along the way, NAD religiously stuck to grey. Whilst it may not fit in with anything else, it has at least meant that if you bought a NAD system another. Try this with Audio Innovations' 'flying saucer' shaped amplifier, and the result is bound to end in tears. Black boxes simply fall off the top of its oval shaped casing. And that other stalwart of alternative design, the Gyrodec, may look imposing but finding something that will accommodate its bulk can be difficult.

Yet there's a factor involved here that goes beyond the merely practical. It's almost inexplicable, but somehow the black box is the iconoclastic symbol for all that is hi-fi. It is the very identity (wrongly perceived or otherwise) of our whole industry. There's something appealing about a stack of anonymous



separates that's more than the mere sum of its parts. Each system tells a story of the owner's likely tastes in music and musical presentation. It points to possible upgrade paths that have been taken in the past, that can be as intricate as a family tree (remember the lengthy articles on readers systems in hi-fi magazines of yesterycar?)

These systems also usually feature yards of exposed cable. It may not be neat and tidy like a midi system with all the cables hidden in conduit tubing, but at least it's got character. I always like to think of a real hi-fi separates system as the equivalent of the Lloyds building, with all the workings exposed in an intriguingly skeletal yet honest fashion.

You may argue that this is the case with a collection of any separates whether square black ones or not, but there is something appealingly industrial and. again, honest about boring black boxes. Don't get me wrong, I still think there's scope for huge improvements in build quality and detail design. And there will always be a place for the absurd. impractical and downright gorgeous (which we could do with more of). But maybe there's more to the mainstay black box than first appears, and perhaps they aren't so boring after all. Perhaps



4 JULY 1996

#### review

Tangent's Monitor Two loudspeakers put up a tough fight against their opponents for just £60. Haider Bahrani is on the front line for some close surveillance work

TANGENT

s a budget loudspeaker the Tangent Monitor Twos aren't bad at all. For £60 these are the nearest things to a bargain I've come across in hi-fi.

In loudspeaker terms the Monitor Twos are tiny, their cabinets holding a tightly confined 5.7litres of air. Sound staging was quite the opposite though with very good breadth and depth giving a far larger impression than I'd expected. The bass driver is a 130mm long throw unit and the tweeter is a 25mm copolymer dome, ferrofluid cooled. Interestingly these are an infinite baffle design, not reflex loaded like most miniatures.

Now let's talk music. Eurythmics' 'Sweet Dreams' was exposed in most of its synthetic splendour. The mid band was clear if a bit dry and its lower end behaviour was dynamic and punchy. Below this bass didn't extend down that far, but was tight and tuneful which is all you can expect from such a compact box. Transients like on 'Here Comes the Rain Again' were handled quite competently with the typically fast attack of a small sealed box.

The bells on Bjork's 'Venus as a Boy' rang a little too much though and the decay on cymbals and high hats, in contrast to the upper and lower midband behaviour, tended to fade rather too slowly causing them to splash. Bjork's vocals were prominently forward in the image however forming a convincing illusion of expansive sound.

With Fairground Attraction's hit song 'Perfect' the reproduction of the acoustic instruments and Eddie Reader's vocals was musically enjoyable. I can't describe these speakers as truthful, but I did find them entertaining: The First of a Million Kisses lost little of its life or character. Double bass didn't have the openness and richness of a floorstander and treble lacked the smoothness and sweetness of more expensive models. Saying this, the Tangents' sound reproduction was coherent, gelling together all aspects of the music and presenting it in a balanced and tidy fashion

Sade's 'No Ordinary Love' off her Love Deluxe album really did show these speakers off more than their sub £100 price tag would have you suspect. The soundstaging was better than I've found in speakers at many times the price while the control in the lower midrange bought a tightly defined tempo and rhythm to the track. The slight glare in the treble and accentuated sibilance tried, but failed to detract from the very acceptable overall sound.

BATTLE

BULT

FOR

Much like a budget guitar, the Tangent Monitor Twos don't have the smoothness or sustain of pricier Fenders and Gibsons, but they sure can churn out a good tune when asked to. Beer swiggin' blues fans I'm sure will show some feeling for this raw animal which complemented the smooth Cognac of Bonnie Rait's slide guitar on Buddy Guy's 'Feels like Rain'. Buddy's guitar did screech a little on the higher notes and there was a clear lack of substance at the very bottom. . .

But then for this kind of money what more could you ask for. The Tangents are balanced to produce an enjoyable and communicative sound, and at this price that's not just half the battle, it's a clear victory. Perfect for students or audiophiles on a budget

Tangent Monitor Two

£60

Tangent Acoustics 115 New London Road, Chelmsford, Essex CM2 0QT 0500 828620

#### world verdict 👘 🌐 🌐

Good imaging as well as control. Tweets a bit too much, but more than fine for the money.

Measured Performance see p103

# A COMPETITION WITH

We've got four pairs of loudspeakers from Celestion's Impact range to give away this month, one each of the 10s, 15s, 23s and 30s. That's a total of over £1,000 worth of prizes.

elestion is the world's oldest loudspeaker company, with a history of manufacture stretching back 70 years. The company was formed in 1924 by Cyril French, an audio engineer from Hampton Wick in Surrey.

1932 saw Celestion produce the Reetone Dual, one of the first two way 'speakers for domestic use with an awesome power handling capacity of two watts. In the early 50s the introduction of FM transmissions meant that for the first time real high fidelity became a possibility for radio listeners. Celestion's HF 1300 tweeter, developed in 1956, was therefore quickly adopted by the BBC for studio use. The Ditton 10, one of the first bookshelf 'speakers, made its debut in 1964 and the Ditton 15 arrived a couple of years later.

In the professional world, Celestion made its mark with the G12, the speaker of choice for The Beatles, The Rolling Stones, Jimi Hendrix and Led Zeppelin.

The late seventies saw Celestion's development of 'speaker diaphragm mapping with lasers. This technique was used in the design of the SL6 and the SL600, famous for its cabinet of aerolam, a rigid, lightweight aluminium honeycomb sandwich used in the aerospace industry.

Moving into the digital domain, Celestion then released their DLP600 digital loudspeaker processor for use with the

SL600 and SL600i. This unit sat between the transport and DAC correcting frequency response and time

delay errors in the 'speakers, improving their sound quality. The latest addition to Celestion's 'speaker canon is the Impact range. Dominic Baker reviewed the Impact 23s in our March '96 issue, and was very taken by their coherent presentation and tonal accuracy, coming to the conclusion that

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#### competition



they were a sonic bargain. You too could find yourself sitting in front of a pair of Impact 'speakers, if you're one of this month's competition winners. All you have to do is complete the questions and tie-breaker opposite.

Please send in your entry on a postcard or the back of a sealed envelope to reach us no later than 4th July to:

Celestion Impact Competition Hi-Fi World Magazine, 54 Castellain Road, Maida Vale, London W9 IEX

Don't forget to include your name, address and telephone number if possible so we can contact the winners promptly.

#### MAY ISSUE COMPETITION

ROGERS COMPETITION In our May '96 issue, we gave you the chance to win one of five pairs of Rogers loudspeakers. Here are the lucky winners:

Martyn Scott of Locks Heath wins Rogers LS33/AB33 L. Bourne of Bracknell wins Rogers LS33 John Morton of Eccles wins Rogers LS33 Peter Molyneux of Witley wins Rogers LS1 Miss K. Cooley of Milton Keynes wins Rogers LS1

**CONGRATULATIONS!** 

#### **COMPETITION ENTRY QUESTIONS**

#### Cut out and affix to the back of a sealed envelope

1) What famous Celestion 'speaker did the Beatles use?

A. G12	C. R68
B. F15	D. M40

2) In which year did the Celestion Ditton 10 make its debut?

A. 1875	C. 1968
B. 1964	D. 1932

3) Who was Celestion's founder?

A. Fred Bloggs	C. Dominic Todd
B. Jimi Hendrix	D. Cyril French

4) What material was used in the Celestion SL600's cabinet?

A. MDF	C. Aerolam
B. Cardboard	D. Chipboard

5) How long have Celestion been making 'speakers?

A. 20 years	C. 70years
B. 50 years	D. 80 years

#### **TIE BREAKER (obligatory)**

Complete the following in less than 30 words

Celestion have been manufacturing loudspeakers for over 70 years now, their latest range being the Impact series. Write a one line slogan incorporating these facts, eg. Celestion - Making an impact for over 70 years.

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#### **COMPETITION RULES AND CONDITIONS OF ENTRY**

[1] Only one entry per household. Multiple entries will be automatically disqualified.

- [2] In the event of more than one entrant submitting all-correct answers, the winner will be picked from the tie-breaker by the Editor. We will endeavour to publish the results in the second issue following the closing date.
  - [3] Purchase of the magazine is not a precondition of entry.
- [4] No correspondence will be entered into; the Editor's decision is final.
- [5] No employees of Audio Publishing Ltd. or of any companies associated with the production or distribution of the prizes may enter.

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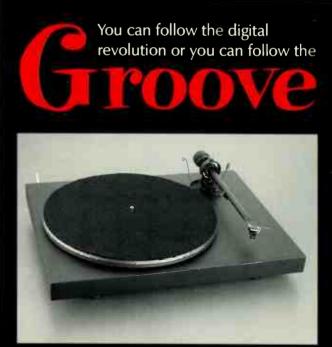
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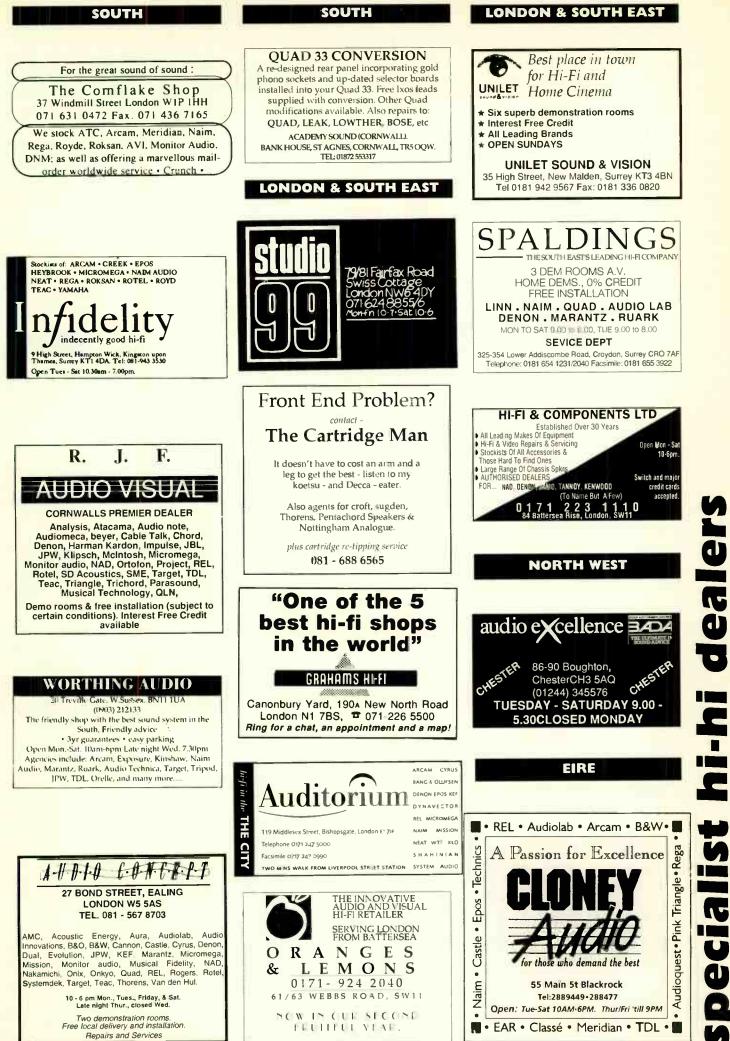


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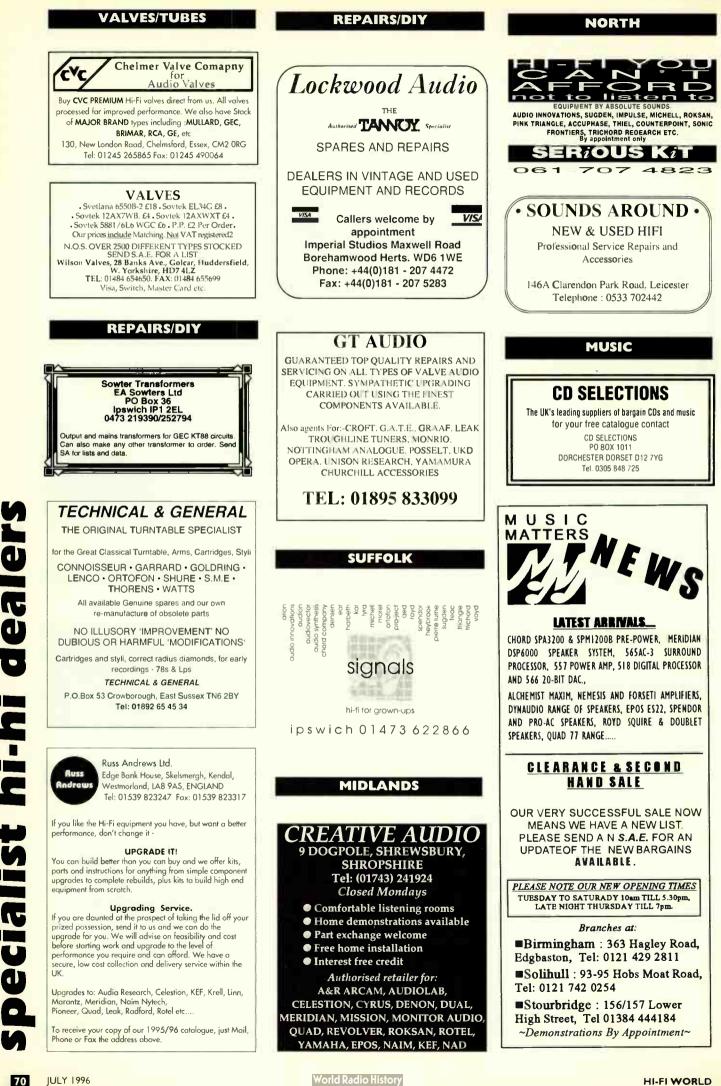
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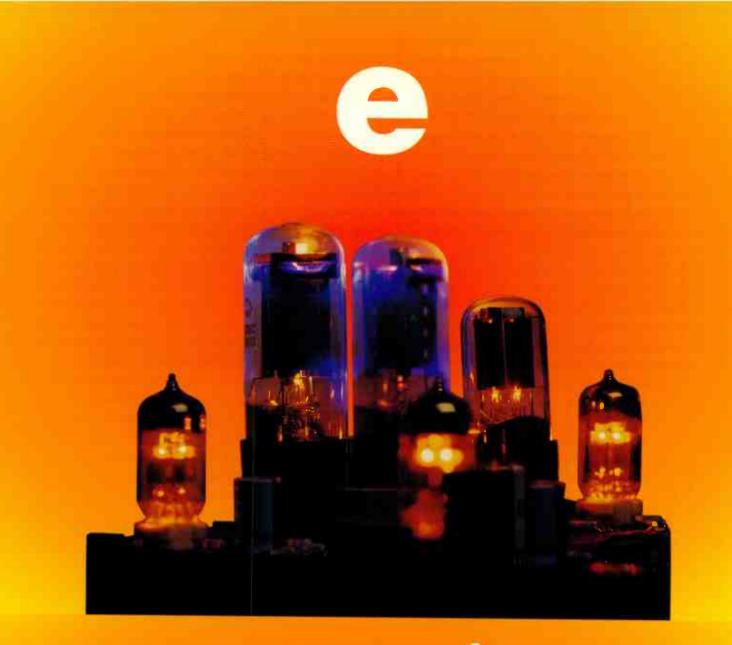
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KLP1 line level preamplifier					£345	£295
KIT BUILT		KLP1-K240/120 KLP1-B240/120			£545	£465
KLPP1 full valve phono prea	mplifier	KLPP1-K240/12	0		£495	£425
		KLPP1-B240/120			£695	£595
KLS3 3-way carbon fibre driv Drive Units + Crossover kit etc	ver flo <mark>orst</mark> anding lo	udspeaker KLS3-C			£350	£300
Drive Units		KLS3-D			£230	£200
KLS4 2-way carbon fibre driv Drive units + Crossover kit etc	ver standmounting	KLS4-C	-		£230	£200
KLS6 3-way HDA driver floo	rstanding loudspea	ker				(700
Drive Units + Crossover kit etc		KLS6-C KLS6-D			£825 £640	£700 £545
Drive Units KLS7 2-way carbon fibre driv	ver <mark>flo</mark> orstanding lo		L			
Drive Units + Crossover kit etc		KLS7-C KLS7-D			£195 £110	£170 £95
Drive Units AUDAX DRIVE UNITS (P&	P Extra, please add	£5.75 for individ	ual units o	or tweete		)
High Definition Aerogel 3inch midrange		HM100Z0			£35	£30
4inch midrange 6.Sinch bass/mid		HM130Z0 HM170Z0			£45 £50	£40 £45
8inch bass		HM210Z0			£60	£55
Carbon Fibre 4inch midrange		HM130C0			£40	£35 £40
6.5inch bass/mid 8inch bass		HM170C0 HM210C0			£45 £55	£50
Fabric Dome Tweeters 25mm 92dB for 2-way systems		TW025M0			£15	£13
25mm 92dB for 3-way systems		TW025M1			£16 £25	£14 £22
34mm 93dB - powerful sound Oval Gold Piezo electric dome	tweeter	TW034X0 HD-3P			£225 £225	£195
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(customs duties) and for carriage charges, which must be added to our net price.	ANSWERPHONE (24hrs)	0171-266-0461 5	ielangor Darul Vest Malaysia.	Ehsan,	Taipei, Taiwan. R.O.C.	Chiyodaku, Tokyo 102, Japan.
which must be added to our net price.			Fel: (603) 793		Tel: (886) 2 599 2598	Tel: (81) 3 3264 5321

## 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. Goo	d enough to
frighten many rivals.	0

DENON DCD-315	£150
Real hi-fi and real music for a mere £150. Achieves a good semblance of orchestral dynamics and acoustic space.	
NAD 510	£200
A competent all rounder with lifelike soundstaging and impressive treble clarit	у.
NAD 512	£250
Its smooth sound and fine treble extensio the 512 something of a rarity at the price. money rivals are few.	n make For the
ARCAM ALPHA ONE	£300
An excellent entry-level player from Arca far better than equivalently priced Japanes machinery.	m that's e
MARANTZ CD-63 Special Edition	£350
A superb budget buy. Addressing the prot the CD-52II SE, its detailed and musical sc embarrasses many expensive players.	plems of bund
NAD 514	£350
The 514 conveys deep bass notes with con and weight. A supremely relaxing player to to with fine build quality.	nviction blisten
MARANTZ CD-63MKII KI-SIGNATURE Similar to the CD-63SE but with more por and authoritative bass and an all-round sm sound.	<b>£500</b> werful oother
TRICHORD GENESIS	£549
Conveys music in a powerful and dramatic fashion. Smooth and sweet, with a good se depth. Maybe a little soft sounding though.	nse of
DPA RENAISSANCE	£895

#### Words cannot describe its infinite variety, but suffice to say you'll love it or hate it. Highly emotional, involving presentation with not a hint of self-doubt.

MARANTZ CD-16	£1399
An extremely neutral CD player, smooth	and
reserved in its performance. Beautifully bi	uilt too

LINN KARIK 3	£1600
Superb one-box player. Its supremely	rhythmic,
musical sound with delicacy and finess	e puts it up
with the best of the rest.	• •

NAIM CDI	£1600

This single box 16-bit player sounds very engaging compared to your average bitstreamer. Has that vital tingle factor of the larger, two-box CDS.

MCINTOSH CDM7009	£2635
A thoroughly inspiring machine.	One of the most
musical CD players around: swo	ot open and

detailed.

## **COMPACT DISC** TRANSPORTS

#### TEAC VDRS-TI

Not as substantially built as its chunky looks suggest, the TI is nevertheless a good entry-level transport with a warm, expansive sound.

£550

£800

£1300

#### ARCAM DELTA 250

A well-built transport with serious sound quality. It partners the BB50 well, especially when synclocked.

#### AUDIOLAB 8000CDM

Beautifully built and finished, the CDM is packed with sensible features and performs superbly, day-in day-out.

## **CD CONVERTORS**

#### DPA LITTLE BIT III

£300 A lot more weight at frequency extremes than the II and far better control. For £300 there's nothing to beat it.

#### THORENS TDA2000 £700 Used with the TCD2000 as a transport, the TDA2000 produces a sound that is focused, detailed and spacious. Good value.

DPA ENLIGHTENMENT £795 Some believe this to be the best convertor around. A truly charismatic performer, it dives into rock music with rare passion

#### PINK TRIANGLE ORDINAL

Pure, smooth sound free from hardness. One of the best at any price, losing little to the big guns.

#### PINK TRIANGLE DA CAPO £1450+ Offers a choice of filter modules, all up there with the best. The Da Capo is superb in many respects, but can sound a touch polite on rock.

#### **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!

## TURNTABLES

#### GARRARD 401

second-hand In a decent plinth with an arm of SME309 calibre. the 401 has a highly authoritative overall sound with the most solid, expressive bass in the business. Very musical, but treble isn't up to modern standards.

£330

£600

£837

THORENS TD124 second-hand One of Thorens' best-ever turntables. Needs a modern plinth to give of its best. Duly installed, it's good enough to face off the Garrard 401, swapping some of its bass power for a more delicate, incisive treble.

#### SYSTEMDEK IIX900/RB250

A fine all rounder and easy to upgrade. Brings more depth and breadth than a Rega 3.

#### **RESON** rsl

A lean, yet vibrant sound quality that really draws the listener in. With good detail and rhythmic integrity this is an impressive turntable package.

#### MICHELL GYRODEC

Stunning looks, build and engineering, and don't underestimate the sound. Standard PSU and Rega arm gives a detailed, architectural, if undynamic sound. With QC PSU and SME V, its scale and insight kills the competition at the price.

£800

£999

£1950

£2495

#### PRO-JECT 6.ISA

The Pro-ject places the listener in the best seat in the control room. Outrageous dynamics and a punchy, seriously deep bass. Comes with Sumiko arm and Ortofon MC30 Supreme.

#### LINN SONDEK LP12 £840 - £1530

Cirkus bearing puts it back up with the best. Superbly beguiling, rhythmic sound that plays jazz like few others, but lacks the Gyrodec's detail or imaging. With a Lingo PSU and EKOS tonearm, you'll forget CDs were ever invented.

#### PINK TRIANGLE ANNIVERSARY £1200

One of the finest-sounding turntables around, the Anniversary takes the listener nearer the recording studio than almost any other deck. Works with Rega, Linn and SME arms alike.

#### MICHELL ORBE

The Darth Vader of analogue, the Orbe builds on the strengths of the Gyrodec. An ultra-tuneful, expansive sound.

#### SME MODEL 20

Including the excellent SME V tonearm, the Model 20 is possibly the last great turntable, unless you've got £11,000 for the Model 30, that is.

# TONEARMS

#### REGA RB300

£130 Supremely capable at the price, but not quite humankind's salvation as has been suggested. Detailed, tight. rhythmic sound but tonally rather grey and cold-sounding.

#### LINN AKITO

£300 A well made entry-level tonearm which works especially well with the LP12, but struggles to match the RB300 on other decks.

#### SME 3009SII

This Paleolithic device doesn't bother with frequency extremes or detail, but its legendary serviceability makes it a cult in Japan. Oh death, where is thy sting?

#### **SME309**

£570 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

#### SME IV

A Series V with lower toleranced bearings, cheaper cables and no damper. Still vastly over-engineered and almost capable of its bigger brother's sonic fireworks. SME's best value product.

#### SME V

£1235 A masterpiece of precision engineering with a cohesive, ultra-transparent sound. A dream to set up and use

#### LINN EKOS

£1400 A thunderous battleship of an arm, with a very impressive sound, masses of detail and dynamics. but lacks the SME V's cohesion and musicality.

