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# Hi-Fi WORLD

AUGUST 1994 £2.00

SCOOP!

SOLID WOOD  
UKD CALLAS  
LOUDSPEAKERS

Planes

## AUDIONOTE OTO SE SINGLE-ENDED AMPLIFIER

DIY SUPPLEMENT No. 9  
banded to this issue

NEW -  
AUDIOLAB'S  
8000CDM CD  
TRANSPORT

LEAK TL12  
RESTORING A VINTAGE  
VALVE AMPLIFIER - PART 1

COMPETITION - THREE ROTEL  
AMPLIFIERS WITH MATCHING  
TDL LOUDSPEAKERS

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Fax: (0222) 794267

The logo for dpa