World Radio History

£375

£850

# World favourites guide

# CARTRIDGES

#### **ORTOFON VMS-2E**

Warm, full-bodied, punchy and fast. Not to be sniffed at for a tenner. Can be upgraded with a better stylus at a later date.

#### GOLDRING 1012GX £60 An accomplished MM with a solid bass, slightly forward midband and clean transients. £20 buys the faster, more dynamic 1022GX.

GOLDRING 1042 £100 The best moving magnet available. Has an extremely cohesive sound that's warm but highly involving. Deliciously delicate treble and strong, powerful bass.

ORTOFON MC15 SUPER II £109.95 An excellent budget moving coil with a smooth, polished, detailed sound. Tracks superbly but verges on the analytical at times. A bargain.

**ORTOFON SUPREMES** £225-£450 The MC10, MC20 and MC30 Supremes all offer superb sound and value for money, with a distinctively rich, smooth and detailed musical performance. The valve brigade love them.

## LINN KLYDE

we've ever heard.

The Klyde's soft treble and prodigious bass mean it's tonally unbalanced, but it's still a real musicmaker that many will love in the right system.

ORTOFON MC2000	£650
We came across this one in an SME IV or	a
Garrard 401; it duly gave one of the best	results

ORTOFON ROHMANN £1000 In a way it's MC2000 meets MC7500 with all the tonal strengths and dynamo sound Ortofon has been putting into its best moving-coil cartridges of late

LYRA LYDIAN £649 A truly musical, sophisticated device that makes most other MCs sound frigid.

VAN DEN HUL MC-10 £840 Fluid bass, finely etched treble and highly tuneful in between. The MC10 is honey, pure and simple.

£2000 ORTOFON MC7500 Conclusive proof that there's hope for humankind. Makes music of enormous scale and vibrancy. CD lovers would die if they heard it.

## INTEGRATED AMPLIFIERS

second-hand NAD 3020 Classic sweet sounding, punchy budget super-amp

with strong phono stage. Able to embarrass many modern budget amps.

NAD 310 £130 A real hi-fi amplifier at a bargain price. Forms the heart of a separates system that will murder any midi system at twenty paces. No phono stage, but you can't have everything at this price.

NAD 312	£200
Smooth, clear and dry. Fine detailing	with little to
complain about at the price. Good fa	acilities.

ARCAM AL	PH.	A	5
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£10

£450

£230 A well-engineered budget amplifier with a bold, exciting presentation. Plenty of power and facilities, but lacks subtlety.

DENON PMA 450II SE	£270
A solid, refined sound with plenty of powe this a good all rounder, but hard and steely wrong ancillaries. Mediocre phono stage.	
AURA VA-80	£280
The VA-80 is superb for the price with a confident, powerful sound. One of the sr around, it is capable of embarassing more upmarket competition.	noothesi
ORELLE SA-100	£449
Clean, open, active sound. Smooth and de with good punch too. One of the best at	
and the second second	

AUDIOLAB 8000A £500 A jack-of-all-trades whose facilities, build, power and top-rate phono input make it a steal. Sound is good, but less involving than the Naim Nait 3.

£500 NAIM NAIT 3 A taste of high-end audio. The most involving, musical design at the price, but low power. Superb phono stage is £100 extra.

MISSION CYRUS 3 £500 Superb engineering, a solid cast chassis and a clear, spacious sound. Phono stage could be better.

SONNETEER CAMPION £579 An amplifier that delivers near studio definition along with exemplary timing. Utterly gripping.

DPA RENAISSANCE €595 Rich and smooth, the Renaissance is one of the sweetest amps around, if lightweight.

AUDION STERLING ETSE £600 Economically but well built single-ended valve amplifier. Wonderful clarity with vocals. £600 with I line input, £800 with 5.

£640 SUGDEN A21a Class A transistor amp. Rich, crisp, deep, tight sound and it images well too. Wonderful.

AUDIOLAB 8000S £650 Fast, clear, crisp sound with a wide-open sound stage. One of the best at the price.

£795 MERIDIAN 551 Beautifully-built integrated with a sweeter, clearer sound than mid-price alternatives. Plenty of facilities and remote controllable.

UNISON SIMPLY 2 £995 This single-ended valve amplifier is smooth, sweet and open. An extremely musical amplifier.

**UNISON SIMPLY 4** £1495 Sonically similar to the Simply 2, but with more power and control.

AUDIONOTE OTO SE £1500 Ten watts of the sweetest sound around. Use sensitive speakers though, because it's unlikely to crack windows or trigger earthquakes.

McINTOSH MA6800 £3735 The MA6800 not so much plays music as takes control of it, with effortless bass drive and a three-dimensional sound stage.

## PRE-AMPLIFIERS

NAIM NAC32.5 so Naim's one-time top preamp is stil reckoned with thanks to its precise and excellent phono stage.	
ROTEL RQ-970BX	£130
Superb value entry-level phono sta audiophile quality components and	ge with clear sound.
DPA DSP200S	£495
Not quite the 50S, but there's little	to match it at
this price if outright sound quality is	
ROSE RV23-S	£495
This interesting valve/transistor hy	brid has a
smooth, rich, spacious sound.	
AUDIOLAB 8000C	£520
Versatile with superb phono input sterile, but latest version is much i	
MICHELL ISO/HERA	£530
This phono stage has fine midband detail, with taut bass. The £850 IS more of everything, and for many last word on the subject.	O/HR brings
AUDIO INNOVATIONS P2	£749
Fantastic bass and super insight ma	ke this one of
the best phono stages around. One	e for vinyl lovers.
AUDIOLAB 8000Q	£995
Excellent line-level only preamp, g	
on 8000C with a more fluid, musi	cal sound and
greater grip. Remote control.	
NAIM NAC82	£1945
This remote control preamp thru in true Naim fashion.	sts detail forth
POWER AMPLI	FIERS
QUAD II	second-hand

Classic valve monoblock with many thousands still in use around the world. Archetypal warm, smooth valve sound, although not the last word in detail or dynamics.

LEAK STEREO 20 second-hand The Stereo 20 can sound impressively up-to-date, although power and detail are ultimately limited.

OUAD 405II second-hand Solidly built, but lifeless sounding, power amp which can be substantially improved by a Quad factory service.

MISSION CYRUS POWER £450 This power amplifier is a honey. Rich and smooth, but with a firm grip; a fine blend of properties.

ROSE RP190 £495 Used with the partnering preamp it gives 70watts of smooth, relaxing sound.

£530 SUGDEN AU41P Extremely competitive at the price with 100W of unusually smooth, full-bodied sound.

£619 SHEARNE PHASE 3 A neutral, highly dynamic and thoroughly exciting amplifier. A sonic bargain.

# World favourites guide

£750

£190

£500

£150

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OL	1.0			n	L	
UL	ЛА	D	0	U	0	

£675 Quad's latest 140W powerhouse is smooth and civilised, but engagingly musical. Legendary backup service.

#### DPA DPA200S

Better than anything else at the price. Not as dry as the 50S.

NAIM NAP180	£900
Partnered with a NAC82, this has classic	Naim
control, making for a superbly rhythmic	
presentation. A touch lean for some taste	26

MICHELL ALECTO STEREO £1300 A refined transistor amplifier with valve-like transparency and a full, warm, easy-going sound. The £1800 Alecto monoblocks have rare lucidity and three dimensional realism.

AUDIOLAB 8000M	£1500
Beautifully built, powerful amps that w	ill drive
anything you care to throw at them. D	etailed,
analytical sound, but a touch grey com	pared to
valve rivals.	

CHORD SPM 1200	£2995
This is one of the best solid-state por	wer amps
around, with a massively powerful, d	ynamic and
detailed sound	

# TUNERS

LEAK TROUGHLINE second-hand

Our favourite way of listening to the wireless. A deliciously smooth, mellifluous sound that will have you junking your transistor radio in seconds. Ergonomics are crude, and you'll need a decent aerial and stereo decoder.

NA	D 4	12			
The	412	is	rema	rkably	mus
	1.				

sical and natural sounding. Rich sound and full bass are a rarity. Unbeatable at the price

#### KENWOOD KT-6050L £300

Very, very tuneful and as clear and detailed as CD. Tuners like this have you sitting in your seat wondering at the sheer wealth of music out there.

MISSION CYRUS FM7 £300 Clear and lucid sound that puts it up with the best regardless of price. Superb build and superior ergonomics to the NAD.

#### ROTEL RT990BX

£500 High quality Michi-based tuner with a sophisticated, forward sound with great imaging and soundstage. Sensible facilities and remote control

#### NAIM NAT03

The NAT03 is further proof of Naim's proficiency with tuners, with a warm, easy sound and a good sense of atmosphere.

#### **FANFARE FT-I**

£1350 In its native US the FT1 is no mere tuner but a 'broadcast monitor' no less, a task at which it acquits itself well, with a clear and powerful sound.

#### NAIM NATOI

£1380 The best solid-state tuner available. For better radio, live in the studio.

# CASSETTE DECKS

Aľ	WA	AD-	S750

Sonically a very decent machine. For the price there's nothing better. With Dolby B, C and S

AIWA AD-F850 £230 A real bargain with fine recording quality and good playback.

PHILIPS DCC 730 £250 Digital playback gives a good 'analogue' presentation and analogue playback is reasonable too. A DCC bargain.

AIWA AD-S950 £300 A stable transport, superb head and Dolby S make this an excellent recorder.

#### PIONEER CT-S740S

£430 A great piece of engineering from Pioneer, a bit complex, but a first rate sound on playback and recording. Dolby S included.

NAKAMICHI DR2 £600 Where serious cassette decks start. The DR2 pushes recordings to the limit, remaining unflustered at all times.

NAKAMICHI DRI £850 Better still than the DR2, with manual head azimuth adjustment to boot.

NAKAMICHI CR7 £1500 Kills every other cassette deck and stamps on their graves.

# LOUDSPEAKERS

MISSION 730iSE second-hand Big clear sound and tuneful bass with plenty of punch. An audiophile bargain at a budget price.

**KEF CODA 7** £129 Arguably the new king of budget standmounters, the 7 has a highly musical presentation.

#### **MISSION 731 LE**

An extensive reworking of Mission's entry level 'speaker, much tighter on transients and more refined treble. Neutral and revealing.

£149

£170

£200

£300

£350

£445

#### TANNOY 631 SE

Great bass extension, super open and focused midrange and fine detail up-top. Work best on filled dedicated stands; unmatched at the price.

B&W DM601

#### Tight, solid and tuneful bass with a clean and pure tonal quality. Midrange is a little laid back, but sound stage is wide and open.

ROG	ERS	LS33			£249	
-						

Big sound and a wonderful impressionist. Combine with matching AB33 subwoofers for extra bass depth.

TDL RTL 2

Bass on a budget from one of TDL's best floorstanders. Solid, vibrant and spacious sound.

SYSTEMDEK SYSTYM 931 £300 One of the best mini-monitors around, with a

coherent, involving sound that really sings.

**REL Q-BASS** 

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.

#### EPOS ESI I

Extremely refined, well engineered standmounters that need distinguished partnering equipment if they are not to sound over-polite.

#### REL STRATA

£500 The Strata is not a toy. Offers superb, true hi-fi bass depth and power.

#### MISSION 752

More capable than many twice the price. Using advanced High Definition Aerogel drivers, the 752s are clear, crisp and focused. Good sensitivity makes them easy to drive.

£500

#### TANNOY DI00

£650 This small dual-concentric loudspeaker produces believable three dimensional imaging.

CASTLE CHESTER	£700
Good sound allied to Castle's exquisite	cabinetry
and finish. Quarter-wave bass loading.	

PROAC STUDIO 100 £700 Excellent monitors with detailed, natural sound and plenty of atmosphere.

HARBETH HL-P3ES £799 A fine example of good loudspeaker engineering.

The top of the mini-monitor league.

UKD CALLAS £850 High quality sound with a high quality bass from this solid walnut miniature.

KEF REFERENCE SERIES ONE £995

The KEF's combine pin-point imagery and detail with a smooth and polite balance. Good, agile bass too.

£1129 HEYBROOK SEXTET II Heybrook have retained the strengths of the original Sextet, whilst improving on bass extension and smoothness. Treble and imaging still up with the very best.

HARBETH HL COMPACT 7 £1329

Dry and analytical, but truthful and uncoloured with it. A cohesive sound from this top class monitor.

KEF REFERENCE SERIES TWO £1500

A truly endearing 'speaker, with clarity, cohesion, detail and precise imaging. Bass has superb extension.

#### EPOS ES25

£1505 Epos' best. Combines near-uncoloured tonality with characteristic fireworks in the rhythm department. Superb by any other name.

#### SPENDOR SP7/I £1970

This big Spendor is very appealing thanks to its lucid sound and valve-friendly load.

#### OUAD ESL-63

£2860

A reference against all other loudspeakers, with superb imaging qualities and genuine transparency. Earlier ESL model is an excellent second-hand buy, and both enjoy that legendary Quad service back-up.

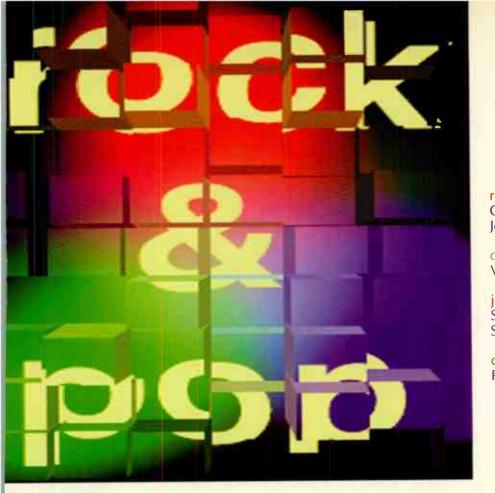
#### IBL S2600

£3500 Smooth, detailed and spacious with great dynamics and fine imaging. Capable of producing a superb performance when used in a big room.

TANNOY WESTMINSTER ROYAL £10,000

An incredibly dynamic, detailed full-range horn design with a rich sound. Its high sensitivity predisposes it to valve amplification.

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# Giovanni Dadomo

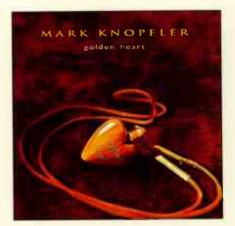


#### DEAD CAN DANCE SPIRITCHASER 4AD CAD 600S CD

Hard to believe but Australian-born duo Dead Can Dance here deliver their seventh studio disc - and it's as inspired and enchanting as anything in their catalogue. Singers/multi-instrumentalists Lisa Gerrard and Brendan Perry have dwelled on this septic isle since 1981, since when they've produced a body of work that is truly international. On this latest recording they continue to draw their inspirations from anywhere and everywhere - Africa, The West Indies, the Middle East. . . it is, in short, a veritable atlas of sounds and instruments.

Lisa Gerrard sounds - to these ears anyway - like someone grounded in the traditional English Folk style of early Fairport Convention or anytime June Tabor, but onto that she can saddle anything from the sound of a Muezzin calling the faithful to prayer to a Bollywood playback singer and almost anything outside or in between. This is world music without being worldly, a constantly intriguing mixture of the ethnic and the modern, a place where the Arabic drones and South African township tribal chants are deftly interwoven, where swaths of rhythm and swatches of colour harmonise with a breath-taking ease and beauty.

Listening to Dead Can Dance can take you anywhere in time or space, from the roots of early Velvet Underground, George Harrison and the Byrds' forays into what was once dubbed Ragga Rock to the entrancing percussion of Haitian Voocoo and the hypnotic and magical sounds of the American Indians. And that's just for starters - there are Egyptian('Song Of The Nile'), South American and Celtic influences - every fresh listening unearths new archaeologies of sound and inspiration. And if this may make 'Spiritchaser' sound pretentious, it's anything but. Instead, it is immediately accessible, yet every listening reveals new magic. The word, I think, is awesome, rightly awesome.



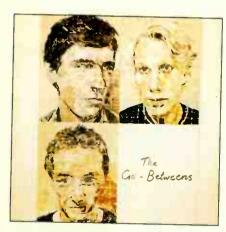
MARK KNOPFLER GOLDEN HEART VERTIGO 514 732-2

Well, if it isn't that geezer from Dire Straits with the bandage on his head. I've never been a big Straits fan myself, but only a churl could deny that Knopfler is a fully paid-up member of Guitar God Heaven, as inspired and unique at his best as Clapton, Garcia or any other of the three wise Kings - B.B., Freddy and Albert, that is. I don't know if the Straits are history or not and frankly my dear yup - I do not give the proverbial damn.

For all that 'Golden Heart' did, for the most part, win even this thick-shelled cynic over. The swaying rhythms of the suitably cheeky 'Imelda Please' (a tribute to shoe fetish queen Mrs Marcos) and the ball-of-barbed-wire guitarings of 'No

Can Do' pleased me as much as they'll no doubt please the crowds. But by a third of the way through Knopfler and my ears started to fall out a bit. But then that's the trouble with such distinctive stylists -J.J. Cale worst of all perhaps - it's all too easy for the style to make up for lack of content.

After all, I'd already heard the inevitable 'Brothers In Arms' re-write in the likeable but over-familiar 'Darling Pretty' and - sure enough - it wouldn't be long before Master Knopfler re-hashed the one about MTV, not to mention 'Twisting By The Pool'. I'll forgive him for sounding like a poor man's Bob Dylan because Bob Dylan's been doing the same for years, but I do get the hump when I'm force-fed something I've heard a zillion times already. This said, fans probably will lap up every single sibilant note, and Knopfler redeems himself with songs like 'Rudiger', as subtle a portrait of sad-eyed loneliness as has come along in yonks.



#### THE GO-BETWEENS THE ALBUM COLLECTION BEGGARS BANQUET BB 2001/2/3/4/5/6 CD

I haven't the space to list every LP title or go into my usual massive scholarly details, but the Go-Betweens were undoubtedly the Australian band of the Eighties. Cored by writers Robert Forster (vocals/guitar) and singing bassist Grant McLennan, they began life with the somewhat rough and ready 'Send Me A Lellabye' in 1983, where their major roots - Television, Dylan, The Velvets etc., were inevitably somewhat obvious.

Nonetheless they quickly developed a strong and distinctly unmistakable personality of their own over six albums and seven years. My personal favourite remains the penultimate 'Tallulah', a joyful mix of poignant voices, dizzyingly inspired guitar and clever rhythms. If you missed them the first time, they sound just as good now. As much a Great Lost Band as The Flamin' Groovies, no problemo.

## **RECORD OF THE MONTH**



#### THE WISHPLANTS DADDY LONGLEGS CHINA WOLDCD 1070

A month or so past my estimable Editor (fawn, grovel, fawn!) sent me an EP called Wittchety Grubs. Now as everyone except Stevie Wonder and Ray Charles probably knows, Hi-Fi World doesn't cover EPs, but it was, nonetheless, a charming and amusing excursion. Now, with the release of the new Wishplants longplayer, I've finally clicked - Witchetty Grubs and the Wishplants are one and the same.

I'd heard the name but not the music and - on this evidence - it was my loss. The quartet - vocalist Saul Denton, bassist Paul Simpson, the multi-talented (guitar, piano, vocals, keyboards) Ed Gilmour and drummer Mick Fitzgerald - produce a dazzling concoction of sounds some rock hack or other will doubtless dub Retro Psychedelia. And so it be's - imagine if you will a mish-mosh of Lennon circa 'Across The Universe', Syd Barrett, late terminally deranged Small Faces and others of that ilk and era.

According to the entertainingly wordy press release (one song is built, we're told on a "Zeppelinesque space folk groove" and why not?) this is a concept album. This would seem rather immaterial. What isn't is the music, with its turbulent maelstroms of sound, backwards guitars, skewwiff strings, frequently omnious vocalising and all manner of lyrical and sonic craziness.

You could of course say it's all

World Radio History

been done before, not to mention again (pace Todd Rundren, doubtless another Wishplants eminence grise) but so what? The point is that this time around it works, and whether you're familiar with the prototypes or not isn't really important. The spooky 'Bigger Than God' is an obvious yet massively well crafted homage to the dear departed Moptop, while Syd and the early Floyd's ghosts

clank cheerily through the muscularly discombobulated 'Everyone Avoids Unmannerly Valerie' - Morrisey eat your heart out for that title!

The words recall Lennon and Bonzo Dog Viv Stanshall at their most Lewis Carroll deranged, while the mock operatics of another song bears out my Rudgren theory, carrying as it does a rhino-heavy hint of the latter's rendering of Gilbert and Sullivan's 'The Lord Chancellor's Nightmare', pausing only to cock a snook at Queen at their most ludicrous on the way.

It's not all lysergic - 'Kika and Frank', with its falling down drunk keyboards and sixty-Gauloises-a-day vocals could easily be Tom Waits' second cousin twice removed, while the closing thirteen minutes-plus 'Treading Water' is, well, simply haunting.

The Wishplants' George Martin in this gloriously wacky escapade is Mark Wallis, a man whose previous credits range as far and wide as Talking Heads, The Smiths, the La's and Marianne Faithfull, to name a few. The results are a minestrone of sounds without being messy or cloggy, which is no mean feat considering the sheer diversity of the arrangements, instrumentation and effects. And they had the good taste to shoot most of the sleeve art at Portmerion, complete with black jackets with white piping a la Patrick McGoohan in 'The Prisoner'. Absolutely lovably insane, 'Daddy Longlegs' may well be the sound of the next Oasis album writ large. Why wait?

# Jon Clarke



NEARLY GOD NEARLY GOD ISLAND DPCD 1001/524 245-2

While it didn't seem possible, last year's musical genius Tricky has gone from strange to stranger. As rockers Oasis come ever closer to self-destruction and Blur disappear more and more up their own crevasses, Tricky's mind seems to be delving further inwards for new inspiration.

With Nearly God, the ex-Massive Attacker has put together a series of highly experimental songs, which at times come as close to the logical destruction of music as German industrial loons Einsturzende Neubauten. Recorded in only three weeks, the II 0 tracks are - while original - distinctly odder, more sinister and perverse than the tracks off last year's excellent Maxinquaye album.

Not a "proper" Tricky album, the singer states. This is merely a time out between his debut and a second album, due for release later in the year. In the meantime, the lairy Bristol rapper has gathered the most uneven group of Alist vocalists to duet with him. Fortunately this includes his partner/exgirlfriend/mother of his child, Martina, who just about snuffs the rest of them out.

Terry Hall, Alison Moyet, Neneh Cherry and Bjork all make appearances on Nearly God. The best are with the highly-strung Icelandic crooner and ex-Special Terry Hall, whose contributions with 'Poems' and 'Bubbles' are both gritty, moody and interesting.

The album starts without a bang and strangely - with an old Siouxie and the Banshees track, 'Tattoo'. But things improve considerably, notably where the brilliant Martina appears in 'Poems'.

'Make a Change', a duet with a powerful Alison Moyet, is apparently a

promise to loved ones to "make a change for Masey," Tricky's recentlyborn baby. Somehow it doesn't quite work. 'I Sing For You', a collaboration with Stereo MC's Cath Coffey - an eerie, and particularly special fusion of soul and experimentation - is better. As is final track 'Yoga', with Bjork, highly reminiscent of the psychotic ramblings of an early Fall number.

It is unlikely Tricky will produce anything quite so strange again, and on the whole this is lucky. But if Nearly God shows nothing else, it shows a man not prepared to rest on his laurels. Buy and file. But look forward to the "proper" album out later in the year.



GETO BOYS THE RESURRECTION VIRGIN CDVUS 103

The world's baddest rappers - famous for dwarf singer Bushwick Bill - return with an unavoidably tasty new offering. The Resurrection, the band's seventh album, comes hot on the heels of two solo efforts - Bushwick Bill's decidedly dodgy 'Phantom of the Rapra' and Scarface's hard-hitting and moving 'The Diary', which both did well commercially.

But the original gangster rappers, from Houston, Texas, obviously realise they are at their strongest hanging together. The Resurrection is testament to that. Kicking off with the firing 'Ghetto Prisoner', the album's 15 tracks roll past with a real swagger. The debut track - a scathing attack on death row's unfair balance of black inmates - is as lairy as it is catchy. A real dancefloor filler of classic production quality.

Sleeve pictures of a church, a graveyard and the band tucked up in coffins ready for burial, are fitting for an album almost entirely obsessed with murder, drugs and crime. It's probably best summed up by 'I Just Wanna Die', sung by Bushwick Bill, who notoriously shot his eye out after an argument with his girlfriend (a picture of the injury was featured on the front cover of their debut album, We Can't Be Stopped). This is not a cheerful album.

But while there are few laughs on The Resurrection, it is a realistic and thought-provoking album. The 'World is a Ghetto', for example - a single which features on the soundtrack for the forthcoming movie Original Gangsta's talks about the depressing spiral of poverty many black people are permanently caught in.

The rest of the album flows past smoothly with a good range of rhymes and rhythms. Basically a mix of old school style chants and more modern sampled tracks. The Resurrection is a step forward for the Geto Boys.



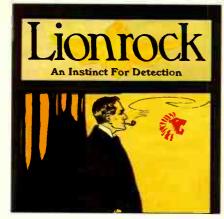
#### LUNIZ OPERATION STACKOLA VIRGIN CDVUS 94

One swallow never made a summer, and on the strength of the debut album by Luniz, we're still scouring the skies for a track even half as good as the band's current single 'I Got 5 On It'. The wacky track - that recently soared high in the charts worldwide - should have lit the touchpaper for a grand entrance on the rap scene. But unfortunately, one listen of album Operation Stackola, is enough to proclaim Luniz childish "one hit wonders".

'I Got 5 On It', a tribute to the wicked weed, deserved its unexpected number 3 slot in the national pop charts last month, for its irritably catchy chorus, groove and beats. As well as going Gold in the US, it even sold half a million copies in Germany alone. But while it will be heard through the summer, the rest of Luniz' debut album will, I fear, disappear without trace.

Operation Stackola starts on a good note, with the mellow 'Put The Lead On Ya', followed by the single in question. But that's about it, unfortunately. The album drifts on, more or less directionless, rabbiting on about various forms of drug use. Basically these youngsters have got a lot more to learn.

# Viv Craske



#### LIONROCK AN INSTINCT FOR DETECTION DECONSTRUCTION 7432134282

At last! Lionrock aka Justin Robertson has finally recorded the album he's been promising for so long.

After launching his Spice club in 1990, a stomping ground of The Chemical Brothers, and re-mixing some of Tom Chemical's early tracks, he's finally decided to join them and the rest of the Brit Hop crowd. But whatever the names - Brit Hop, Amyl House - it doesn't adequately describe the feel of 'An Instinct For Detection'.

Mixing house and hip hop beats with drum rolls and inventive breakdowns, this CD nudges the frontiers of dance forward in much the same way as Leftfield's 1995 ground-breaking album Leftism. Since then a lot has changed, with Tricky, The Chemical Brothers, Portishead and Goldie all doing their bit to destroy musical barriers.

But Justin Robertson more than makes up for the time delay, cutting up lyrics and samples and nailing them to hard house rhythms. His musical progression is evident on 'Peace Repackaged', a drastic re-working of 1992's pop hit 'Packet Of Peace'. From chart favourite to bouncy hard house, the track sounds urban and tribal, the industrial beat writhing as samples stab at the vocals.

'The Guide' begins like a downpitched acid house tune before it is underpinned by a dub bassline and saxaphone samples to create a sultry vibe.

There are huge tunes and huge drum tracks, thought-provoking raps courtesy of MC Buzz B and a handful of Sherlock Holmes samples. Given the Lionrock treatment, the raw materials have been turned into a very respectable first album. Somehow Justin makes it all seem elementary.



#### EYELID MOVIES THE BIG CHILL GLOBAL HEADZ HEADZCDOOI

Lie back, close your eyes and let Eyelid Movies' summer breeze drift over you. Wafting drum 'n' bass snares you with hi-hattery and gentle melodies at the start of this stroll through electronic easy listening.

Put together by Pete Lawrence, North London's regular Big Chill DJ, this is the take home version of the Sunday chill-out sessions. The policy is simple and since its inception two years ago has been much imitated. Take an eclectic mix of cutting edge blissful music, add people and a sprinkle of Sunday rest and relaxation. The vibe has since spread by word of mouth to create one of the friendliest atmospheres around.

From electronica and dub, to ambient and trip hop, even film music and classical is melted down and stirred in to create a single track CD of hazy summer dreams. Highlights (if I have to choose) come from the likes of T Power, Cool Breeze and Astralasia, each track adding new moods and feelings, like a more subtle 'Café Del Mar'.

dance

ambient

Unlike many ambient compilations, 'Eyelid Movies' draws you in on its first play, each listen building on the last until the album becomes almost greater than the sum of its parts. The perfect antidote to a full-on weekend.

Simply let the melodies weave intimate soundscapes while you shut your eyes and watch the 'Eyelid Movies'. The sound of summer.



#### LIVE AT THE SOCIAL VOL.I VARIOUS HEAVENLY HVNLPI3NCP

Get a bag of floor-fillers and chartskirting tracks, whack on a big name mixer and hey presto - another club experience in your own home. Formularised club compilations fronted by resident DJs are becoming a little tedious on the whole.

But this one's different. Not only do The Chemical Brothers do the honours, but they kick up a storm in the process, re-creating a big night out that many big-selling club compilations fail to do. But even then if you've been to a Heavenly Social in

JULY 1996

the last two years, you'll know they're hardly run-of-the-mill. With The Chemicals dropping The Beatles and The Manic Street Preachers into the mix alongside Red Snapper, Lionrock and Eric B & Rakim, the emphasis is on rocking the floor, rather than playing safe and mixing invisibly.

The Chemicals blend genres with ease but without pretension, collecting fat beats with elements of trip hop, electro, funk and disco. They then ignite the blue touch paper, building the tracks up before stripping them down.

DJ Who's 'PB4UG02BED' adds acidic 303s into the equation lifting the music, while the Charlatans' anthemic 'Nine Acre Dust' is slotted into funk D'Void's tribal funk of 'Jack Me Off'.

This anything-goes, cut-and-paste approach certainly hits the spot, the tracks like scaffolding supporting The Chemical Brothers' musical architecture. No formulas, no tedium just a seriously funky, heads-down party mix.



#### THE BELOVED X EAST WEST 0630-13316-2

Providing further proof that dance music is finding a respectable niche in the mainstream culture is the latest release from The Beloved. Fusing the best elements of pop with dance rhythms, chord progressions and melodies, they have joined the likes of Everything But The Girl as the acceptable face of dance.

Simple but stylish, the ten tracks on X range from yearning ballads to honest

expressions of emotion to uplifting house. The confessional nature of John Marsh's vocal draws you deep into tracks like the ultra-emotional 'Deliver Me' and the yearning passion of 'For Your Love'.

Die hard dance purists may be forgiven for turning their noses up at this CD at first, but given a chance X blows up in places into epic proportions. Uptempo house tracks like 'Ease The Pressure' deliver the happy house vibe, but with intelligently raw vocals X dips its toes in the club atmosphere to produce engaging and sensuous examples of what 90s pop should be.

But where the CD shows real depth and maturity is on the slower tracks. 'A Dream Within A Dream' layers orchestral moods that gently envelop the vocals, to calm those post-club jangled nerves.

X combines the pure spirit of top 40 hits 'Hello' and 'Sweet Harmony' with the grown-up voice of experimentation and experience. Okay, X is not particularly cerebral or as intricately constructed as say Portishead, but the feeling will stir you just the same

## **RECORD OF THE MONTH**

#### ORBITAL IN SIDES INTERNAL TRUCDIO

The now iconic Orbital have dusted down the machines once again to create this, their fourth album release. Whereas the tracks on 1994's Snivilisation were somewhat observational and distinct from each other, In Sides has more of the Hartnoll brothers' personal touch.

Snivilisation opened a quizzical window on the world and In Sides is the reaction, looking

inwards for its inspiration. Consisting of six tracks, the CD clocks in at over 70 minutes, allowing the tracks to grow and mutate their melodies.

'The Girl With The Sun In Her Head' oozes sadness-tinged beauty.



'P.E.T.R.O.L.' and 'Adrian's' pick up the pace while still retaining an atmosphere of uncertainty between firmly-rooted beats. Once again, eerie vocals weave in and out of the tracks, 'Adrian's' delivering simple melodic motifs on a par with Orbital's 'Chime' and Orbital II's 'Halcyon'. Chart hit 'The Box' meanders like a lost soul, exposing one of Orbital's most emotionally-charged tracks to date.

Where 'Snivilisation' left a few fans cold, 'In Sides' will lead them back to the fold with its proudly displayed maturity and confidence. Years on Orbital still maintain their position as the best ambient techno outfit around, creating cinematic soundscapes rather than detached melodies and beats. Like many albums

of long-lasting quality, the effect is not immediate but stirs the listeners more and more with each play. The hope and melancholy slowly makes sense of the classical refrains and rounded beats. Timeless beauty •

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#### JAMES BLOOD ULMER TALES OF CAPTAIN BLACK DIW DIW403

Guitarist and sometime singer James Blood Ulmer is one of those musicians who really polarises opinion. On one hand written off as a second rate guitar player who has made his name on a rag bag of esoteric musical theories from his mentor Ornette Coleman (another opinion polariser, but that's another story), he's lionised by others as one of recent jazz's key innovators, a musician who's brought the intensity and grit of the blues and the propulsive drive of funk to the more abstract world of free jazz. And as one of the most important guitar players to have emerged since the first flowering of jazz rock. The evidence of this reissue of Tales of Captain Black, Ulmer's 1978 classic, is definitely in favour of those in the latter camp.

Formerly Ornette Coleman's student, Ulmer had been playing on and off with the altoist since 1974 when he turned the tables, using Ornette's group to interpret his own songs. The resulting quartet - Ulmer, Coleman, bassist Jaamaladeen Tacuma and drummer Denardo Coleman (Ornette's prodigiously talented son) - is surely one of the finest to have graced contemporary jazz, and certainly one of the most shocking.

If you were to use one word to describe the music on this album, it would have to be 'angular'; angular, awkward, but generally relentless rhythms, angular melodies, angular group improvising. Of course, Ornette's 70s electric groups had already ploughed this furrough for some time, creating some of the most essential, groundbreaking and sadly overlooked albums in jazz history. But Ulmer, with a childhood spent singing gospel and subsequent years with organ funk groups, brought to the group a different energy altogether. This is cerebral challenging music, for sure, but music with passion and fire too. An essential reissue.

# Simon Hopkins



#### GENERAL STRIKE DANGER IN PARADISE PIANO PIANO 503

One time Flying Lizard David Cunningham has reactivated his longdormant Piano label with a batch of reissues and rediscoveries which includes his own excellent Secret Dub Life of the Flying Lizards (way outside this column's remit but highly recommended for listeners fascinated by the delights and struggles of pre-digital experimental dub) and this curio, General Strike's Danger In Paradise.

General Strike were multiinstrumentalists Steve Beresford and David Toop; they recorded this album previously released only on cassette between 1978 and 1984, and it's really quite wonderful. Toop and Beresford both had backgrounds in free improvised music, but these sessions, while full of improv's intuitive imagination, fell back on both musicians' love of dub - not just dub's alchemical sound possibilities, but also its narcotic and inescapable rhythms. So what we get here are 15 short pieces hung around persistent and lop-sided rhythms banged out on whatever percussion came to hand.

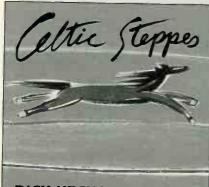
To this Toop and Beresford brought a wide-eyed fascination with bizarre and exotic sounds, grabbing snatches of melodies and riffs played on guitars and synthesizers and glockenspiels and flutes and toy pianos and... on and on. The results, enhanced at the time and since with David Cunningham's highly inventive dubby tape treatments, are at once wonderfully exotic, naive and yet oddly disturbing.

There are two Sun Ra covers here, 'We Travel the Spaceways' and 'Interplanetary Music' (which features a swooping Lol Coxhill soprano solo), plus a fantastic dub version of the latter - for my money this album's stand out track. This couldn't be more appropriate; General Strike learned much from the great Saturnian bandleader's best work: a certain sense of wonder, a delightful clumsiness and a give-a-damn attitude to instrumentation and technique.

Toop and Beresford have gone on to wide acclaim in different spheres; Beresford has continued to expand the vocabulary of free improvised, and in the wake of the rise of post-techno ambient, Toop has recently re-emerged as one of its most innovative music makers. This timely, highly revealing reissue captures two musicians on different musical trajectories, briefly coming together with startling results.



# Simon Cooke



**DICK HECKSTALL-SMITH** 

DICK HECKSTALL-SMITH CELTIC STEPPES 33 RECORDS JAZZ 027

The steppes of the title have nothing to do with the mountainous western limits of Europe to which the Celtic peoples are now confined, but those of Central Asia whence the first proto-Celtic peoples rode into the recorded history of the Hellenic world, wreaking havoc and destruction as they came.

No, this isn't 'Archaeology Today' you've picked up! It's relevant because Heckstall-Smith employs motifs from across this gigantic geographical and cultural canvas, using it as a huge melting-pot of barbaric sound and rhythm, in preference to the more familiar but attenuated Celtic strains of today's Irish or Scots bands. This makes for a piece which sounds more like the film score to 'The Ten Commandments' than a 'traditional' Celtic work at times, but take the size of that palette into account and a long, hard look at Celtic history, and this will make you realise just how deeply the roots of this waning ancient culture still reach into the consciousness of

European people today. I hope I've given you the idea that this is more than just a piece of jazz; it's a revelation.

Enough about that though. The band is too large at twenty one members to list here but Don Weller and Theo Travis - with Ed Jones - on tenor sax and Spirit Level's Kendrick Rowe on drums are liable to be among the most familiar names for HFW readers. All of the players, however, turn in superb performances, with musicality and empathy with the material firmly to the fore. Many musicians have come a cropper trying to wed jazz with forms of Celtic music, but this group manages to invest Heckstall-Smith's work with both a reverence for the roots of this music and the pride of those who try to keep Celtic culture viable today.

All told, though, I have only one quibble, concerning length. At just over thirty minutes playing time there's a real danger of the buyer feeling ripped off by this CD, not only financially but because the work is so 'moreish'. Despite that, it's a superb piece well transferred to CD by the ever impressive '33' Records label, and I can heartily recomend it.



#### GLEN MOORE DRAGONETTI'S DREAM vBr 2154

If you're a fan of the rich, full sound of the double bass, this album really is a cracker. It's a solo album of fifteen tracks, fourteen of which are played on a luscious 1715 Klotz bass, lovingly strung with Thomastic Spirocore in high C, D, A, and low C (My, but I just adore sleeve notes this comprehensive). The second track, for no readily apparent reason, is played on a Steinway piano.

To get on with the review however, I have to say that the recording quality stands head and shoulders above the music, which I'll come to later. The technical side of this release is mouthwateringly sumptuous, making it possible just to sit back and revel in the detail as every hair of the bow seems to lend something to the performance, every finger-touch on the strings is audible, and every note from the screeching highs to the flatulent thrumming of the lowest notes leap out of the 'speakers at you. Fundamentally, this recording should score well for detail, whatever your taste in jazz may be.

Taste is where I encounter a problem with this CD, as I lean more toward the multiplexed, sampled and delayed complexities of Eberhard Weber, for instance. While Moore also uses electronics to boost his performance (those comprehensive notes list a Lexicon PCM 70, 2.0 effects unit among Moore's equipment), its presence is far less noticeable, and he substitutes a wry humour in place of prestidigitation or obvious electronic enhancement. This is most easy for me to describe by comparing Weber's 'Pendulum' with Moore's 'Walcott's Pendulum', which I assume has a similar raison d'etre. Weber's track runs like a complex, quality Swiss chronometer while Moore's plays up the lurching, boozy passage of time as marked by your average pub clock and that goes for the whole album; empathetic, touching and humane. Try it.

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# Peter Herring



CARL PHILIPP EMANUEL BACH **Double Concerto for Two** Harpsichords and Orchestra in F Major Wg46/ Double **Concerto for Harpsichord**, Fortepiano and Orchestra in E flat Major Wq47/ Sonatina for Two Harpsichords and Orchestra in D Major Wq109 Eric Lynn Kelley, harpsichord; Jos van Immerseel, fortepiano and harpsichord; Alan Curtis, harpsichord; Gustav Leonhardt, harpsichord. **Collegium Aureum** Deutsche Harmonia Mundi **'Baroque Esprit'** 05472 77410 2 (ADD/DDD/57.57)

A musicologist of my acquaintance takes great delight in openly questioning the normally unquestioned dogmas of music. One of his favourites is to maintain that Carl Philipp Emanuel Bach was a greater composer than his father, Johann Sebastian. These days, the suggestion is greeted with a sharp intake of breath, but in the second half of the eighteenth century it would have been met with widespread endorsement. It was not until the 're-discovery' of J.S. Bach by the likes of Mendelssohn during the nineteenth century that C.P.E. lost his pre-eminence. Four centuries of English music are encompassed by new recordings of Thomas Tallis, Michael Tippett and William Walton, while - as affirmations of faith - Tallis's serene austerity makes for a sharp contrast with Franz Schubert's final and most intensely personal setting of the Latin rite.



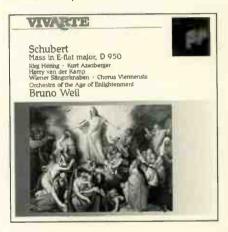
lassical reviews

This recording reveals something of why C.P.E. Bach was so highly regarded by the likes of Haydn, Mozart and Beethoven. The Double Concerto for Harpsichord and Fortepiano, written in the year of his death, 1788, remains rightly celebrated. It is a work of remarkable freshness and originality, with much wonderful solo writing, and a delicious contribution from the orchestra of flutes, horns and strings. The Concerto combines reflection with wit and humour, and in many respects supplies an appropriate epitaph for the Baroque style.

The Sonatina WqIO9, one of fifteen composed in Berlin between 1762 and 1764, similarly mirrors the changes that music was undergoing. The Baroque spirit remains in the festive trumpets and drums of the orchestra, but the solo writing has more than a taste of the early 'sturm und drang' style which was to attain its high-watermark in the middle period symphonies of Haydn.

The third work here is one of the earlier of C.P.E. Bach's fifty-two keyboard concertos, dating from 1740 when the composer was resident harpsichordist at the Prussian court in Berlin. While not as arrestingly original as the two later works, its invention and wealth of ideas still shine through, and the introspective slow movement is particularly fine. It is a pity that the playing in this 'sixties analogue recording by Alan Curtis and Gustav Leonhardt is not a little more imaginative, but the performance as a whole is acceptable.

Better, both in terms of playing and sound quality, are the digital recordings of Wq47 and WqlO9 from 1982: bright, airy and with great clarity of texture. The soloists are forwardly-balanced, but not at the expense of the often-piquant orchestral sonorities, and the whole presentation is most satisfying. Altogether a recommendable introduction to the music of 'the other Bach' - and judge for yourself whether you think my heretical musicologist friend has a point!



#### FRANZ SCHUBERT

Mass No6 in E flat Major D950 Benjamin Schmidinger, treble; Albin Lenzer, alto; Jorg Hering, tenor; Kurt Azesberger, tenor; Harry van der Kamp, bass; Arno Hartmann, organ; Wiener Sangerknaben; Chorus Viennensis; Orchestra of the Age of Enlightenment; conductor, Bruno Weil. Sony Classical SK66255 (DDD/47.44)

As with Beethoven's Missa Solemnis of five years earlier, Schubert's sixth, last and most ambitious setting of the Mass is, despite its scale and splendour, an intensely personal and direct affirmation of faith. It is an oddly dualistic work: in many respects conventional (the composer was anxious for its acceptance by the 'censors' within the church), but with many examples of Schubert unable to contain the desire to express his inner spiritual vision and his own interpretation of the significance of the Mass texts. The result is a work where the dramatic tension is unrelenting, where supplicant

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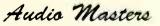
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acceptance is swept aside by a vigorous, unvielding questioning. It is palpable even in the tremulous opening chord of the normally beatific Sanctus. Most startling of all, however, and most deeply affecting is the Agnus Dei in which Schubert employs as his basic material a theme symbolising the Cross - C, B, E flat, D. The effect is powerfully arresting, and Schubert was to redeploy it in a distilled and concentrated form just a few weeks after the completion of the Mass, in one of his most famous and intensely personal Lieder - Der Doppelganger. It is impossible not to draw parallels between the man on the Cross and the protagonist of the song who "...stands there too and stares aloft, and wrings his hands in an access of grief."

But we should not be surprised by the profundity and power of this Mass setting: its date of composition - June-July 1828 - places it between the C Major Symphony and what, for many, remains Schubert's finest chamber work, the String Quintet. However, whereas the collector has been spoilt for choice in those two works, this has never been the case in the E flat Mass. I doubt, though, that this new recording under Bruno Weil has ever been bettered. For a start, the sound is outstanding, one of the best examples yet to come my way of Sony's 20-bit system. The inner clarity, even within the most complex choral sections is exhilarating, and the scale is aweinspiring, as surely befits the score.

And what playing and singing Bruno Weil exhorts from his Viennese choral forces and that excellent period instrument ensemble, The Orchestra of the Age of Enlightenment. With brisk tempos and keenly accentuated rhythms, the dramatic momentum is maintained throughout; it is edge-ofthe-seat stuff. The only drawback is the comparatively short measure, but for once this is outweighed by the quality and intrinsic value of one of the finest

Schubert

recordings of

recent times.



### WILLIAM WALTON Johannesburg Festival Overture/Viola Concerto/Symphony No2 Lars Anders Tomter, viola; English Northern Philharmonia; conductor, Paul Daniel

Naxos 8.553402 (DDD/61.27)

Walton's Second Symphony has never attracted the attention or acclaim of his First, but then it was composed in a very different musical climate. When it was premiered at the 1960 Edinburgh Festival, it spoke a language that was clearly out of step with the prevailing radicalism and was coolly received by the critics. It deserved better, and in a fine performance such as this, its qualities can be appreciated without reference to any musical '-ism' (most of which it has outlived). The slow movement, marked lento assai, ranks among Walton's greatest inspirations: hauntingly atmospheric, lyrical, and displaying a complete mastery of a wide and exotic range of orchestral colours, something Walton appears to have learnt from Ravel, whose influence is undisguised.

Like the Fourth Symphony of Brahms, the Walton concludes with a splendid passacaglia, a set of variations on a twelve-note theme, and a lively fugato passage leads to a final, rousing coda. Throughout, colour and texture are all, underpinned by a rhythmic urgency, something which comes across strongly in this performance by one of the most promising of young conductors, Paul Daniel. His orchestra, the English Northern Philharmonia, is better known as the orchestra of Opera North but is rapidly building a reputation for itself beyond the confines of the opera house - and rightly so, given the standard of playing here.

As with the Second Symphony, the other main work here, the Viola Concerto, enjoyed mixed fortunes initially. It was written in 1928 for the great virtuoso Lionel Tertis, but he rejected the score as too modern and the first performance was instead entrusted to the composer, Paul Hindemith, who also happened to be an accomplished violist. But Tertis disliked Hindemith's approach to the work and, as though

to show how it should be played, took the concerto into his own repertoire after all. He first performed it at a festival held by the International Society for Contemporary Music and then at a Three Choirs Festival, where it seems the piece did not meet with the approval of the ageing Elgar.

Now, though, the work is acknowledged as one of the finest concertante compositions for this 'cinderella' among string instruments, and arguably represented the highpoint of Walton's 'lyrical' style. That lyricism is certainly evident in the

hypnotic, poetic playing of the Norwegian, Lars Anders Tomter; it is as searching and compelling a performance as I have heard.

The entire programme, which opens with a sparkling performance of the Johannesburg Festival Overture of 1956, written for the seventieth anniversary of that city, has been very well engineered by Dave Harries in an acoustic which is, to judge from previous recordings made there, difficult to work in - Leeds Town Hall. The balance is entirely natural, and the detail is luminous, if occasionally a little hard-edged. But, at under a fiver, for exciting, freshly-minted performances of music by a still undervalued English master, I've no complaints.

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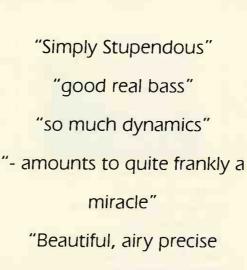
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## **RECORD OF THE MONTH**

#### THOMAS TALLIS

Lamentations, Motets, String Music Theatre of Voices; Director, Paul Hillier The King's Noyse; Director, David Douglass Harmonia Mundi 907154 (DDD/70.45)

The lifetime of Thomas Tallis (c.1505-85) was one of both great musical development and sociopolitical upheaval in England. He was born during the reign of Henry VII and, after posts at Dover Priory, Canterbury Cathedral and Waltham

Abbey in Essex, was to spend the rest of his life in the service of three other monarchs, as a Gentleman of the Chapel Royal. With Henry VIII came the Reformation, and with the accession of his nine-year old son, Edward VI, the Protestant zealots who were the young King's regents intensified the persecution of Catholics and the enforcement of the 'reformed style' in worship and everything associated with it, including the important element of music.

Henry VIII's elder daughter, Mary Tudor, reinstated Catholicism for

six years (1553-58), but under her sister, Elizabeth, the Protestant faith was reimposed, mercifully with a lessening of the fanaticism which had characterised the reigns of her predecessors. Thankfully for succeeding generations, both Tallis and his younger contemporary, William Byrd, survived these dangerous times and, albeit with considerable discretion, maintained their allegiance to the Catholic faith. It enabled them to write with equal mastery and invention for both the Catholic and Anglican liturgy.

Tallis's long career also witnessed a significant shift in the style of English sacred music, as gradually the ornate, discursive approach of the late Medieval period gave way to the new continental European imitative style, with its enhanced potential for emotional expression. Tallis seems to have had no difficulty in embracing the new style, as his setting of the Lamentations of Jeremiah -. regarded by many as his supreme contribution to sacred polyphony.- bears eloquent testimony. But his Latin motets are hardly less of an achievement, and two of the finest - Salvator mundi and Audivi vocem - are included here along with the Lamentations, in superb performances by Paul Hillier's American-based choir, Theatre of Voi<mark>ces</mark>.

## THOMAS TALLIS

Lamentations, Motets, String Music THEATRE OF VOICES, *dir*. Paul Hillier THE KING'S NOYSE, *dir*. David Douglass



The penitential nature of many of the texts set by Tallis, it has been suggested, was a subtle way of proclaiming his anguish at the treatment of fellow-Catholics and his despair at the Catholic Church's expulsion from England. If so, it might be expected that his music for the Anglican liturgy would fail to rise above the prosaic and workmanlike. Yet, as is amply demonstrated here, that could not be further from the truth. His English-language setting of If ye love me, keep my commandments is every bit as moving as any of the Latin motets, and the same can be said of

his Anglican rendition of the Benedictus. His command of the Protestant style at its most severe and unadorned is nowhere better heard than in the eight tunes Tallis contributed to Archbishop Parker's psalter, the two most famous of whicn, Why fum'th in sight and Tallis' Canon, are included here. The former, it is worth recalling, was the theme used by Vaughan Williams in his Fantasia on a Theme of Thomas Tallis.

For Tallis, the simplicity and directness of the Protestant dictate was as much a challenge as the new European polyphony, and he relished the opportunity to exploit it.

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In performing works from both liturgies, Theatre of Voices offer an imaginative and balanced portrait of this great English composer, and it is made all the more comprehensive, and exceptional in Tallis discography, by the inclusion of some of his string music, expressively played by the violins, violas and cello of David Douglass's The King's Noyse. These are arrangements of partsongs, two instrumental settings of motets, and one of the two In Nomine settings, and far from interrupting

the flow of the choral music, they provide a refreshing contrast.

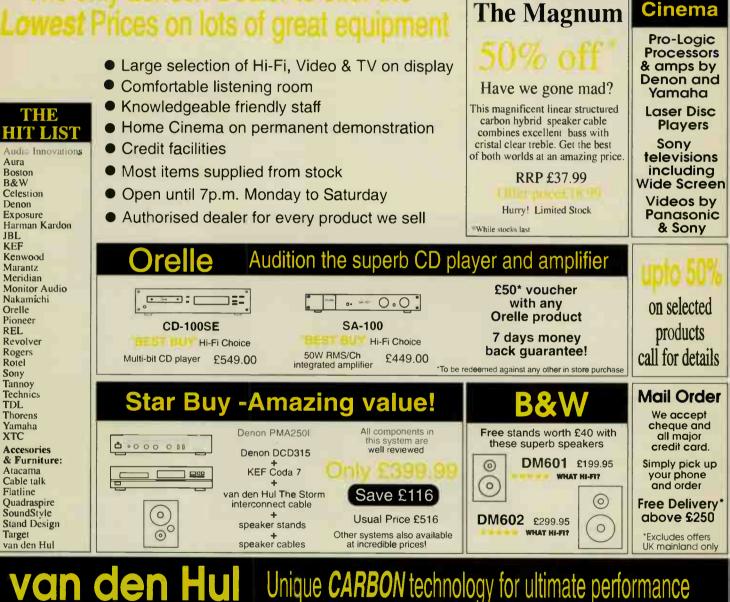
With its clear, limpid recording, made in St Stephen's Church, Belvedere, California, and first class presentation (an excellent booklet essay by David Vernier), I know of few better modern recordings through which to discover the composer who was described in one tribute thus: "As he did live, so also did he die. In mild and quiet sort." Such qualities may have ensured his survival; if so, we can only be grateful that the "mild and quiet" Thomas Tallis let his music express his innermost thoughts and feelings 🔴



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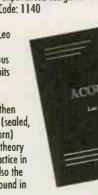
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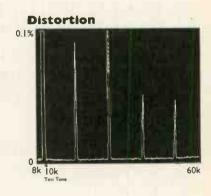
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7.6watts
39Hz-18.3kHz
70dB
-70.8dB
1%
18mV
0/0m∨

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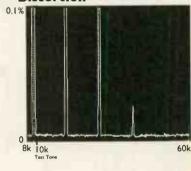
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Distortion



#### QUAD 77 PRE/POWER

The Quad 77 power amplifier through its Aux input managed a big 79 watts into  $8\Omega$ and 115 watts in a  $4\Omega$  load. The frequency response was more than adequate too, flat between the IdB limits of 8Hz and 28kHz.

Midband harmonic distortion at lower power levels was measured at a very low level of 0.008% whilst increasing very slightly at full power. High frequency distortion behaved in much the same way, though starting at 0.07%. As is clear from the trace, some inharmonic signal distortion was also detected, mostly beyond the audio band.

The 77 preamp, has both an MM and MC phono stage. Both have three sensitivity settings following the line stages in similar fashion. The MM (Moving Magnet) stage had a - IdB roll off response of 13Hz to 22kHz with a 1dB peak at 50Hz. The MC (Moving Coil) stage faired less well with a 1dB limit response of 32Hz to 24kHz. I would expect the MM stage to have better low-end sonic results.

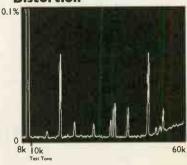
There was a factor of 10 difference in sensitivity between the two stages. At low sensitivity settings the results were 8.5mV and 0.85mV for the MM and MC stages respectively. Given the choices on inputs both these stages should tolerate most cartridge signals.

Input impedence of the MM stage was measured at  $27k\Omega$  paralleled with 100pF with the MC stage having a  $47\Omega$  input. HB

Power	80watts
CD/tuner/aux. Frequency response Separation Noise Distortion Sensitivity	8Hz-28kHz 88.6dB -77.1dB 0.07% 320mV
dc offset	-5.2/-19.7mV
Disc MM Frequency response Separation Noise Sensitivity Overload	3Hz-22kHz 68.7dB -95.1dB 8.5mV   00mV

Disc MC	
Frequency response	32Hz-24kHz
Separation	28.4dB
Noise	82.1dB
Sensitivity	0.85mV
Overload	9m∀
	9m∀

#### Distortion



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test results

604

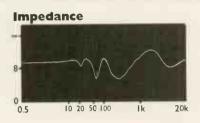
# LOUDSPEAKERS

#### **KEF CODA 9**

KEF's Coda 9s have a very smooth response right across the audio band, showing fine engineering. There is a small peak at 800Hz, but it is narrow and low enough not to effect their balance strongly. Bass extends well down too, so I'd expect quite strong and deep bass from these floorstanders.

Producing 88dB at 1m for a nominal watt (2.83V) pink noise input signal, the Coda 9s should go loud with few watts. Overall impedance measured 8.1 $\Omega$ , but the impedance curve shows some sharp rises and falls indicating reactiveness. All the same

most modern amplifiers should drive them easily. I'd recommend 30watts or so for best results. DB

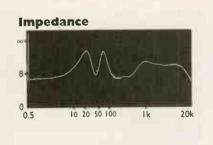


Distortion

#### **JBL S2600**

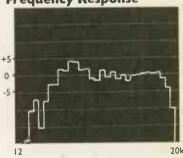
Congratulations have to go to JBL for the S2600s, they have one of the smoothest and flattest responses I've measured from a horn. Our plot doesn't show how flat they really are in fact, because I had to pull back further afield to get good integration between midrange and bass. In the near field the horn gave a near ruler flat response from around 900Hz up to 16kHz. This will give them a balanced and even sound. There was quite a lift in the bass, but this was in our smallish test room, In a larger room I'd expect bass to be flatter and deeper; this was verified during listening tests.

Surprisingly, sensitivity wasn't as high as 1'd expected. They still deliver a very healthy 90dB which is high by domestic standards though. With a smooth  $8\Omega$  impedance, the JBLs are easy to drive and will certainly go loud with few watts. An ideal candidate for valve amplification, I'd recommend up to 20watts for normal listening and 50watts for serious level in large rooms. DB



Frequency Response

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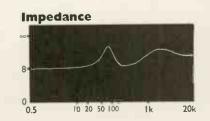


#### **TANGENT MONITOR 2**

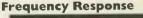
Tangent's Monitor 2s aren't perfect. In fact they have a serious problem, but it's one they get away with subjectively. The tweeter is out of phase with the bass unit, producing the strong suck-out shown in our frequency response plot. I reversed tweeter phase and my suspicions were confirmed as the gap filled in to produce a peak around 3-4kHz. This however was strong enough to make them aggressively bright, so I suspect they have been set out of phase to alleviate this. It's a shame, because all that's needed is a little fine tuning in the crossover for the Monitor 2s to produce an extremely flat response.

Sensitivity measured just 83dB using a nominal watt pink noise signal (it would be higher but for the midrange dip). High overall impedance of  $10.5\Omega$  was partly to blame. The

impedance curve was impressively smooth, a good feature. It indicates that they are a mainly resistive load, matching well with a wide range of amplifiers, even though they'll need plenty of volts to go loud. I'd recommend amplifiers capable of producing



40-50watts - and also that Tangent invest a little time fine tuning the crossover. Then, at £60, they would be exceptional value. DB







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# test results

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# LOUDSPEAKERS

#### WHARFEDALE VALDUS 300

The Valdus 300s are an interesting loudspeaker, certainly in measured terms, combining many strengths. Frequency response is impressively smooth, from low bass right through to upper midrange. Above this there is a shallow dip, around 2dB, which will remove some sparkle, but the response peaks again around 12kHz so I'd expect them to create a good impression of detail and insight all the same.

Wharfedale have balanced the drive characteristics of the Valdus 300s well too. They are sensitive, producing 89dB at 1m for a nominal watt (2.83V) pink noise signal, and overall impedance is high at  $13\Omega$  so they won't demand high current either. This

# UNER

#### HARMAN KARDON TU-950

The flat audio frequency response of this tuner will ensure it sounds tonally smooth, treble roll-off above 12kHz ensuring that neither sharpness nor brightness intrude.

At full quieting, which requires ImV or more from the aerial - normal enough - hiss sank to -74.5dB, lower than usual and low enough not to be audible even during Radio 3 silences. Distortion was also well controlled, measuring 0.3% second harmonic, as our analysis shows.

Harman have provided effective pilot/sub-carrier filtering and audio output was usefully high at 750mV.

Alternate channel selectivity was well balanced, measuring 80dB above and below (+/-0.4MHz) a wanted signal. Stereo sensitivity was satisfactory at 30µV, if not class winnning.

In all areas, the TU-950 measured well. It has no foibles or weaknesses. NK

# ASSETTE

#### **TECHNICS RS-AZ7**

The new form of replay head used in this deck is a success, but the rest of the deck did not complement it. Head azimuth alignment was poor, so treble roll-off occurred - ironic considering the reduced head gap span was meant to alleviate, if not eliminate, this problem. Poor set up has negated this advantage. Replay frequency response was intrinsically flat, especially at low frequencies - a good result.

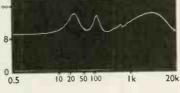
The RS-AZ7 could record high levels onto tape (e.g. +3.8dB MOL onto metals), although not Nakamichi levels (+6dB MOL onto metals). Its tape tuning system managed well with metals, chromes and ferrics, but metals (see analysis) had slowly rising treble. Chromes and ferrics tuned flatter.

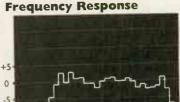
Noise from the head was lower than usual, leading to good all-round noise figures, although Dolby C did not give quite the reduction (-18dB) hoped for (-20dB).

The transport was poor, suffering significant capstan wow and flutter. I'd expect this to detract from tonal purity, adding a wiriness (wow) and some paperiness.

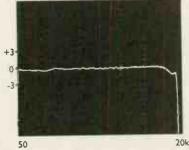
means they will go loud with few watts. The impedance curve is smooth too, indicating they are a mainly resistive load; again this will make them easy to drive and compatible with a wide range of amplifiers. Very good. DB







**Frequency Response** 



5Hz-12kHz

33dB

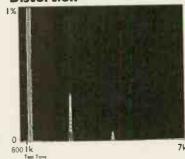
0.3%

-74dB

30mV

Frequency response Stereo separation Distortion (50% mod.) Hiss (CCIR) Signal for minimum hiss



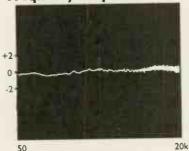


Selectivity (at 0.4MHz)	80dB
Sensitivity	2.5µV
stereo	30µV
signal strength meter:	none

The RS-AZ7 needs a better transport and more care in set up at the factory. NK

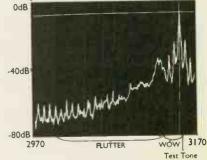
**RECORDING** (blank tapes) Frequency response (IEC Primary Refs.) 20Hz-17kHz ferric (IECI)

#### **Frequency Response**



chrome (IECII)	20Hz-18kHz
metal (IECIV)	20Hz-20kHz
Separation (IkHz)	56dB
Distortion (315Hz)	0.8%
Hiss (70uS, Dolby out)	-57dB
Speed variations (DIN total)	0.14%
Flutter energy (3-3.13kHz)	-25dB
MOL/SAT (IEC Refs)	315/10k
IEC I (ferric)	4.4dB/-10dB
	2.2dB/-8dB
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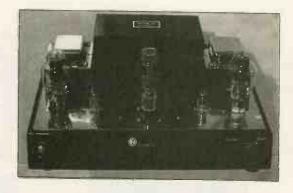
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offers the sort of acoustics treasures that are usually the domain of far more expensive amplifiers, "Gamma is to be applauded for this exciting new product!" (Hi-Fi Choice Jan. '94) "the Gemini is a peach. Switch it on leave it for a couple of minutes

to settle down and (once run in) it will give a truly amazing sound. CD,

radio broadcast tape can all sound stunning through this devise

the Gemini will charm the very best out of your music collection.

for £699 you'd be hard pressed to match this design for sheer sound quality and enjoyment (Hi-Fi Choice March '95)

the immediate effect of this new amp was warmth and funkiness. "Suddenly it had soul" "I had a clearer idea of

what they were feeling" "the Gemini offers a small footprint with a

difficult to beat price" (Hi-Fi News & RR Feb. '95)

There's a hugely endearing quality about the Gemini sound, " It has the most attractive price tag: £699 is small money for a decent valve amp, and decent the Gemini is." (What Hi-

Fi Feb. '95) BUT DON'T TAKE THEIR WORD COME AND BE HAPPILY SURPRISED!

108 JULY 1996

## test results

# CARTRIDGE

### WILSON BENESCH HYBRID

This cartridge is a high-ish output moving coil type, for use with moving magnet inputs possessing a 47k input impedance. Volume will have to be cranked up a bit, but most amplifiers will be driven to full output on peaks and hiss should not be a problem.

Tracking ability was mediocre, but satisfactory for most records. Vocal peaks may induce some strain, since midband performance was below class standards set by low output MCs. I suspect this is the price paid for high output, extra coil turns increasing tip effective mass.

Tracing distortion was low (0.5%) and correct vertical tracking angle of 22degrees ensured low distortion from vertical modulation components (L&R stereo information).

Poor mechanical generator alignment gave unbalanced channel separation at

# **CD PLAYERS**

### TRICHORD GENESIS

The Genesis player is based on the Pioneer PDS-504, but modified by Trichord. Its frequency response shows strong treble rolloff, IdB down at 15.2kHz with both channels displaying virtually identical characteristics. This I would expect to give a soft sound.

Distortion levels were low right across the board. At -30dB, a level picked to represent a typical music signal, there's only a small amount of 2nd harmonic visible. As even order distortion is generally innocuous, especially at such a low level, I'd expect a smooth sound from the Genesis. Separation remained above 90dB even at 20kHz. No noise figure could be obtained because the Genesis mutes under test.

The dynamic range figure of 105.9dB is very good echoing the low distortion at -60dB. Output voltage was above standard, the Genesis providing 2.4volts rms. Apart from the discrepancy in the frequency response the Trichord Genesis fairs well. HB

### **ROTEL RDD/RDP-980**

The Rotel DAC and transport duo displayed the standard 4Hz to 20kHz CD player frequency response, although the plot shows a gentle lift at the top end and a bit of a dip at about 500Hz. The former may accentuate the system's perceived clarity.

Distortion figures were quite good staying as low as 0.005% at -30dB signal level. No harmonics were visible here, distortion sinking below the noise floor, so I'd expect a smooth sound as a result. Separation figures across the audio band weren't the best I've seen, but ranging between 80-94dB were still good results.

With low noise, wide dynamic range and a higher than standard 2.4volt output, the test bench has little bad to say about the pair. HB 20dB/30dB, with the body upright. Tilting it by a very obvious 10degrees or so gave a balanced 25dB/25dB. This will move stereo stage centre off-centre.

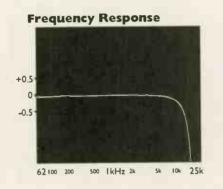
Frequency response was smooth and peak free, displaying a slow downward trend toward high frequencies, as our analysis shows. Inner groove tracing loss was reasonably low, showing good tip shape. All the same, overall, this cartridge will have a warm tonal balance, with less sparkle and air than most. It should also sound clean and relaxed though. NK

Fracking force Vertical tracking angle	1.8-2gms 22degrees
Frequency response	20-20kHz 25dB
Channel separation Tracking ability (300Hz)	2506
ateral	63µm
vertical	45µm

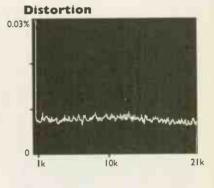
lateral (IkHz)	15cms/sec.
Distortion (45µm)	
lateral	0.5%
vertical	2%
Output (5cms/sec rms)	I.2mV
Channel imbalance	0.5dB

### **Frequency Response**

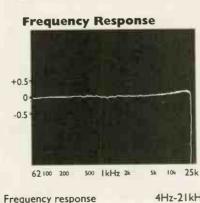




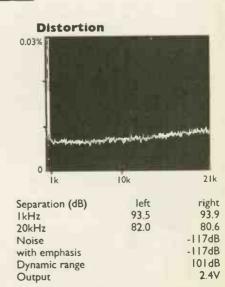
Frequency response		4Hz-15.5kHz
Distortion (%) -6dB -30dB -60dB -90dB	0.006 0.020 0.56 30.1	0.006 0.019 0.62 31.5



Separation (dB)	left	right
IkHz	122	124
20kHz	96	99
Noise		N/A
with emphasis		N/A
Dynamic range		105.9dB
Output		2.4V



Frequency response		4Hz-21kHz
Distortion (%)		
-6dB	0.004	0.004
-30dB	0.006	0.005
-60dB	0.75	0.70
-90dB	43.2	40.0

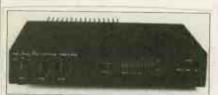


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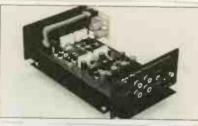
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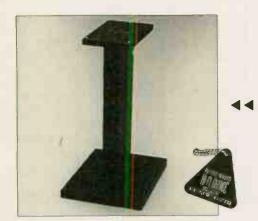
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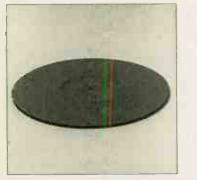
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Arcam Alpha 5 Plus (F/L)	£479.00
Arcam Alpha 6 (F/L)	£599.00
Arcam Delta 270 (F/L)	£799.00
Arcam Delta 250 Transport	£799.00
Arcam Black Box 50	£479.00
Arcam Black Box 500	£745.00
Denon DCD 825	£269.00

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Linn Mimik CD Player	£875 00	
	YESI	
Linn CD Players - Full range?		
Marantz CD63/2	£269.00	
Marantz CD63se	£349.00	
Marantz CD63 Slg (F/L)	£499.00	
NAD 501 (New)	£199.00	
NAD 512 (F/L)	£249.00	
Nalm CD3 (F/L)	£977.00	
Naim CD2	£1997.00	
Naim CD Players - Full range?	YES!	
Quad 77 CD Player	£595.00	
Rotel RCD 930AX	£199.00	
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Arcam Delta 290	£499.00
Arcam Delta 290P	£399.00
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Marantz PM55se/2	£249.00
NAD 310 Amplifier	£99.00
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Naim NAC 92 Preamp	. £447.00
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P.S. We also have some news about a new integrated amplifier from Roksan, (please nng for more details).

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1 x L2 Preamp	£995	£595
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This is a must own for any collection, Miles' first album. Miles led the Birth Of Cool Band for only two weeks of live shows, but these later recordings capture a flowing and contemptative sound quite different from bop's frenetic style. Lee Konitz's fragile alto sound and Gerry Mulligan's velvety baritone are crucial to it, as is Gil Evan's use of unusual instrumentation. £25 ARMSTRONG & ELLINGTON - Complete Sessions.

Although these sessions have never been highly regarded for Ellington's imput, they are considered some of Armstrong's finest. With all the material composed by Duke Ellington, Louis stamps his mark on it from the opening tracks, the results are both moving and quietly eloquent, Louis shines. £25 RICKIE LEE JONES: Girl At Her Volcano (10")

Rickie Lee Jones has recorded may albums in her crear, but in my opioion there are only two real stand out classics, one being her first album, 'Rickie Lee Jones' and the second the 10" EP 'Girl At Her Volcano' where Rickie Lee covers such classics as; "Lush Life" Hey, Bub", "Under The Boardwalk", "My Funny Valentine" and my all time favourite "Walk Away Rene" This is a wonderful 10" that I never tire to hear, I was so pleased to hear of this Virgin Vinyl reissue, it well deserves true audiophile recognition. (Not 180gm) £20 HERBIE HANCOCK: Cantaloupe Island.

By 1963 herbie Hancock was a regular Blue Note side man as well as record artist in his own right. 'Cantaloupe Island" catalogues Hancock's greatest cuts from this period. From "Cantaloupe Island" (a classic track from which this album is named) and "Maiden Voyage" masterpieces from the 'Empyrean Isles' album to "Watermelon Man" a bona fide hit single! This is essential Hancock not to be missed. £25

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### **Recommended CDs & LPs**

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# **Gramophone Audio Awards**



I must say that it is very gratifying to find so many of the products that we recommend receiving either 'Audio Classic' or 'Audio Choise 1996' Awards in the January issue of Gramophone. These include Classic Awards for the ATC SCM 50A Speakers, the Chord SPM 800 amp, and the AVI S2000MP/MA, with 'Choise 96' awards for the ATC S2000 MI and Heybrook's Sextets. With recommendations for the ATC SCM 10, Ruark Tallisman, Crusader and Equinox, the Heybrook Quartets, the AVI S2000MC CD Player, the Chord 1200B, and the Shearne Phase 2 integrated amplifier, then the only major omissions are the Electrocompaniet range of amps and speakers plus the Alon speakers referred to at length in a previous advert. Both of these ranges are however new to the UK market and have not been reviewed yet by Gramophone.

So as you can see, we have selected our product

range carefully and feel we have something here to suit most people. One item we haven't referred to much is the Chord 800, mainly because it is at a price disadvantage in comparison with AVI, but it is an excellent amp and particularly suited to driving the Alon range and passive ATC50s, so do come and have a listen to its particular qualities. **HEYBROOK** 

### QUARTET/SEXTETS Mention of the Heybrook



Awards above reminded me of a recent demonstration given to a customer who was finding great trouble with certain CD recordings and found the Quartets produced a particularly sweet treble and really the only criticism one could make is lack of real bass. Matched with the Jamo SW600 subwoofer, however produced a

huge sound for just over £1000. P/E BARGAINS

A Trilogy 902 Line-Level Pre + 958 100W Monoblocks (all valve) retailing at £4600, bargain at £1900 B Previous AVI Pre at £500 Phono Stage £100

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Note and Yis, this will be on a "stripper" or space of the summarised table below or real and in 1, you pro-spaced contrasts of the summarized tables of the stripper set of the summarized tables in the summarized tables of the summarized tables of the summarized tables of the summarized tables of the summarized at 01100 control tables of the summarized tables of the summarized tables of the summarized at 01100 control tables of the summarized tables and tables and summarized tables of the summarized at 01100 control tables of the summarized tables and summarized tables of the summarized at 01100 control tables of the summarized tables and summarized tables of the summarized at 01100 control tables of the summarized tables of the summarized tables of the summarized tables and summarized tables of the summarized at 01100 control tables of the summarized tables and summarized tables of the summarized tables of the summarized tables of the summarized tables and summarized tables of the summarized tables of t

### AUCIO NOTE OUTPUT TRANSFORMERS.

the year the process of builting up to a scatte ranges of Archiveto actual transformers, in order to offer the best and the scatter of the state of the scatter of the s

A Company of the second of calculated to encours and to gailing as compared on a set of the Top Source and calculate downers a the company path-path engines are of the Top A for all and the second of the set of A and 1950. B Top Source are set of the Top Source Source and the company and additions to the

5.5 for the second state and the second state and the second state and stat famm. Buy won't, but then easen thuy do not carry the prior has either!

The quality column for group A any 2016 to 2010 r. 1 to 1 548 they are E could with spicon steal introduces and are capable of Process and ender tage, where we have peed and up any or it was been been and an any any any any The upon of a stration core, specified in the each power been expected, other tages over specifying by 50 or 100%, as we do as Group 4. The winding scalely and capper ware is the same

Grap 1 are typicity 2016 to 40% to this critica 1 50% E could with high pairty stoces and luminglaws wound with tangentine support with all facility and after hist-testic or bornes draps with from back. Ourso it as a pairty 10% to 10% or mark 1.5% critiques and marks from Course match have the land analytic interes marks under the marks with critication with the back of the testing of the testing of the stoce that a strange testing with critication with the back of the testing of the testing of the testing of the from testing testing and the testing of testing

Group D use Author Note other Wire, used I say more?

Grane &

PP + Popt-Pol. PPP + Parable Popt-Pol. SE + Simple-anded PSE + Simple-anded Postilit UL separates 42% ultraineur tage, 45 a generation into and an ext constance the sum of UL-tage, as we consider these detriment to

ra m column 5 All our activit transformers are instead in condition leads of monotons 3,000 units all 211/045 extends are condition

to Sta fluck, every transformer is tested to this total of resultation

We do not give any further technical atternation on our output trave ormers, as we do not wish to take perf in

technical competitions, our products are designed to criticite which are and will be understand once they are latered

b) In addition to this output transformers offend failure as offer a design server, where we can exploy almost any management for explored transformers which the exceptions, more quick controllage, for exploy the extension, for explore exploy, we design and manditudes programs, exception, the explore design as (2000), protection extra control and a prior manufactory control and any extension of the prior design as (2000), protection extra control and a prior man before the prior design prior design and (2000), protection extra control and a prior man. The fore offer prior design prior design and (2000), priority on an UNIL/Prior design is the design of the col band and with it is in implied of the core. AUDIO NOTE AUDIO QUALITY OUTPUT TRANSFORMERS.

0082 Sate and a Outputs Prin-S-c. Inp. Sex Weight 205 - 48 Dime. 80:67:08mm 8K - 48 Dime. Recommended Value Has CL & Pewer Size Weishi Max. Correct Price Ex. UK VAT 10.015m 022mF 033mF 047mF 012mF 0.12mF 15mF 0.22mF 33mF 47mF 0.60mF 1.mF 1.4mF 1 10 4 15 wells 90mA SE 44.50 20 webs 1-45 73.50 1425 4/8 Dime 1 A PSE IN 50 Group B. ELM/20LAS 216 45 Dine 11 7:95:90 mm 87.00 20 milis 25 milis 1 400 3008/342 795 48 Dime 117:98:90m SOMASE 91 00 B.MUCAT 30 casts 115 48 Ohne 115dbd5mm 1125 48 Ohne 9bd2d5m 1 WPSE 113.00 113.00 2820 AT 85 5881 AT 85 21 VT4C 30 web 130nWSE 30 wells H WS 06.00 114.00 124.00 151.00 172.00 237.00 104.00 102.50 107.00 150mA58 104 - 4400ms 117/501 (00m 104 - 4400ms 112:134:1300m 1125 - 440 Ohms 135:1 (5:125m 265 - 440 Ohms 135:1 (5:125m 16 - 440 Ohms 11 (5:16) 215 - 441 Ohms 11 (5:16) 215 - 441 Ohms 11 (5:16) 216 - 441 Ohms 11 (5:16) 217 - 441 Ohms 11 (5:16) 218 - 4 150mASI 180mAPSI 13008 1545 21 1/74C EL30/05-1 50 wells 50 wells 180mAPSE 24 A PSE 1 Juni A SE 90 JA SE 14 SE 0.0001-0-1 0 0006mF 0 00062ml R IG 0 001 Smi NEW SE Prod 213 -44 Dime 11 PMA PSF 123 00 012 (C) wells 0 un Sani 0 022ani 0 033ani Per Per D 0 000mf 0 017mf 0 050mf 0 050mf 0 050mf 0 050mf 0 0572mf 0 072mf 0 072mf 0 074mf 3K 44 Dines bba67x68 ms 6K 44 Dines bb273x88 ms 5K 44 Dines bb275x80 ms 74 41 Dines bbx75x80 ms 93 41 Dines bbx82x83 ms 6KJ 440 Dines bbx87x80 ms 6KJ 440 Dines 0bx87x80 ms 6KJ 440 Dines 125x100x113mm ELAVECLASI (6 ELAVELESSE) 2AS 10008 pto:// 42 00 59 00 63 00 73 00 74 00 114 00 111 00 15 mills 25 mills 30 mills 50 mills 50 mills 545 (TBB/III 125x100x113mm UUP ITEMESSO 202 4/9/160hms190 UL PR t M AD 0.075 Group C. Single-anded anty a conce 110 265 - 446/1621mm 1021 - 416/1621mm 11025 - 446/1621mm 11025 - 446/1621mm 360 00 4 -0 00 396 00 8 15mF 0.18m 8.27ml 0.22ml 0.27 Para Silver Wired Outputs 0.33ml 25 valls 205 44 Ohms 117:98:90 mm 50 valls 102 46 Ohms 112:134:150 mm 5066/2A3/ 6846 2111678-C/845 90mA SE 150mA SE 1,645.00

The AUDIO 407E other send outputs lated here are despeed and neder in the VK, we can negaty the AUDIO 100TE Japan manifestaned outputs for the OMEANI, IARENI, CARLY ON or the RESON. Just they are manifestantly expresse as you result separation for the OMEANI, IARENI, For any such is status, for example an output standarmer. ter an ONGARU costs £ 18.500.00

### AUDIO NOTE CHOKES & INDUCTORS.

30e	5.05	Price Ex UK Vat
Sw ClimA		18.00
Are the		14 00
Hann A for D= AGLCo		24.00
A 70		21 00
HH400mA		31.00
01/125m	63a74z76 mm	26.00
OH/200mA	98x65x83 mm	33.00
01/50Ma	fildfidi mn	24.00
ther values can be supplied to a	entior, and for quests	

## AUOIO NOTE MAINS TRANSFORMERS

This coups relates to see Thingked products, mains transformers are reductioned atticked to the the date as the supplex of primatigions all first and Healer reduces are ablest and their ablest and the supplex registers of the USES and USES and Think and the supplex and the supplex and the supplex transformers the WEST secretion is Source Privations tone of a major state to expert an experiments of the WEST secretion is Source Privations tong or a sufficient to expect the range an experiments of the VEST secretion is Source Privations tong or a sufficient to expect the range an experiments of the vest secretion of the privation of the secretion of the secretion of the the VEST secretion of the s

sary Veltages	Secondary HT Windings	S-condary Heater Windings	Price Ez. UK Ve
30.711 m/120v	0+-230===25cm/A	De-12.Boar1 Amp	34.0
20-230-240		3 15v-Ov-3 15v at 4 Amp	
distant.	Ov - 230v at 0.4 Amp	0+12.0v al 1 A	41.0
00-1 1 or		3.15v - 3.15v at 4 Amp	
1 100 lz	300+ Or 300+ # MA	12.0v - Ov at 1.5A	46.0
11.124		6.3v - Ov at 500mA	ter W7Tube Pre-amp
			-th SOH chaile spot litte
1 1 1 20r	Or - 29Dv all 40mA	12.0r-0r #1.5A	28.0
125		Or - 6.3r at satisfy	
Without 3	Sr-200-0-244-318v at	3 15e -Or-3 15e at 4.5 Amp	72.5
distriction."	1791-18	128rz158vp	
marine.	Or-920v at 1 60mA	0 1 Or at 6 Amp. 04-6 3r at	98.0
and investor .	150v-150v at 50 mA	1.54,0+-51#2.54	
110.00	380x-0+550x al 200 mA	3 15v-0v-3 15v at 1 .20mp, 7v	86.7
CG-110+120y	1 70y at 50mA	at 3A 7v at 3A, 5v at 2A	
11-10-01	425+0+425+ at 229mA	3 15v-0v-3 15v at 2.5A	95 0
1 120		7 Or-Or at 2A, 7 Or-Or at 2A,	ter IOT CHE & IOT
		5 De-Or at 38.	THREE MOND channel
		315-0-3 15v # 750mA	
110.100.07	390x-0x-380x at 200mA	170-0x at 5084.7 Dx -0x at	67 0
120		3A. 7.0- 0v at 3A. 5v - Ov at	
		24	For ICASSAL realize
		315+0+315i #12A	
risten -	380r - Or 380r at 270mA	150e-0r at 150eA. 1 Oe-0r	137.0
110v123v		325A 10-0+#125A	
		Se Or at 2A Se - Or at 3A	For ONGAIGH reals:
		far Ov al 3A, far- Ov al 3A	
		6.3v - 01.3v # 1.254	
		0.01 0.001 0.1704	
in has a more in	entirement Phases int for the WF	1 power anallier as sheren in South	of Provinces the
		di Silitan prenary angadanca, «di -	
		a she have the facility to make any o	

On a new general web, it is importent to institutional the specialised externed that design and institutions of branchmars for audio explanent, is need industrial applications for next cutric's are cert. weight or belgivity, as audio mises readious, particular and have to the special inglitication for next cutric's are certain and an instructionary and have to the special inglitication with text in the code, and provide in an endocated area or building, particular and an endocated and endocated and an endocated in the cost durb in the meanwalk. So no matter where you care you are structures remarked that a shapilit condent in to the construction you application. As a proved rate we dure the second patient transformers, and all durate there was the and second in the cost and the cost and the cost or others, as patient for theorem than the second into the cost on the systemic apprediction?

### AUDID NOTE PAPER IN DIL SIGNAL CAPACITORS

The bandwate signili equations on extending space for any of the particle or state of the transfer of the part of the space of the spac

nami-post, a belonguedado regereran os non peper el a secondo treator and engregoriado de a nostenal final endencoso tengonsty and socend quelado, te an el adistano porterremost el engal. A que una sen or ara stenigi encarguenting antel 50 30% por teñer tena timo tengo el apere o nel enganchez as avel, en common vezh ten copper and atrar fall types. There are sen this, methodies the 2.2mF50 well case made for seasure processory and the 0.5kmF/200 well we sold state areas, we have also added some values sustable for REAA oppoliting networks, and the odd headback togo

Value

010

001.06

	DC Veltage	Size	Price as, UK. Vet
	50 vm	21:0 000	11 85
	200 web	32:11:00	203
	200 veit	25:36 mm .	5.45
	400 volt alter textestores	21.9mm	545
	400 volt sil rer isadoutwires	21:0 00	545
	400 volt allver laadcativeres 400 volt allver laadcativeres	21.000	5.45
	400 vot	21:0 00	1.25
	400 volt silver insinderets	35x10 mm	545
	400 volt silver teatestorres		5.85
	400volt sil rer latelant wves	32x11 mm	15
	400 volt	33x14 mm	425
	400 volt allver landostveres	33x14 mm	6,25
	400 veit	33x14.mm	4.75
	400 volt allver landeabuvres	34x16 mm	6 65
	490 volt silver isodouterves	32x16 mm	5 15
	460 volt sitver isotoutwens	35x18 mm	5.85
	400 volt 400 volt silver instinutiveres	Khrið ma	6.35 7.95
	400 voit allow load not wrots	35/25 88	1.10
	400 volt allver landouteves	1002	11 15
	400 voll silver instruments	53/24 mm	12,65
	400 volt	70/24 mm	14 95
é .	ESD volt	17x9 mm	2.95
	630 volt	20-5 mm	2.95
F	630 volt	23x9 mm	2.95
F	500 VDR	17:5 00	2.95
	630 volt	20x9 mm	2.95
	630col	21x11 mm	3.45
	630volt 630 volt alter landaderes	21z11 mm	2.45 5.45
	and 100	32r11 mm	375
	630 val	32x11 mm	3.95
	630 volt	33x14 mm	6.85
	630 volt	33:15	(25
	630 volt	33:14	4.25
	630 volt	33:14 199	125
	630 volt	33r16 mm	43
	630 voit	33h*16 mm	4.35
	630 vali 630 vali	33x16 mm 33x16 mm	4.35
	flow 068	33x16 mm	435
	630 voli	33r16 mm	4.35
	630 volt	33r16 mm	4.35
	630 vet	33-1-00	4.55
	630 vot	34x10 m	45
	630 volt silver tischtutures	42:15 mm	7.75
	630 vol	(3r18 mm	5.45
	630 volt	52x19 mm	725
	630 volt silver isadoutwires	52x19 mm	9.45
	630 volt	53422 88	615
	600 vol	52x22 mm	725
	530 roll	52x26 mm	735
	630 volt allver instandaurus	52x26 mm	9.85
	630 well adver instantistrys	the second	12.45
	630 volt allver laadquiturres		15 15
	1000 valt	32:11 000	4.55
	1.000 well	59c8 mm	6.95
	1000 valt	\$1:25 mm	11.85
	1300 web	52x32 mm	13.65
	\$000 volt	72x40 mm	16.75
	1600 volt 2000 volt	60x26 mm 70x29 mm	9 65
	4000 volt	ra can olik	21 75
		i mandalaria	4873

porotium multiturs Genders Chorne high All MADIR MOTE poper in all signed capacitors are path ligner. Whe are present are and in any and platitudes when paper in all capacitors at the memory and address the to adven. The areas of 4,000 MOTE paper in all signed capacitors

AUDIO INFT AMPRIN ID. IC. COPPER A SULVER FOIL SEAML LANACTORE. We an annutity downing of the fairs may be an as a regime in all quadra build at singly domains but as a Buildow apper page rating in the fairs may an assessing the regime in the guadra buildow and an assessing have capped able paper reparts and the fairs of the single transmission buildow is different and end ends. Buildow apper page rating in the fairs may be capacity buildow fairs fairs that and parts and part of the single may be apper page rating in the fairs may be appendixed by the fairs fairs and and appendixed by the fairs fairs and and appendixed we will be fairs fairs and and appendixed on a fair of the single capacitors, which are party mapping in quadry, and it we have a low gath fairs fairs fairs fairs and part of the buildow buildow to the single single fairs and the law we show buildow and the fairs and all balance and the buildow buildow to the single single fairs and the law whether buildow and and we shall capard as build an versar to cover all be papedra ratios.

Talus	OC Voltage	Sec. 1	Miss es. UE Sul
0.001 mF	630 volt	23:9 mm	11 5
) 0020vmF	630 velt	23.9 mm	11 5
0.0082mF	630 volt	23x9 mm	11.5
3 01 mF	630 volt	23x9 mm	1215
1 Film	630 volt	30x9 mm	13.75
) 047 F	630 +00	2lix16 mm	15.3
) 1mF	K30 volt	33x22 mm	16 82
) 15mF	630 volt	35x22 mm	18.15
220	630 veit	58/25 mm	22.4
).33mF	630 veli	35:30 mm	26.65
) 47mF	630 volt	56:38 mm	31 02
ef.	550 volt	Carld mm	50.15
AUDIO NO	TE SILVER FOIL PAPER	IN OIL CAPACIT	ORS.
0 047 mF	630 volt	14146 mm	41.00
1.1mF	630 volt	16x46 mm	74.00
15mF	for CC3	22:36 mm	131.00
22-5	293 web	10-10-00	120.00

### 107mf 633 vali 1mf 630 vali 25#16 mm 30#6 mm 486.85

### AUDIO NOTE SILVER FOIL SIGNAL CAPACITORS.

Bert synd casactors availles, quilip really quarks for bort and an angliges the ORCANS FEEDER. GAU-DR and M27 des Sher, handmade in very limited quarks at Auto Botes lacitiy to Folge. Aquan "Tease capacitors are i fan wyke tile debatels, wit ar analektorer aning capacitatio teases on the fail and detectors in per the best

Cal Contact and	The same scope of section services.	
	DC Voltage	Price es. UK Va
	SOC work	177.0
	500 wolt	2 11 7
	500 volt	346.7
	500 velt	645.7
	500 volt	985 7

### AUDID NOTE PAPER IN DIL RESERVOIR CAPACITORS

false	DC Vollage	Size Pr	tes Ex. UK Val.
2mF	400 vot	Byind on	26.75
2mF	tor (8)	30-522 mm	33.65
2mi	1000 vot	45×15±72 mm	41.75
2mF	1600 volt	50x70x72 mm	45.95
4cf	1000 valt	45x45x120 mm	49 95
4mF	2900 vmt	70x70x120 mm	265 75
3mF	1000 volt	78x100x100 mm	95.75
Bof	1000 imt	78x100x120 mm	10.9
lanf	1600 v	108x100x123 mm	1
12mF	2000 (482	No. 10.227	158.75

The beat solder we have been able to the 1 dees not contamonds the particles. Which ever tone increase	S (ENC) (S
resistance. Used in all our amplifiers from OTO to the GA4OV.	
Walgh/Massers Pr	ico Es. UN Vol.
50 grammes er about 8 meter 1 mm distrator	19-95
1 kite reit of 1 mm-denoter	213 652

### AUDIO NDTE CABLES & WIRES

We are groupd to writer the AURID HOTE maps of high quicky copper and adverse, speaker and versag cables, which depending on the overall proce of the project, will do paster to any faith system regardless of proce. Sel

III 99 WA Pare Additio NOTE SI	her With	
494	Insectation Material	Price per Meter Ez. UK Vat.
5mm	Pelysrethene	16.75
200	Palyscellane	22.75
5mm	H.	24 95
	ML.	27.65
	HL.	31 75
	H.	35.75

The above solid plow stress are soluble for low lead where stage transformance, noticel transformance, power negative chankes, which has been added to a solution and paramine or for informal weaps or forwarms, manglities the A worker range of groups in structure to making weak realistive groups. It may well be stock. Services loads decounds availables as they re-anality.

### AUDIO NOTE 15 Strand 8.00mm 99.00% Silver Wiring Wire

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### AUDIO NOTE COEX INTERCONNECT CABLES.

Type/Colour cade	Countraction	Price per Stores Meter Ex. UK Vat
Lit-A yellow	symmetrical GH copper Biz coax	15.1
AM-C red	symmetrical OP+C capper litz cost	20
AU-S light gray with yellow writing	symmetrical 99,99% silver litz coas	84.2
AN-V silver grey	symmetizati 30.90% silver M2 coex	1 52.3
All-Va are prop	symmetrical \$5,97% selver litz coar	382.5

### AUDIO NOTE SPEAKER & WIRING CABLES.

Type/Calter sade	Construction	Price per livere lileter
		Ex. UNE Value
AN-D groon or red	single conductor GR copper speaker on alg	6.85
Alt-8 blue while writing	don't to stream, screened 54 speaker ware	12.34
AV-L blue black ontang	double strand, screened GH Mz copper speaker ware	25 11
WH-SP selver	single core 15 strand 99 99% Mz silver speaker was	106 <b>3</b> E
WH-SPX show	saligte core 20 strand 202.95 silver speaker sore	10 99% Hz

PTFE Inisiated Silver Pieled Copper Wree.

### Ver can also prevents here cognitizes wrang worse for fisted worsig circuits. Deale PTFE mentione solver plated cooper worse are 19 strand of 0.15 mm were and come in breven black, blare peet, red. green, erange, vigint, while and recthelinite, they cost £ 1 60 per meter in any college

### AUDIO NOTE HIGH QUALITY STEPPED ATTENUATORS & SWITCHES

These facilitation elements and switches are manifestioned by a freed of the facation of AUD ON MOTE, and represent the best available values quarters and switches year car use a year pre-emplifies, the admentator is 4.5 steps and with solver fileadium philad context/brackes made with an array of brackees from reverses. The switches feature solve plaint contacts and self cleaning action

Type	Value	Price Ex. UK Vat
Sterno Potenber - Panadar	1 OKONIMIS	221 75
Stares Patentics Hitseeder	50KDhms	221.75
Sterve Polanta	100KChure.	237 75
2 Chemnel wortch	6 - any adjustable	個花
4 Chemid welich	6 way-collecteda	24.78

### AUDIO NOTE HIGH QUALITY CERAMIC VALVE BASES

Al of our robot hance are of the highest possible quelly, made how search and using the host needs and pure hom always which reach how purey human around the web pitch for larger. They are recommended as negratives to all robot amplifiers and should be an essential part of any DY project.

Type	Hopping	Palling	Price Ex. UK Vet.
4-pm LDX4 ter 3008/2A3/801A	Cheesis	Gold	125
4-pm LD14 ter 3008/2A3/801A	Channel	licht	725
14-pm LD14 WE-type for 3000-243401A	Channes	Silver	34.75
if-pas LOA WE-type with inspand mounting	Chases	Sher	46.95
14-Pix Junite 4 for 211 A/74C/845	Channes with impress?	6 dates	198.95
15-pm UYS for 807	Channel	Geld	\$75
7-pm 87 fpr 624, 042	PCB	Silver	615
7-pm 87 for 6X4_042	PCB	Gold	7.85
7-pm 87 fpr 614_0A2	Cheese trem above	Sher	675
7-pm 87 for 614, 042	Change light above	Catt	7 95
8-pm UBX for EL34 6550 5UHG 6234 6L6G etc.	Change	Sia	5.65
8-pm UKX for EL34 6580 5046, 6234 60.06. etc.	Changin	Getti	\$ 65
9-pm 80 for ECC83 ECC88 5687 6350 etc.	POB	Sher	3.85
9-per 88 for ECC83, EDC88, 5687, 6350, etc.	PCB	Gold	5.75
8-pin BBA for ECCB3. ECCB8: 5687: 6350. etc. etc.	Chaosis legas above	Sher	4.45
8-pin BBA for ECCB3_ECCB8_5687_6350, etc. etc.	Channe been above	Gold	675
9-per 804 for ECCR3 ECCR8 5007 6350 etc. etc.	Classic loss below	She	4.95
9-per BBA for ECCR3 ECCR8 5887 6350 etc. etc.	Channe legas baller	Gent	715
TOPCAPS			
Торсар	For 807 puntode etc.	Nichel	9.75

You may want to start your project with loss overall cost, and for time purpose we can allor the following "industrie grade" caramic sche heer

### Industrial Grade Valve Bases

2 Address 1	Management	Price Ex. UK Mat.
8 pm for EL34 8550 XT06 8L8G	Cheseus with bracket	1.45
9-pm for ECC83, ECC88, 5687, 6350	Classes with stroud	1.85

### AUDIO NOTE CERAMIC STANO-OFFS.

in must hardward onto power anothers it is frequently difficult to get the HT and hoster rate property associate In and Referenced who yow any Refer (a to hopping) which is by the Ref and the and or the property supported and a sparetise study on the top be the factors. A sequencing along who makes property and provide whop directly hands that the Ref Ref and the sequence and the sequence damp makes and the support of the composite matchin legal to be the data (and the ALCO) DDT. State-fills should be not us fails and the sequence and the legal to be the data (and the ALCO) DDT. State-fills should be not us fails and the sequence and the legal to be the data (and the ALCO) DDT. State-fills should be not us fails and the sequence and the legal to be the data (and the ALCO) DDT. State-fills should be not us fails and the sequence and the legal to be and the sequence and allows a sup-proved served. There is not any state of sequence and the legal to be and the sequence to the sequence and the sequence and the set of the set of the sequence and the set of the s

Type Mp. Humbs	april Tegs	Holph(Longth	Solder Connection	Chaeses ParingPrice	Ex. UK YoL
AN-421	1	255 mm	Wapmed	Screw-m belt	1.41
Alt-422	1	17.4 mm	Wrap-round	Screw-in bolt	1.41
AN-423	1	22.6 mm	Solder stol	Screw-m	\$41
All-452	2	Adjustabile, 17mm	Solder plats	Dualitoil screw-m	242
AN-453	3	Arbentalia 24mm	Solder plats	Deel belt screw-et	3.05
AN-455	5	Adientatie 32mm	Seider stats	Deal belt screw-m	106
101-458		Alimith Sten	Scitter slats	Deal belt screw-a	5.79

0 (01 mi

1 **2mF** 8 22mF 0.22ml 0.1mF

is sharily expending, to ask for when that you do not stat.

AUDIO NOTE PAPER IN OIL COPPER & SILVER FOIL SIGNAL CAPACITORS. 24 00

### AUDIO NOTE COPPER FOIL PAPER IN DIL CAPACITORS.

			_
Talue	OC Voltage	in the	Print es UK Stal
0.001 mF	630 volt	23:9 mm	11.9
) 0020mF	630 velt	23.9 88	11.9
) ()()()(2)/()	630 volt	23x9 mm	11.9
101 mF	630 volt	73x9 mm	12.1
1 million F	630 volt	30:9 mm	13.7
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) 15mF	630 volt	35x22 mm	18.1
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HOWCOM Stores

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ERISCE Super/1 2N/7WB	high gain suppr low noise	3.95
EB3CCD1/1 2AX7WXT	expetition name, low micropheny andio version of WS	5.45
B072A1 2AV7	dendes trade, low gam ECCES type, exceptional seconding need in	\$45
	ONGAIOJ, 6777 also Silver IEEGON probably best seconding ECCR3	
E88CC/0822/50J8WA/7308	double thode	3.95
EF06/6267/2720	pasiade	2.45
ECC82/1 2AU7/581 44	double trivile, not space	\$.35
BSN7GT Russen	deuble trade. LIEX beer	2.75
<b>BSN7WGTA Sylvane</b>	double trade organal US-made, low microphony, super sounding	5.95
BSL767	double triade, LIEX Issue	3.25
6350WA	dealer trade	6.75
5587998 Sylvene USA	double trook, powerful driver good in ONGAGA REGON etc.	8.75
E1 82CC/7044 General Eluci	ric USAdouble triade very pewerful driver, per-equivalent al 5687WB.	14.75
ECLEZIONIC	trade-particle	2.65
EL846805	small power pasteds	1.55
ELAMAN HOOSWA	small power particula, mil spac version	4.51
TIMU	small power tetrode	2.45
8.66	medium power particula	2.75
SHELATISHLENGC	mediate power laterale	4.51
5881W0XT	medium power lebrain, standard bern	5.55
GCA7/EL34 Fot Buff	power tetrade	8.85
8.346	power periode	£45
3008	power trade, Andle Note branded and tested to our specification	58-45
UN211	power trade, Audio litele tranded and tested in ter specification	28.45
AN-845	power troots. Audio Idais tested and tred	33.45
8C33	powerful regulator indirectly hashed treads	24.65
6457/8080	strong regulator, entropy basined trade	6.45
213 4-pm or 8-pin for Auch		
	teacvations Second Audio Amplifiers	17.05
SUIG Reason	HT-sycillar	325
SY3GT Russen	HT-rectifier	2.25
SY3GT Sylvania	HT-receiler	3.65
5949ET	HT-rectifier	2.25
62345AM Research	HT-rectifier	8.75
6234/0V1377 Mullerd	HT-rectiler	44.05
6237/CV378, UK-mails	HT-rectifier, equivalent to 6232/34, but bellar sounding	9.55
SAAWGE Catron USA	Very powerful HT-rectilier, 2 500volt at 100mAl	21.55
624	HT-rectifier very good for pro-empiliers, 7-pia lane	2.65
605 H	T-receiver for pre-amplifiers & power amplifier inset-anals, URX base	2.15

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### AUDIO NOTE 1 2 WATT TANTALUM RESISTORS.

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AUDIO NOTE 1 V ATT TANTALUM RESISTORS

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IMPORTANT NOTICE!

PRICES MONTHLY, SO ASK FOR PRICE WHEN YOU ORDER

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POTENTIOMETERS

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12-201 also makes a very good quality 100120m balance control, sender to the encaper and 100% pet, this costs £32,75

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	350vol	25x12mm radmi	1.25
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ACA, MIC, BANAMA, PLUGS. ACA DOCKETS. SPEAKER & GROUND TERMINALS & LOUISPEAKER SPADES

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### AUOIO NOTE CHASSIS SETS

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### AUDIO NOTE COMPLETE KITS

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### **TECHNICAL INFORMATION BULLETIN No. 1**

### MANTICORE TURNTABLE POWER SUPPLIES

Manticore Audio Visual's range of power supplies suit all turntables fitted with the Phillips Impex range of AC synchronous motors. This includes Manticore (of course!). Linn, Rega, Logis, Ariston (not all models), Systemdek and many more. Our power supplies can also be adapted to other AC synchronous motors and we have built up a lot of experience over the years in this area.

The entry level model, the MB5i, is a quartz crystal based amplifier that runs at 33 and 45 RPM. The highly sophisticated MB6 in addition, has a computer referenced phase lag and separate amplification for each set of poles of the motor.

Manticore has the policy of helping our customers to progress along the upgrade path, and we will always take an MB5, or mb5i in part exchange at full cost price against an MB6. Consequently we often have pre-owned MB5 or MB5i in stock at very good prices.

A detailed specification sheet is available for both current models.

We believe the MB6 to be the finest turntable power supply on the market. Our customers agree, and we have many testimonials to that effect. A sample of these is contained in the product information pack.

Our products are very reliable. At the time of placing this advert, no production MB6s have ever gone wrong in the field.

All Manticore Audio Visual products come with a lifelong guarantee. This is qualified in the following way - electronic components, such as transistors, are guaranteed until the end of their reasonable working lifetime. Mechanical assemblies for the most part manufactured by us are guaranteed until the reasonable end of their specified design life. The first Mantra was produced 12 years ago and is still in fine shape.

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We offer below a selection of our CVC PREMIUM range of audio valves. These CVC BRAND valves are from selected world wide sources, processed in our special facility to provide low noise/hum/microphony PRE-AMP valves and POWER VALVES burnt-in for improved stability and reliability. Use this sheet as your order form. If you require matched pairs, quads or octets etc. Please allow £1.00 extra per valve for this service and mark alongside the valve type number 'M2,M4, M8' etc as required.

PRE-AMP VALVES				RECTIFIERS	Unit Price	Qty	<b>Total Price</b>
	Unit Price	Qty	Total Price	EZ80	4.00	100	1 -
ECC81/12AT7WA	5.00			EZ81	4.25		
ECC82/12AU7WA	4.50			GZ32	7.00		
ECC83/12AX7WA	5.00			GZ33	7.00		
ECC85	5.00			GZ34	6.00		
ECC88	4.50	-		GZ37	6.00		
ECF82	5.00			5U4G	5.00		-
ECL82	5.00			5V4GT	4.00		
ECL86	5.00			5Y3GT	3.50		
EF86	4.50			5Z4GT	3.50		0.0.0
E80F Gold Pin	9.00					10.1	
E81CC Gold Pin	6.20			SOCKETS ETC	Unit Price	Qty	Total Price
E82CC Gold Pin	6.20		1 1	B9A (Chassis or PCB)	1.60		
E83CC Gold Pin	6.20			B9A (Ch or PCB) Gold	3.00		
E88CC Gold Pin	7.20			Octal (Ch or PCB)	1.80		
6EU7	6.00			Octal (Ch or PCB) Gold	4.20		
6SL7GT	4.00			4 Pin (For 2A3, 300B)	3.30		
6SN7GT	4.50			4 Pin Jumbo (For 211 Etc.)	11.00		
6922	5.00	and the		4 Pin Jumbo Gold (For 211 Etc.)	15.00	1	
7025	6.20			5 Pin (For 807)	3.00		1000
1025	0.20			7 Pin (For6C33C-B)	4.50		
POWER VALVES	Unit Price	Qty	Total Price	Screening Can (For ECC83 Etc.)			
EL34/6CA7	7.50	V.y	Total Trice	Anode Connecter (For 807 Etc.)	1.50	1	
EL34 (Large Din)	8.50			Anode Connecter (For PL519 Etc.)			
EL84/6BQ5	4.00			Retainer (For 6L6WGC Etc.)	2.00		
E84L/7189A	5.50			Retainer (1 of obowere bie.)	2.00		1.
KT66	9.20						
KT77	12.00						
KT88	12.50			MATCHING CHARGES	£		
KT88 (Gold Special)	12.30				£3.00		
2A3 (4 or 8 Pin)	14.50			POST & PACKING (UK)	£3.00		
211 211	22.00			TOTAL EXC VAT	t		
300B	50.50			VAT @ 17.5% (UK/EEC ONI			
	27.00			TOTAL TO PAY	£		
6С33С-В	6.50						1
6L6GC	8.00						
6L6WGC/5881			-	Please make cheques payable to:			
6V6GT	5.00	E -		'CHELMER VALVE COMPAN'	Y' or pay by		
6080	12.00	K		ACCESS/MASTERCARD/VISA		details:	
6146B	10.20						
6336A	46.00						
6550A	11.00						
6550WA	13.50			SIGNATURE:EX	P. DATE:		
6550WB	13.50			NAME:			
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MORDANT-SHORT 5.40 + 8" Stands, mint, cost £370, £220 or exchange for EPOS ES II. Denon PMA **450** SE amplifier, mint, £190 o.n.o.. Arcam Delta 90.2, £190 Tel: Richard 01908 563737

NAIM 32.5 Pre-Amp, fitted K board phono. Good condition. £175 Tel: 01623 759264 (after 6pm)

LOWTHER CORNER Horns with refurbished speaker units. Highly sensitive £550, Concordant Exhilarant line level pre-amp, wooden and/or metal case. Superb sound quality £400. Tel: John 0181 202 3307

WANTED: LINN K18. Either alone or with late model lttok. Also wanted, Hi Fi World 12" record storage cubes. Milton Keynes area. Tel: 01908 647798

BEARD BB100 Mk II, 50 watts/ channel valve amp. Mint condition, boxed with instructions. Stunning sound and looks. £650. Wanted: Teac P500/D500, SD Acoustics Ribbons, original Roksan DPI. Tel: Noel 01628 521885 or 0956 688506

WANTED: MARANTZ SX-72 Digital noise suppression unit or something similar.

Tel: 01843 587732

MARK LEVINSON Madrigal HP interconnect cable, 7 metre stereo pair £450 (£995). Peter Sanhen SP 1.5 pre-amp, unusual but highly regarded design, very rare high resolution preamp with phono stage £850 ono (£2350 new) Tel: 0181 291 1744

QUAD ESL Lovely pair £395. Spendor SP1 mint £375. Grace G707 arm boxed £65. Kmal M9BA arm new £45. Leak Stereo 30 as new £75. Wanted: Naim; ARO, NAC72, Prefix, Armageddon, Linn: Ekos, Lingo. SME IV.

Tel: Peter 01203 713501 (Coventry)

TRILOGY AUDIO 918 Pre-amplifier, one year old in as new condition (boxed) £1950 ovno (£2950 new) Tel: 0181 291 1744

MUSICAL FIDELITY F22 pre-amp (phono) £650; and F15 power amp £1390, both as new. Meridian 206 CD player £450. Roksan Xerxes XPS2 £390. Tel: 0181 337 2544 (eves)

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MERIDIAN 200 Transport, 203 DAC, excellent condition, very little used, two years from new, bargain £595 for quick sale. Metre pair Chord First Interconnects £75 Tel: 0123 732828 (Eastbourne)

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QUAD 67 Mint condition, hardly used, brilliant sound. Dual 435 turntable + 510, mint both boxed and manual £650 the lot. Tel: 0385 783900

TANNOY BERKELEY loudspeakers, excellent condition £550. Tel: 0191 281 0260

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SONIC FRONTIERS SFD1 DAC (balanced) HD CD compatible, amazing sound, boxed as new, 1 year old - 4 years warranty remains. Bargain at £1800 OR will sell together with Theta Data Basic, 1 year old £3450. A fabulous combination.

Tel: 01623 871950

REVOX 877 Stereo reel to reel tape recorder. Speeds 3 3/4 and 7 1/2. Hardly used and recently serviced c/ w remote, instruction book and cover. £595. Tel: 01383 821873

QUAD 34 PRE-AMP and 303 power amp £250. B&W Acoustitune subwoofer £100. Wanted: Linn Karik CD player and Linn K400 speaker

cable. Tel: 01622 858085

AUDIO INNOVATIONS Classic 25W amplifier (factory built) plus 834

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van den Hul silver, 3 off 0.5m pieces; gold 2 off 0.5m pairs. Offers for cables considered. Call Mike. 01482 666910

### MARK LEVINSON ML 12A preamplifier with PLS-124 power supply and MLII power amplifier. Original boxes and manuals. Happy to demonstrate £1500. Tel: 0191 281 0260

LOWTHER LONDON TP1 corner horns incredible dynamics from these full scale classic speakers. PM2C drive units. Cabinets Teak and Black. A bargain at £750 ovno. Buyer collects. Tel: 01736 798393 (Cornwall)

TANDBERG TUNER 3011 or 3011 wanted for parts, perhaps lying forgotten in your attic. Tel: Martin 01837 840438

LINSLEY HOOD HART monoblocks, approx 100wpc, handbuilt with silver wire throughout £425 ono. Tel: Geoff Mackenzie 01293 771542

NEAR 10M SPEAKERS Won in Jan comp. Unused. (£499) £399 ono. Swap my Roksan DAC DA1 for your Meridian 203 DAC. Wanted: Bassmid for orig Heybrook HB2. Tel: 01203 469363

MICHELL GYRODEC with Rega RB 300 £600. Perspex PSU £50. As new condition, 2 years old. Spendor SP2 speakers £125. Tel: 0181 427 6936 WANTED: SUGDEN A21a with phono stage. Tel: 01287 625166

WANTED: TWO LEAK Sandwich loudspeakers. Must be 8 Ohm impedance and in good condition/ working order, within easy reach of Oxford please. Tel: Bob 01865 62554

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Tel: 01222 889083 (Cardiff)

MISSION 770 FREEDOM speakers, black, Integral stands, excellent sound and condition £175. Sansui 222 Mk2 turntable £25. Tel: 01977 684343 eves (Yorks)

QUAD 33/303 FM3 tuner £150 ono. Complete with instruction books. Tel: 01254 886185 before 2pm or after 6pm

BANG & OLUFSEN Stereo receiver £70. Bang & Olufsen stereo cassette deck £50. Haffier stereo pre-mplifier £75. Pair KEF Choral speakers £75. Teac DBX noise reduction unit £60 vgc.

Tel: 0181 686 7996 (Croydon)

AUDIOLAB 8000A amplifier £250. Marantz CD MkII. QED digit plus Positron power supply £70. Sony ST444 ES tuner £100, serious upgrade causes sale. Tel: 01844 354287

DENON POA 6600 Monobloc power amps 250 watts into 8 Ohms. Real powerhouses. Mint condition, boxed £675. also matching Digital pre-amp POA 5500 £450 or £1075 together.

Tel: 01279 724804

TANNOY LANCASTER Conner 12" Reds £650. Radford STA25 mint £450. Leak ST20 £250. Micromega Duo v.3.0 plus Marantz CDA 94 DAC both mint £950. Decca Radiogram £30. Tel: 0181 296 8538 (daytime or after 10pm) AUDIOLAB 8000A Only 4 months old, boxed and hardly used. Unwanted gift £395. IPL Acoustics A2 Aerogel speakers using Audax 6.5 inch Aerogel bass/mid similar to Mission 752 £325, Mission DAD 7000 CD player £75. Tel: 01902 374786 (nr Wolverhampton)

LINN KARIK III CD player £1050. Mana 4 tier table, Soundstage, Ref. Top and speaker stands £750 ono. Tel: Tim - Pager No. 0941 119432 (Please leave a contact telephone number)

JOHN SHEARNE 2 amp, vgc £350 ono. Croft SV power amp, 35 wpc, vgc £325. STD 305, 774, Shure, superb £160 ono. Arcam 2 speakers, modified £140 ono. Panel speakers £80.

Tel: Paul 01895 446713

CAMBRIDGE AUDIO CD3, Pioneer A400 amp, TDL RTL2s £350 the lot, or split. Buyer collects. Tel: 01279 504926

MVT Mk3, Musical Fidelity pre-amp, MC and MM inputs, separate power supply as new £585. Tel: 01945 581111 (Wisbech)

FM/AM STEREO TUNER, Sumo Aurora, high end product imported by ATC. Cost £700, now £310 or exchange for 35mm SLR camera. Cash adjustment. Boxed, demonstrated with Galaxy 17 aerial! Tel: 0181 651 5711

AUDIOLAB 8000A 5 months old (receipt) perfect £380. Audio Alchemy DAC-in-the-box, 11 months old £135. Tel: 0116 234 5019 day or 01530 831357 eves (Leicestershire)

SONY TA-N55ES Power amp, 10W per channel stereo (300w monobridged). Exc condition with instructions £215. Entre-1 m/coil cartridge £35. Tel: 01908 260112 eves

PIONEER A400 Stereo amplifier as new £150. Maranttz CD 63 compact disc, new condition £150. JVC toploading quality cassette deck, vgc £40 Pioneer PL12 turntable vgc £25. Pair early Decca speakers £30. Sugden stereo tuner vgc £60. Tel: 0181 681 1054 (Croydon)

LINN ISOBARIKS PMS black ash with stands, new style, boxed, as new £1050 ono. Project 05 turntable as new £70. Tel: 01494 866487

NAIM NAP 90, 10 months old, Naim NAC 92, 3 months old £600. Tel: Tim-Pager No. 0941 119432 (Please leave a contact tel. no.)

UNITY AUDIO SIGNATURE 3 EDC speakers. A unique blend of beautiful looks and sound. Rave stereophile reviews. Mint condition and boxed. List (£2000) will accept £1150 ono. Tel: 01206 844855

REL 'STORM' active subwoofer, bargain at £450. AVI S2000MC CD player £750. Both units as new, with makers warranty. Tel: 0181 870 3630 day of evening. TOWNSHEND ROCK RB250 arm £275. Snell JII loudspeakers (walnut). Foundation stands £295. Thorens TD150, Grace arm £65. Denon TU260 tuner £55. Thorens TD150 £30. LNB loudspeakers (dual concentric) £25. Notts Analogue Tracer cartridge MkII £50. Can Opener Headphone adaptor £45. Beyer 911 Headphones, as new £100. NAD tuner 4225 £50. Marantz ST320L tuner £25. Leak Troughline Mk3 stereo tuner £55. Tel: 0114 £73 8153 or 272 3621

MANA ACOUSTICS Reference Phase Three special table, including brass finished mini table. This set is one of only two made, Mana Acoustics owns the other. £300 ono. Tel: 01772 719267 eves

WANTED: TECHNICS SL-1200/1210 direct drive turntable. Any condition considered. Wanted: mixer with 2 phono, 2 line. I mic input. prefereably valve.

Tel: 0181 830 7214 Sparks

DPA (DELTEC) TI Transport, DPA Bigger Bit DAC, also 2 x The Power Mains Filters £850 ono. Black Slink Interconnect £100 ono. Mint, boxed, instructions.

Tel: 01900 826400 daytime or 01900 826294 eves

WANTED: QUAD 66 FM tuner. For Sale: Quad FM4 tuner £250 ono. Tel: 01883 653165 (Surrey)

ELITE ROCK TURNTABLE with Mission 774 arm, Linn K9 cartridge £350, Jecklin Float 2 headphones £75 Marantz CD40 CD player £70. Quad valve FM mono tuner £60 Tel: 01423 507266 (Harrowgate)

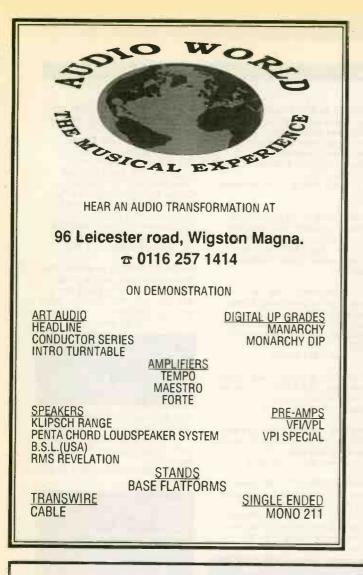
THORENS TD 124 turntable with SME 3009 series II arm, £195. Teak plinth £25. One Leak Sandwich speaker, Teak, £25. Original owner all items. Tel: 0181 908 0087, anytime, Wembley.

LINN EKOS TONEARM. Excellent condition. It is still in my system so a demo is no problem. £600. Tel: 01227 830286 (Canterbury)

ACOUSTIC ENERGY AEI sspeakers, black, bi-wireable with matching AE stands unmarked condition £550. Naim Hi-Cap P/S latest type excellent condition £350. Tel: 01761 410 625 (nr Bath)

TEAC TI Transport £350. DPA Little Bit 3 £225. Both 5 months old. Rogers LS3/5A walnut, one month old, boxed £350. LX5 Pro Genexa speakers £70. Subwoofer Teak finish 2 x 10" Audax professional cones, active or passive. Awesome home project. Offers. Tel: 01883 330063 (Surrey)

MERIDIAN 203 DAC £195. Teac P10 CD drive £675. Gale 302 loudspeakers £195. Target speaker stands £30. Perfect condition, boxed with manuals. Tel: 01483 578 609 (Surrey, eves/ weekends)



## **Riverside Audio**

18, Riverside, Cambridge CB5 8HL.

Our aim at Riverside Audio is to enable the Our aim at Hoverside Audio is to enable the home constructor to build value amplifiers which combine superb sound quality with the professional finish of the best high-end products - at a low price. Our rigorous and conservative designs ensure that you get long and trouble tree service from your amplifier. We offer our amplifiers in various forms, from circuit designs.

anplifiers in various forms, from circuit designs, through printed circuit boards, to full kits and even fully assembled amplifiers for those who cannot wait to listen to them. <u>The Bruersldg 4040</u> is our Integrated amplifier. It features dual mono construction and has five line level inputs and both 4Ω and 8Ω outputs. The output stage is configured in the classic McIntosh connection, which gives stable, wide-band operation even with difficult loudspeaker loads. The stainless steel chassis and transformer cover are hand polished to a mirror finishmer cover are hand polished to a mirror funs, and come with a semi-mati black valve cover. 4xEL34, 4xECC83, 2xECC82. A full descriptin, including circuit diagram, is given in the 4040 reference manual, £6.50. Kit £780, fully assembled £995. Technical \_specification: dual mono

The 4040 reference manual, £550. Kf £780, fully assembled £995. Technical specification: dual mono construction, 40W/channel, 12Hz to 25kHz power bandwidth, distortion <0.1%, five line level inputs, tape output, 230240V mains input. Stereo amplifier circuit board : board only £49.50; component pack (including valve bases), add £63; populated board £125; full valve set, add £45. Power supply board : board only £20.50; component pack, add £16; populated board £33. The output transformers are configured for the Michitosh connection and have excellent tow. Trequency response and a primary reflected impedance of 3800Ω. Full connection instructions provided. Price £70. The mains transformer is wound for dual mono

instructions provided. Price £70. The mains transformer is wound for dual mono construction, as this gives superior Isolation between channels which sharpens imaging and eliminates inter-channel ground loops in the amplifier. Primary 0-230-240V. Secondanes 2x295V@0.25A (0.4A ht.1), 2x70V@30mA, 2x63V@5A. Price £60. Other primary voltages can be supplied to special order. Data sheets giving connection diagrams, specifications, as well as dirouts for using each transformer, £2.50 each.

Wen as Groute for using occur variation, and each. The chassis, comprising main chassis and transformer cover, is hand polished, welded 1/16" stainless steel - NC machine tooled for a perfect fit and clean finish. Each kit also includes a mesh valve cover and baseplate, finished in

Telephone/FAX: (01223) 512253 semi matt black. Price £310. Also available in mild steel finished in black, £195. For those who wish to use one of these high quality chassis for their own projects, details of the chassis are given in the 4040 reference manual, £6.50.

given in the 4040 reference manual, £6.50. Connector kit: twelve gold plated phono connectors, two sets of loudspeaker terminals, an IEC mains socket with Integral fuse and switch, and an IEC mains lead with fitted 13A plug £51.50. Cable kit: all cables required for the 4040, £6. The Riverside P2 phono preamplifier is designed to partner the Riverside 4040 for those who aring the vinut Sound Equalization is

designed to partner the Reverside 4040 for those who enjoy the vinyl sound. Equalization is provided for moving magnet output to line level. The P2 features a high accuracy feedback RIAA equalization circuit, ensuring a natural tonality, a equalizate high voitage supply per channel and cathode follower outputs 3xECC83, 1xECC81, 2xECF80. Full details and circuit diagram in the P2 reference manual, £6.50. Kit £225, fully assembled £275. Technical specification: 47kΩ input impedance, 1kΩ impedance output for driving long interconnects. Stereo circuit board: board only £25; component pack, add £37.50; populated board £70; full valve set £20.

The mains transformer is wound for dual The mains transformer is wound for dual mone construction and is toroidal for low leakage flux. Primary 0-230-240V. Secondaries 2x295V@20mA, 2x6.3V@0.45A, 16V@1A. Price £30. Other primary voltages can be supplied to special order. These transformers are also suitable for power supplies in preamplifiers and other line level valve circuits -see data sheet for details, £ 2.50. The chassis (main chassis and transformer)

see data sheet for details, £ 2.50. The chassis (main chassis and transformer cover) is made from mild steel. Each kit comes complete with a mesh valve cover and baseplate, finished in black. Price £110. For those who wish to use a high quality chassis for their own projects, details of the chassis are given in the P2 manual, £6.50. Connector kit: four gold plated phono connectors, IEC mains socket with integral fuse and switch, and IEC mains lead with fitted 13 A plug, £15.

and switch, and IEC mains lead with ittee to A plug, £15. We normally ship within three working days. If we do not have the item in stock we will advise you of expected delivery and confirm before despatch. P&P (In UK); £2 for each part of £40, maximum of £10; manuals free of charge. Assembled units despatched by courier free; courier service on other items £10. Write, phone or FAX for a catalogue sheet of the full range of Riverside products.



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SonicLink AERO SPACE TECHNOLOGY Loudspeaker Cable AST150 SonicLink AERO SPACE TECHNOLOGY BiWire Loudspeaker Cable AST75x2	£1.95/m £3.95/m £4.95/m £7.95/m
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## SonicLink

The Derwent Business Centre, Clarke Street, Derby, DEI 2BU Tel; +44-332-361390 Fax; +44-1332-298836

### PRIVATE

WANTED: QUAD 67 CD player. Must be in mint condition, boxed with instructions. Tel: Kevin 01703 601 222 (Southampton)

MUSICAL FIDELITY F15 amp, F22 pre with MM phono input. 15 months old in perfect condition. £1900 (list £30001

Tel: 01422 832 836 (after 6pm)

GARRARD 401/SME 3009II in SME 2000 Teak plinth, excellent condition, complete with original instruction manuals £250 ono. Pair Goodmans Magnum K-2 speakers (Teak finish) €50

Tel: 01279 871 461 (Essex)

NAIM SBLs (black) Latest specifica-tion, complete with NACA leads. Also, Linn Karik. All in mint condition. Tel: 01983 523 450

MIRAGE M890i speakers (1075) £750. Orelle CD10T/DA180 Mk2 (1400) £750. Stax SR84/Energiser (260) £120. Huygens stands (300) £100. Madrigal/Descadel cables. Boxed, manuals vgc. Tel: Roy 0121 427 6661

BEARD PI00 Mono Class A power amps £1500. Beard P505 pre £250. Musical Fidelity 800 Class A integrated £350 ono £800 new. Musical Fidelity Ref 4 £250 ono £500 new. Audion Premiere 1 pre 5 inputs MM £400 ono £1000 new. Pioneer PDS 901 CD player £200 ono £500 new

Tel: 0956 301 065

WANTED: SME 3012 tonearm, first series, or Ortofon RMG 309, only complete and good condition. Sell Altec 511B + 802-8A and 811B + 806-8A Tel/Fax: +49 7202 7937 (FRG)

MISSION 751s, black, Rogers LS4A, black, both immaculate, £150 per pair. Stands and cable also available. Sony TC-K611S cassette recorder boxed as new £175 Tel: 01702 470 084 eves

WANTED: Audiolab 8000A Mk2, Nalm NAT 03 tuner. Must be mint, boxed. Tel: 01242 673 147

MISSION SPEAKERS 753s Rosewood £400 751s Rosewood (unused) £200 780s £125 760iSF (unused) £125 760iSE £95 Sony Pro-walkman £125 Audio Alchemy Dac-in-a-Box £125 Mission DAD7/DAC7 Trichoud adapted £150 Trichord adapted £150 Tel: 0181 655 2733

NAIM NAIT Mk1 amplifier. Mint. Boxed with manual £180. Tel: 0181 299 2428

ARCAM ALPHA 5 CD player £275. Target turntable wall bracket, 2 shelf £40. Audioquest video Z cable 0.5m £30.

Tel: 01964 551 137 (Beverley)

AUDIOLAB 8000A Mkil mint, boxed £350. Tel: Andy 01242 515 373

TRICHORD CLOCKED Arcam Alpha 5+ £375. Theta TLC £175. Dac-in-the-Box £165. Audioquest Video Z cables £60. Chord Company Chameleon £30. £800 for all. Tel: 01509 620 814

**REVOX A77** reel-reel; privately used, original instructions £175; Thorens TD 160 Super (heavier platter) fitted with Mayware Formula 4 arm, Elite cartridge, unmarked, boxed £170; Ferrograph Model 88 valve reel-reel, needs work, almost free to good home.

Tel: Paul 0181 965 8105

BOWERS & WILKINS P2/H monitor ionising speakers, B&W service documents, excellent condition beautiful veteran monitors, rosewood cabinets £350; Tandberg 6X reel-reel 1/4 track, instructions unmarked condition £125. Tel: Tony 0171 431 8569 (home) 0956 343 638 (mobile)

KENWOOD DPX9010 CD Transport for quick sale £200. Deltec PDM2 convector £195. Tripod equipment supports 3 x 2S units £40 each. 1 x 2XL unit £40. Half price and boxed. Tel: 01202 888 832 (Dorset)

AUDIOLAB 8000S amplifier £525. Marantz CD-63 Mk2 £200. Mission 752 £400. All new 28/12/95. Marantz CD52IISE £175. Royd Abbots £350. Quad 33 pre £65. Tandberg TR2075 receiver 75wpc £100. Tel: 01926 831 388

HI-FI WORLD 5881 valve amp, expertly built, bargain at £250. Tel: 01228 74537 (Cumbria)

AUDIOLAB 8000A integrated amplifier £100. Pair Wharfdale speakers Hi-Fi TSR 110 27" high with Target spiked stands, total height approx 37" £150. Tel: Harry 0181 959 7662

TECHNICS SLP5670A CD player. Pioneer A203 amp, Mission 731 speakers and Atacama BD21 stands. All boxed as new. All for £350. Tel: 0802 823 275 (evenings)

PINK TRIANGLE Da Capo + Cardinal £1450. Stax SR Lambda Pro headphones + SRM-X drive unit + Ni-Cad pack £100. Sugden A21a integrated amp £600. ProAc Response | speaker + stands £500. Will sell whole system for bargain. All excellent.

Tel: Brian 01962 771 298 (evenings)

WANTED: QUAD 606 Mkll amplifier and 66 preamp complete with remote control. Tel: 01902 676 319

MERIDIAN 508 20 bit CD £1000. Meridian 526V multimedia controller £700. Meridian DSP 5000 digital speakers black £2000. All less than 6 months old.

Tel: 0121 783 8227

NAIM-DBL Passive X-overs, Prefix kit, Hi-Caps, 32 5/72TA preamp, 250. With the apply 3237/210 preample boxed. Naim serviced, guaranteed Wanted 4-pack-pairs NAP 135s, matched pairs 250s, cash payment will collect/meet half way. Tel Paul 01924 271043 - 274887

EAR 859 SINGLE ENDED valve power amplifier, mint condition £950. EAR 834P valve pre-amp (inc phono), mint condition £290. Tel: 01730 263 473

QUAD 67 CD Player, near new £495 Tel: Rev. D.R. Hill 01775 768710 or 722346

MUSICAL FIDELITY F25 pre-amp, new model sell £1100 (£1500) Musical Fidelity FCD compact disc player, mint, £800 ono. (£1500). Garrard 401/ SME3009/ plinth/ cover, excellent condition £225. Tel: 0121 602 2591 (Birmingham)

A.V.I. PRE £460, A.V.I. Mono amps £580, A.T.C. 10s £650, Quad 66 pre £550, 606 power £375, Meridian 508 CD £975, Meridian 551 amp £600, AE Aegis speakers with stands £325. Arcam Alpha 6 CD £350, Alpha 6 amp £225, Teac VRDS10 CD player £400, Spendor B.C.I. speakers, white with stands £150. Tel: 01977 643 629

REVOX TUNER B2605 - FM RDS (black/gloss finish) - Willie Studer special edition - battleship build! (DX) sensitive reference sound as new, boxed with manual £775 (1500). Marantz CD-63SE - 6 months old, boxed £250. Tel: 01733 892 228

BEARD VALVE amp P100 Mk2 90w per channel - Class A to 40w. The original "Gentle Giant" recent £150 service/new valves £650. Audio Innovations L2 line pre-amp - as new boxed £400 (750) Tel: 01733 892 228

8812 LINEAR Phase Studio Monitor speakers, USA made, new, boxed with manufacturers warranty. Ideal for home studio/hi fi. Professional specification. Can be demonstrated £800 (£1500 rrp) Tel: 01628 784 887 (Maidenhead eves/weekends)

PI2/CIRKUS/LINGO/ITTOK/ LYDE 200 hours) £1050 Kabers KLYDE 7200 hours) 21050 Kabers active 21125 - passive 2795 Four LK 100 amps (new style) 2425 each. Kairn (new style) 2925 Can demonstrate or install. Tel 01352 750 801

QUAD 34/405 £300, Musical Fidelity TI £110, Quad FM2 £60, Celestion SL6si £200, SL 24" stands £50, Sugden A48 £110, T48 tuner £90. All mint. -Also- Grunge Hi-Fi Cheap! Tel: 0151 546 7949 (Merseyside)

MARANTZ CD-63SE special edition CD player. Boxed with remote and manual. Mint condition with about 30 hours use. Still under guarantee. Offers over £200. Can be seen in London or Bristol. Tel: 0117 932 3814 (Bristol)

ACOUSTAT SPECTRA II Electrostatics £600. Quad ESL 57 black £325. Celestion 66 £300. Revox G36 4 track £425. Leak TL12+ £300. Stereo 20 pre, power, stereo FM tuner £350. 301 Slate plinth Rega arm £325. Swaps for W.H.Y. Tel: 01460 281 529 SWAP YOUR TURNTABLE for my CD collection (70 rock, 10 classical) must be 33/45 e.g. P.T., Oracle, Linn. Phone for CD list (s.a.e.) All offers considered, any takers? Tel: Dave 0181 677 0187

LL KRELL KRELL! The new 300 AVI integrated amp. Three months old £1850. Sonus Faber Minuettos plus stands £800. Naim NAP 140 (old style) £250. Tel/Fax: 0181 367 9738 (Enfield)

LECSON HLI païr horn loaded floor standers. Anyone remember/ interested? Acoustically & electronically as always. Need recovering (again). Offers. Tel: 01934 624 014 (North Somerset)

LINN EKOS tonearm immaculate condition. One cartridge change only undertaken by dealer, 6 years old. New cost is now £1500. Will sell for £650

Tel: Steve 01625 877 628

LINN LK1/280 pre & power amps with remote £450. Linn Ekos tonearm £695. Nalm 72 with MM & K boards £360. All boxed & mint condition.

Tel: 0171 701 4580 (day) 0181 871 0424 (eves/weekends. SW London)

NAIM NAC 52K preamp £2750. Naim NAT-01 tuner £750. Naim SBLs. black Ash, pristing £795. Nakamichi CR7E cassette deck with remote control, hardly used £795 Tel: 01524 381 389 (Lancs)

CABLE SPRING CLEAN Intercon nect, loudspeaker, phono, from £5 to £100, VDH, LFD, DNM, QED Monster, Siltech, Audio Quest, Trichord etc. Private Sale. Tel: 01276 858 481 (Surrey) or 01753 857 530 (Berks)

LINN LP12/Lingo/Ekos/Troika/ Trampolin. Walnut, regularly serviced, all boxes, receipts. £1000 or best offer. Tel: 01344 892 499 (days) 01734 629

009 (Eves)

ARCAM ALPHA Plus CD player, as new condition, £210; Alpha 6 amplifier, recently serviced, £225; Sequence 30 speakers, ideal for wall-hanging if floor space limited, £150. Tel: 0161 282 6703 (Manchester)

RUARK CRUSADER II Loudspeakers, dark walnut, I year old £900 ono. Tel: 01252 843 391 (Evenings, North Hants)

CYRUS III amplifier £300 (only 2 months old) Mission 760iSE with Target stands £50. Kenwood KA3020 SE £50. All mint condition. Tel: 01474 357 088 (evenings)

LINN LP12/Cirkus/Trampolin/Lingo/ LINN LP12/Cirkus/Iranpolin/Lingo' Ekos/Klyde £1700 (£3700 new). Karik 2 (inc Brilliant & Memory upgrade) £1100 Kairn (inc Pibono & Brilliant) £1000. Klout (1 month old) £1750 (£2000 new) Epos ES22 loudspeakers (1 month old) £985 (£1185 new) 2 Soundstyle grey 4 shelf tables £115 soch (£200 andh new). All in absolute each (£200 each new) All in absolute perfect unmarked condition. Genuine reason for sale. Tel: 01323 845 143 (East Sussex)

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5U4G USA	£6 each	3A/108A STC	£20 each	.5UF 5000V	£15 each
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6L6WGB USA	£12 each	3A/110B STC	£25 each	2UF 600V	£6 each
6B4G USA	£35 each	LS7 STC	£30 each	4UF 600V	£6 each
L63 GEC	£12 each	3A/109B STC	£25 each	8UF 600V	£8 each
H63 GEC	£12 each	5B/255M STC	£12 each	8UF 800V	£10 each
KT61 GEC	£25 each	4212E STC	£P.O.A.	8UF 1000V	£12 each
A2900 GEC	£20 each	4212H STC	£P.O.A.	8UF 1500V	£30 each
12AX7 Brimar	£10 each	4242A STC	£P.O.A.	4UF 800V	£12 each
CV4004 Brimar	£12 each			4UF 1000V	£12 each
M8137 Mullard	£15 each	OIL FILLED CHOKES		2UF 1000V	£10 each
ECC82 Mullard	£8 each			1UF 2500V	£15 each
CV4003 Brimar	£10 each	18H 60MA	£15 each	.02 1000V	£4 each
EL84 Mullard	£9 each	10H 180MA	£20 each	.1UF 2500V	£10 each
E88CC.01 Mullard	£17 each	10H 250MA	£30 each	2.2UF 630V	£6 each
E88CC Mullard	£10 each	10H 350MA	£35 each		20 euch
ECC88 Mullard	£10 each	10H 100MA	£20 each	MOSFET POWER TRANS	FORMER
EF86 Mullard	£10 each	1H 300MA	£15 each		CRIMER
EL86 Mullard	£6 each	16H 120MA	£20 each	PRIMARY 10-0-200-220-240-SC	P
EF37A Mullard	£8 each	5H 200MA	£15 each	SECONDARY 0-18.5-26-29V .35	
6SL7 Brimar	£8 each	5H 400MA	£25 each	26V .5A £40 each	
5Z4G Brimar	£6 each	2.5H 220MA	£15 each		
JAN 5751 USA	£6 each	3.5H 300MA	£15 each	P&P £5 PER ORDE	-p
ECC83 USA	£6 each	15H 150MA	£25 each	17.5% VAT TO BE ADDED TO	
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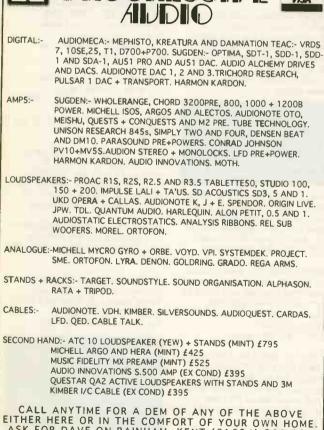
Improve the Dynamic, Bass Control and Low level Resolution of your Audio Innovations EL34 Of 2A3 power-amp/integrated with the addition of a Valve Rectified Choke Input Filter Power Supply. Uncover previously hidden detail in recordings together with much improved solidity and control. This conversion makes the amplifiers sound like more powerful and expensive models. The conversionis reversible, does not devalue your amplifier and is transferable to other models. The PSU is switched on and off from your existing Audio Innovations amplifler and incorporated fail-safe circuitry to prevent damage to the valves. The slow start characteristics ofthis supply will usefully increase valve life. Priced at £550.00 (£1000,00 for monoblocks) including fitting the conversion represents excellent value for money. For those competent in electrics/electronics the unit are also available by mail order and comprehensive conversion instructions are provided.(If you have any doubt about your ability to do this modification safely, please consult us first.

VISA and ACCESS welcome

SECONDHAND EQUIPMENT FOR SALE. (New price available in brackets)

Audio Innovations Series 200 pre-amp	£250 (£350)
Audio Innovations Series 200 pre-amp	£225 (£500)
Kenwood KA7050R integrated amp (remote control)	£200 (£495)
Audio Innovations Series 500 integrated amp	£495 (£1199)
Impulse H5 Oak	£799(£1750)
Impulse H6 Grey/Black	£650 (£1250)
Impulse H7 Walnut	£400 (£750)

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CALL ANYTIME FOR A DEM OF ANY OF THE ABOVE EITHER HERE OR IN THE COMFORT OF YOUR OWN HOME ASK FOR DAVE ON RAINHAM, KENT (01634) 389 004

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SOWTER P.P. Output transformers. Two pairs 6K6:6 and 6K6:4,8,16. All on 95x114x38 cores. £50 per pair or swap for S.E. types. Tel: 01895 633 486

CD PLAYER Rotel RCD945AX for sale £75. Tel: 0121 476 8507 (after 6pm, Birmingham)

ARCAM ALPHA ONE CD Player £195. Arcam Alpha Six Amp £210. Ruark Swordsman Plus Two £200. All six month's old. Marantz DCC DD32 £190. QED turntable £75. Audio Quest interconnects and speaker cables £80 Tel: Matthew 01787 479 106 (Essex)

SUGDEN AUSI Pro transport CDM 9 Pro Mech, less than one year, as new, boxed, cost £1600, selling at £999 ovno.

Tel: Mr Mohammad Ibrahim 0161 795 0185 or 0161 877 2741

BRYSTON 12B Pre-amp £375; Nakamichi CR4E cassette deck £325; Rotel RT850AL tuner £65. Available together for £700 All low hours and very good condtion. Tel: 01276 451 704 (Camberley, Surrey)

QUAD 34, 606 FM4 Tuner. All mint and boxes. £600 ono. Musical Fidelity TI FM tuner, mint with box £120 ono. Tel: 0131 664 5745

REVOX A77 1/2 track stereo. 7 1/2-3 3/4 i.p.s. Line output version. Complete with full Revox service manual. Excellent condition, superb sound. £275 Tel: 01935 816 513

CONRAD JOHNSON 4 tower Synthesis spillkers, Ash. £2200. Metaxus Icarus integrated amp £400 Metaxus Charisma pre-amp £600. Carver speakers, black £650. All boxed mint. Tel 01438 716 149 lievenings

**OPPORTUNITY IN Musical quality** connoisseur marques. Linn Sondek LP12, walnut finish, Aro arm, Troika needle, Naim Armageddon State-ofthe-Art monitor speakers, black ash finish, mint condition Sensible offers Tel: 0181 293 4185 or 0956 981 159

LOUDSPEAKERS: Canon wide imaging stereo S-50 speakers. Dome shaped, includes cable. Unwanted gift. Never used. Cost £350 new. Accept £250. Tel: 01296 688 558 (Aylesbury)

FOR SALE - OFFERS PLEASE Speakers: KEF Cadenza type SP1024 8 Ohms 25W. Deck: Rotel RP850. Amplifier: Dual CT1260 synthesizer tuner. CD Player: Denon RC-207. Tel: Jenni Woolf 01246 235 404

**REVOX G36 Tape recorder. Pristine** condition, very occasional use. Offers around £400. Gale GS401 chrome with stands vgc £250. Garrard 401, oak plinth, nice £185. Tel: 01604 791 252

NAIM 140 amplifier new style, excellent condition. Upgraded. Tel: 01923 448 265 (Watford) PRIVATE

AUDIO INNOVATIONS Series 500 amp with replacement valves. Linn Sondek, Scorpio arm with A&R P77. Target wall support all as new absolutely immaculate and boxed. £1100.

Tel: 01908 696 964 (anytime)

LOWTHER ACOUSTA PM6A Horn speakers, walnut, superb sound, lovely condition £395. Mint, boxed Thorens TD12411 £295. Leak valve Troughline tuner vgc £55. Leak. Quad. Rogers. expert valve ampifiers, preamps Tel: 01364 72153

KRELL CD DSPII Custom CD player with clear acrylic lid, balanced outputs. mint condition, boxed with manuals. Anne condition, boked with mandas, outstanding sound quality, bought from new Sept 92', list £5500, bargain £2900 ono Tel: lan 0171 589 4840 or 0171 584 5784

ROTEL RCD 965BX LE Discrete CD player. Excellent condition. Sold without interconnects, £165. Tel: 01204 660 255 (Bolton)

AUDIO INNOVATIONS 800C preamplifier £195. 800 Mark One (triode coupled) power amplifier £295. Target turntable isolating wall shelf £30 Tel: John 01295 710 613

TL12+, Mint, original condition, Mullards with GZ37 transparent sounding classic £350 ono. Arun valve pre-amp handbuilt by Mike Pointer, perfect for Leaks/Quad only £150. Both v. low use. £400 the lot. Tel: 01834 845 928

MUSICAL FIDELITY A100 integrated Class A amplifier. 50 watts per channel. Mint condition, cost £500 Accept £220. Can demonstrate. Tel: Rob 01789 262 929 (Stratford on Avon, Warwickshire

AUDION SILVER KNIGHT 300B stereo SE amplifier, recent service and re-valve £695. HFW 4W SE amplifier £425. Leak Troughline 3 (GT Audio), wood sleeve, immaculate £250. Tel: 01834 860 681

WANTED: EXPOSURE X amplifier, good condition. Tel: 01273 880 858

LUMLEY REFERENCE ST70 valve power amp. Pentode/triode switch ng. This high quality unit is only 18 months old and in mint condition. A bargain at £975. Tel: 01342 315 243 (Sussex)

AUDIOLAB 8000M monoblocks. latest spec £525 each. NAD 902 monoblocks/stereo poweramps, as new £135 each. KEF 105/3 speakers, black, 14 months old £1100. All mint, boxed.

Tel: 01883 330 063 or 0181 660 8147

AUDIO INNOVATIONS \$500 mtegrated valve amplifier £495 ono., or swap for a Rega Elicit. And Silver Sounds 14/4 speaker cable 2x3 mtrs **£9**0 Tel: 01843 220 499 (Kent)

NAIM SBL SPEAKERS, black + 8 mtrs NAC 05, approx 4 years old, mint condition £650 ono. Tel: 01705 662 772 after 6pm

McINTOSH PRE-AMP (C26) v. good condition, v. good sound; 7 inputs, 2 outputs (and central channel) all manuals £750 ono. Tel: 01932 830 267 eves or 0171 699 5445 day

KEF DRIVERS circa 1971, good condition, bass units SP1044 (palr), tweeters SP1032 (pair). Sensible offers please. Tel: 01,454 329 495

LINN LK1/Dirak+LK280/Spark £850 Linn Lingo £450. Meridian 200/263 CD+DAC £450. Super Hi-Fi sound. Can demo, deliver and install. All prices ono. Tel: -1908 368 664

AUDIO INNOVATIONS Series 500. triode-coupled, new valves, perfect £500, Sondek Valhalla, Zeta/Van den Hul silver wire AT160ML, superb Auf silver wire ATT60ML, superb 2325. Audionote ANB 6m pair £120, 4m pair £80. Audioquest Lapis i/c £250. Deltec Black Slink i/c £100. Tel: 0181 747 1968

2 LEAK 600 Sandwich speakers, 40w, 3 speaker system. Dark wood finish, immaculate condition, offers. I Thorens TD/150 Mark II turntable with dust cover, Shure cartridge, in original box. Offers. Tel: 01324 625 458

AUDIOQUEST DIAMOND Interconnect Im cost new £550 asking £250. Krell KSA50 power amp 12-15 years old, fan needs attention, asking £400. Yamaha DSPE580 processor cost new £450, asking £270. Tel: 01296 437 314 evenings

(Aylesbury)

UDIO RESEARCH and KRELL SPpic anip (£2650 instead of £6200) and KSA-100 Mk 2 power amp (£2250 instead of £5150) Both unmarked. Also pair of Isobariks (£450) Tel: 0161 904 8081 after 7pm

WANTED: SNELL K. For Sale: Musical Technology Harriers piano black inc plinths, lovely look and sound, I month old, immaculate, cost £545 accept £400. No offers. Tel: 01642 542 395 day or 01429 274 638 eves

MUSICAL FIDELITY pre-amp 3B, boxed, unwanted gift £170 ono. KEF Kube for extending dynamic range, sensible offers. Tel: 01280 813 100

SUGDEN AU51 pre and power amps £2500 new, accept £1100. AMC CD6 CD player £380 new accept £200. Flutterbuster turntable power supply £40.

Tel: 01803 297 691 (Torquay)

PS AUDIO 4.6 pre-amp. Active/ passive. MM/MC, excellent condition, boxed £425. 2x63v 4700 UF Elna Cerafine caps 6 months use £11 the pair.

Tel: 01342 712 653 answerphone (Sussex)

EAR 802 Mkll pre-amp £650. BBE Sonic Maximiser £110, both boxed, manuals

Tel: 01772 626 660 (Preston)

QUAD 606 POWER £395, 44 pre £195, FM4 £250, KEF 102 in walnut + Kube £250, all boxed and instructions in mint condition. Pair Tannoy Devons £250 very nice. Tel: 01702 219 723

AUDIONOTE OTTO SE Line Class A amp. Phonostage can be factory fitted £750. Audionote DAC One + AN 'V' cable £450. Meridian CD 200 Il transport £450 Tel: 0468 363 543 (Basingstoke)

LINN EKOS ARM condition mint £575 ono. Tel: 0181 854 6738

NAIM 180 £695. Rogers Studio 1A including Target stands £295, Quad 33, 303, FM3 £245. Original Systemdek £45. Mission 774 on Linn board £40.

Tel: Jon 01202 667 789 (Dorset)

BEARD P100 Mono blc £1500 will split good condition. Beard P505 inputs MM + 4 line £250 good condition. Audion Premiere I pre amp inputs MM + 4 line £350 good condition. Musical Fidelity A200 integrated 6 amp inputs MM + MC £400 ono good condition. Musical Fidelity Ref 4 speakers £250. Pioneer CD player PD/S901 £200 ono. Tel: 0956 301 065 after 4pm

HEYBROOK SEXTET speakers. Latest Mk2 version in black ash/yew with Heywire cable £735. (retail £1129). Linn Nexus speakers with stands £195, both good condition, boxed, can deliver. Tel: 01784 421 123/437 150 office/ home

MICHELL ARGO/HERA Not a bad pre-amp, priced to sell at £450 ovno. TDL RTL2 speakers £195. Arcam Alpha CD £175. Three tier table £30. Tel: Tim 01223 32 2215 (Cambridge)

2 MANA ACOUSTICS wall shelves, as new, unmarked £100 each. Tel: 01895 440 602

AUDIO INNOVATIONS Series 500 valve integrated amplifier, good condition with new valve set £450 ono. QED MC pre-amplifier and Audio Technica AT630 MC Transformer also for sale. Tel: 01425 470 070

MONITOR AUDIO Studio 50 SE speakers Ebony piano lacquer finlsh 6 months old £3250 (£4950) Target B5 equipment rack £100 (£175) Tel: 01797 253 073 (East Sussex)

VINTAGE BRITISH Equipment available: Leak Delta 70 amp (perfect), Armstrong 625 receiver (tuner ok, amp works - just!) GL75 turntable (overhauled, decent cartridge, spare arm) £95 the lot. Will split. Tel: 01582 664 339 (Beds)

GARRARD 401, SME & Goldring 1042. Custom sprayed heavyweight MDF plinth. Immaculate condition £300 ono. Heybrook Quartet loudspeakers, walnut burr, mint condition Cost £600 sell £375 ono. Leak Troughline mono £75 Tel: 01446 740 079



### 71 HIGH STREET, NEW MALDEN, SURREY, KT3 4BT. ENGLAND. TEL: 1081 336 0012 FAX: 0181 336 2703

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### **CLEARANCE BARGAINS**

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ALCHEMIST APD15 INT AMP	£900	£720
ATC SCM20T ROSEWOOD	£2650	£1999
AVIS2000 MT	£600	£480
AVI S2000 MI	£800	£680
B+W HTM	£500	£375
B+W P5	£875	£699
CASTLE CHESTER	£700	£550
EXPOSURE XX	£625	£450
JBL TI 5000	£3700	£2700
JBL CONTROL 5(PAIR)	£500	£350
JBL CONTROL 1(PAIR)	£240	£169
MARANTZ CD17	£800	£640
MARANTZ CD72SE	£600	£420
MUSICAL FIDELITY E100	£600	£450
MUSICAL FIDELITY E600	£600	£450
MCINTOSH C712 Pre-amp	£1480	POA
MCINTOSH MC7100 PWR	£1260	POA
MCINTOSH MCD7009	£2635	POA
MCINTOSH MC150PWR	£2855	POA
MCINTOSH MC500 PWR	£6265	POA
MCINTOSH C40 Pre-amp	£3129	poa
NAKAMICHI ST-3S TUNER	£350	£250
NAKAMICHI MB2	£850	£550
NAKAMICHI 1A-4S	£200	£139
REL STORM	£690	£550
REL Q.BASS	£350	£280
RUARK TALISMAN II	£750	£525
RUARK PALADIN	£1100	£775
TUBE TECHNOLOGY UNISIS/PI	HONO£1750	£1099
TDL RTL 4	£650	£499

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F22 PRE-AMP, phono mm	Were £1100	Now £799
FX POWER amp	£1100	£799
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	CAMBRIDGE CD1 CD PLAYER HEAVILY MODIFIED	HAN	GEL	,
	WITH MASSIVE POWER SUPPLY, SUPERB METAXUS ICARUS INTEGRATED AMPLIFIER CHROME - MINT	£1295	S/HAND	
	PINK TRIANGLE PIP2 MK2 VISHAY MODIFIED PREAMP - MINT MARK LEVINSON ML3 POWERAMP - MINT	£595 £1795 £3995	EX/DEMO S/HAND	£4500
	MERIDIAN ARGENT 3 SPEAKERS, ROSEWOOD - MINT SNELL A3 SPEAKERS WALNUT, V.G.C.	£3995 £995 £4495	S/HAND	£1495
ľ	CABASSE IROISE MC SPEAKERS CHERRYWOOD MINT	£4495 £895 £1995	S/HAND EX/DEMO	£1500
	CITATION 18 TUNER ORIGINAL ATIERICAN V.G.C.	£799	EX/DEMO	
	SUGDEN AUSIC PREAMP 2 BOC MODIFIED BY AVONDALE V.G.C.	£295	S/HAND	
	SOTA COSMOS VACUUM PLATTER - MINT CRYSTAL REFERENCE TURNTABLE (WALLMOUNT)	£895 £1995	S/HAND	£4400
	GRYPHON EDITION PREAMP BALANCED - MINT MERIDIAN 606 DAC - MINT	£1495 £3995 £705	S/HAND	£2500 £8000
ł	AUDIO RESEARCH V70 HYBRID VALVE AMP - MINT KRELL KRSBP REFERENCE PREAMP, BALANCED, MINT	£795 £2495	E/D S/H	
	GOLDMUND MIMESIS 3 POWER AMP BALANCED, MINT TANDBERG TPA 3009A MU2 MONO POWER AMP MINT	££4995 £1995 £10955	S/HAND S/HAND	£11500 £5000
	MARK LEVINSON ML12A PREAMP PLS124 POWER SUP	£10955 £995 £2995	S/HAND S/H	£2195 £2400
	CAT SLI SIGNATURE PREAMP 7, PHONO MINT EXPOSURE 7 PRE 9 PRO SUPPLY 4 REG AMP MINT MARK LEVINSON ML2 POWER AMP, MINT	£2995 £1250 £995	S/H S/H	£6000 £2750
1	LUMLEY REFERENCE M120 VALVE MONOS, MINT SONY 337 ESD CD PLAYER, MINT	£1795	S/H E/D	£2700 £3200
	JADIS DEFY 7 MK3 VALVE POWER AMP MINT KEF 102,2 SPEAKERS, BOSEWOOD & KUBE & STANDS	£295 £3495 £595	S/H S/H	£600 £5290
1	APUGEE STAGE SPEAKERS & STANDS, MINT ACOUSTIC ENERGY AE3 SPEAKERS & STANDS, MINT	£595 £1695 £995	S/H S/H	£1150 £3454
	COUNTERPOINT SA3000 VALVE PREAMP, MINT ADCOM GFA565 MONO AMPS, BALANCED, VGC	£995	E/D S/H	£2075 £2169
	MERIDIAN DOOR ACTIVE SPEAKERS BLACK MINT	£1250 £1795	S/H E/D	£2000 £2995
	WHARFEDALE OPTION 1, 4-WAY ACTIVE SPEAKERS, GREY & WHITE, 1 OF ONLY 5 PAIRS, SUPERB, VGC CARVER AMAZING SPEAKERS, PIANO BLACK, VGC	£1995 £895	S/H	PHONE
r.	HALES SIGNATURE 2 SPEAKERS, ROSEWOOD, MINT MUSE 18 ACTIVE SUBWOOFER, ROSEWOOD, BALANCED, MINT	£3495	S/H S/H	£2300 £6600
н.	PIONEER PD75 CD PLAYER, MINT MERIDIAN 508 SUPER CD PLAYER, BALANCED, MINT	£395 £995	S/H S/H	£4000 £800
E	MARANTZ CD65 Mk2 SE CD PLAYER, MINT ROWLAND MODEL 3 MONO AMPS, BLACK, BALANCED, MINT	£995 £175 £2250	E/D S/H	£1475 £350
Ľ	MARK LEVINSON NO20 REF MONO AMPS BALANCED, MINT CHORD 1200 POWER AMP MINT	£2250 £4995 £1595	S/H S/H	£4000 £1100
ь.	APOGEE CENTAUR MINOR SPEAKERS MINT	£1595 £895 £275	S/H S/H	£3000 £1345
	GALE 302 SPEAKERS, BLACK ASH, MINT THIEL CS51 SPEAKER, PIANO, BLACK, MINT GRYPHON XT PREAMP + MC, MINT	£275 £7995 £2250	S/H S/H	£440 £12300
E 4	ELECTROCOMPANIET AW100DMB BAL AMP MINT MERIDIAN DSP5000 DIGITAL SPEAKERS ROSEWOOD, MINT	£2250 £1295 £2250	S/H S/H	£5485 £2018
	ALPHASON SYMPHONY TURNTABLE & ARM PLUS ATLAS SUPPLY, PIANO FINISH, MINT	£2250 £1295	S/H	£3450
	MERIDIAN 506 Mk2 CD PLAYER, MINT MERIDIAN 508 Mk3 CD PLAYER, BALANCED, MINT	£7295 £750 £1395	S/H E/D	£2700 £950
Ľ	MERIDIAN 500 TRANSPORT & 563 DAC, BALANCED, MINT AUDIO RESEARCH SP9 PREAMP, SILVER, MINT	£1395 £1595 £895	E/O E/O	£1685 £1990
1	MERIDIAN 501 PREAMP & MSR, MINT MERIDIAN 551 INTEGRATED AMP. MINT	£575 £595	S/H E/D	£1700 £675
Ľ	MERIDIAN 555 POWER MINT MARK LEVINSON No20.5 MONO POWER	£595 £550	É/D E/D	£695 £650
	AMPS, BLACK, BALANCED, MINT AUDIO PLAN KONCEPT SPEAKERS, BLACK, MINT	£5995 £795	S/H	£12500
5 P	MARTIN LOGAN SEQUEL 2 SPEAKERS, OAK	£1495	S/H S/H	£1750 £3277
	ANTHRACITE, MINT CAL TEMPEST 2 CE VALVE PLAYER, MINT	£1595 £1500	S/H S/H	£3998 £3900
F	MARK LEVINSON ML10A PREAMP, MINT	£1250 £2500	S/H S/H S/H	£3900 £3800 £5250
	CONRAD JOHNSON PREAMP 4, VALVE, MINT	£1795 £995	S/H S/H E/D	£500
N	ARK LEVINSON ML7 PREAMP, MINT IRG A201S STEREO AMP 200W CLASS A, MINT	£1995 £1995 £2995	S/H S/H	£2500 £5800 £6600
0	SUMO ARIA PANEL SPKRS, OAK, VGC GENESIS 8300 SPEAKERS & STANDS, PIANO BLACK, MINT	£795 £995	S/H S/H E/D	£3000
	CONRAD JOHNSON SYNTHESIS REFERENCE 4	£995 £2995	S/H	£1895 £8000
A	POGEE MINI GRAND GS SPEAKERS PIANO BLACK, MINT	£4500	S/H	£8595
K	IEW IN THIS MONTH COETSU 80TH ANIVERSARY CARTRIDGE MINT	£1250	D/H	£3200
F	ORSEL AIR REFERENCE LTD EDITION TURNTABLE & ARM	£5995	S/H	£13262
P	HACLE DELPHI MK3 TURNT, SUMIKO MDC 800 ARM MINT	£1795	S/H S/H	£3400 £3900
A	OWNSHEND ROCK 3 REGA ARM WITH V.T.A. ADJUSTER MINTE: UDIO RESEARCH CDT I CD TRANSPORT MINT	95S/H £1995	£1034 S/H	£3290
A	CCUPHASE DP70 CD PLAYER BALANCED AT&T MINT CCUPHASE DP65 MMB CD PLAYER DIGLVCH LIME BAL MINT C30	62250	S/H £6800	£6000
N	IERIDIAN 602 CD TRANSPORT MK2 & 606 DAC MK2 MINT	£1500 £995	S/H S/H	£3300 £1800
N	IISSON DAD 5CD PLAYER & DAC S MINT AIDA WT 3200 CD TRANSPORT MINT	£325 £1195	S/H S/H	£600 £2038
M	IARK LEVISON NO 385 PREAMP BALANCED MINT IARK LEVISON NO 265 PREAMP BALANCED MINT	£4495 £3995	S/H E/D	£6500 £8500
F	OWLAND CONSUMMATE MK33 BOX PREAMP ULLY BALANCED LINE & PHONO REMOTE ETC.	£4495	S/H	£9300
M	ENSEN BEAT 100 INTEGRATED AMP MINT IISSON CYRUS I INTEGRATED AMP MINT	£395 £130	S/H S/H	£600 £250
A	AIM 32.55 HICAP 110 AMP MINT UDIO RESEARCH SP15 MK2 PREAMP BALANCED MINT	£695 £2995	S/H S/H	£1350 £6608
M	PPOGEE DAX ELECTRONIC CROSSOVER MINT USICAL FIDELITY MVX MK2 PREAMP MINT	£1495 £1095	S/H S/H	£4400 £2500
PI P/	RO PASSION BALANCED PASSIVE PREAMP MINT ASSION PASSIVE PREAMP MINT	£395 £395	S/H S/H	£695 £620
M	EITNER PAGEPHONO & LINE PRE RC & STR50 AMP HRESHOLD FET 10E LINE & FET10 PHONO BAL MINT	£1295 £2495	S/H S/H	£3495 £4920
A	UDIO RESEARCH SP8 MK2 VALVE PREAMP MINT	£1895 £995	S/H S/H	£4250 £2000
PI	UDIO RESEARCH SP 14 VALVE PREAMP MINT RIMARE 201P PHONO & LINE PREAMP & PAIR OF 202	£1595	S/H	£3298
M SI	ONO POWER AMPS ALL IN STAINLESS UPERB BALANCED FULL WARRANTY	E7495	E/D	£13800
M	UDIO RESEARCH DIIS MK2 VALVE AMP MINT USICAL FIDELITY A370 MK2 POWER AMP MINT	E1250 E1395	S/H S/H	£3200 £2500
JA Mi	ADIS JA80MONOS LATEST MINT ARK LEVINSON ML9 POWER AMP MINT	£4495 £1995	S/H S/H	£9912 £3800
W A1	OODSIDE RADFORD MA50 VALVE MONOS MINT TC SCM 50A ACTIVE SPEAKERS & STANDS MINT	£895 £2795	S/H S/H	£3600 £2448 £4497
S1	AGNEPLANAH 2.5R SPEAKERS FOUNDATION	£995	S/H	£2200
KE A1	EF 103/4 MS SPEAKERS BLACK ASH MINT TC SCM 20 SPEAKERS & STANDS ROSEWOOD MINT	£895 £1295	S/H S/H	£1199 £2000
AC	COUSTAT II ELECTROSTATIC SPEAKERS BLACK MINT	£495	S/H	£1095
1	"OODLES OF HIGH END CARTRIDGES AVAILABLE - MANY MORE ITEMS IN STOCK, EFFICIENT SERVICING DEPARTI WELWYN HERTS ALL ITEMS GLARANTEED ALL MANDO CE	HENT WE AP	FLOCATE	
	RING FOR DETAILS AND DEMONSTRATION	- 01438-714	ACCEPTE	.U.
	10.00a.m 7.00p.m., MON - SAT, 10.00a.m 1.00p.m. SUN. I	wobile tel. 08:	31 250985.	



NAIM NAIT 2 (new style) 3 years old, immaculate condition, with box and manual. Recently upgraded to pre/power amps, hence sale £275 ono

Tet: 0171 258 7300 (day) or 0181 464 3969 (eves/weekends)

CR DEVELOPMENTS Kalypso valve amplifier with upgraded Soutek power valves and valve cover I year old £295. Upgrade forces sale. Possible deliver within reasonable distance of Stamford, Lincs. Tel: 01780 641 49

QUAD ELS loudspeakers, bronze £325. Naim Nait 3, MC phono stage £425. £700 for both. Can deliver. Tel: 01202 554 110

WANTED: TRIO/KENWOOD L07D turntable working or not. Also accessories, manuals, packaging etc. Cash waiting. Tel: 01782 680 376

AUDIOLAB 8000C pre amplifier £250; Sugden AU51P amplifier £400; Modsquad Phonodrive MM or MC equalisation stage or stand alone phono only pre-amplifier £275. All equipment boxed in excellent condition.

Tel: 01793 771 286 evenings

MERIDIAN 200 transport and 203 DAC £500 (£1325), as new, unmarked with original boxes and manuals Tel: 01364 72292

LINN LP12 BLACK, Valhalla, Basik Plus, K9, very good condition below average use. Can be heard £325 ono Tel: 0181 840 4699

MILLENIUM STEREO valve amplifier Class AB 25+25 watts. Twin offboard power supply, phono input, 6 months old £240. Connoisseur deck with Hadcock Unipivot arm £30 Tel: 01889 564 021 (Staffordshire)

MERIDIAN 203 DAC7 3 years old. Upgraded by Russ Andrews. Crisp vibrant sound. £195, includes carraige. Hart phono amp 2 box suit MC or Mag £35. Tel: Harold 01952 249 627 (Telford)

WANTED: SAGE AUDIO Supermoss 2 module, also RS2 mains conditioner. Top prices paid. Tel: 01656 725 420 or 724 342

WANTED: NAIM NAC92 preamp also Naim NAP power amp 90. Must be in good condition-used bargain Te: D. Owens 0161 747 5679

PIONEER REFERENCE Series C90/ M90 pre power amp. Ultimate in Hi Fi stereo componant. 200 x 200 w mono-block design in original boxes £695 ono Tel: 0115 929 8301 (Nottingham)

RADFORD WS2 CD Player. True hi end machine fitted with switchable passive control (as standard). Radford SC26 valve pre-amplifier both MM phono stage and line stage, superb sound and reviews. Both in original condition £475 and £900 respectively. Genuine reason for sale. Tel: Mike 01934 518 072

ROKSAN DPI Transport & DAI DAC £900. Linn K20, bi-wired speaker cable 2x5mtrs £50. Denon cassette deck DRM 800 £175. Can demonstrate, all boxed with manuals. Tel: 01293 883 730 evenings

KEF 105/3 Reference speakers walnut finish, boxed, documented, mint condition, transport can be arranged £1150 ono. Tel: 003531 459 1432 (Dublin)

CROFT ENIGMA 'Elite'. Modified by Glen Croft - latest caps, 6 months old, 20 hours use, absolutely mint condition and superb sound. Cost £1600 give away at £850. Tel: 01902 786 818 Mon-Fri after 3pm only please.

LEAK 1950s Troughline mono valve tuner £75. Tripletone valve tuner £50. Nelson Jones Wireless World transistor preset tuner £25. Rogers Ravensbrook tuner £30. All in excellent condition. Tel: 01372 467 264 (Esher)

LEAK STEREO 20 Tuner and pre amp £200 ono. A few un-named valve amps, valves, a few very old speakers etc

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MUSICAL FIDELITY A 100 Class A integrated amplifier, boxed, mint £500 new accept £220. Mission PCM II CD player £600 new accept £200. Naim NAP 160 £200, Can demonstrate

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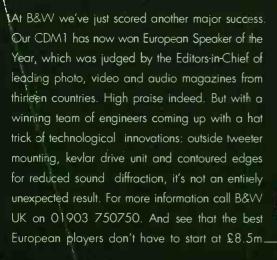
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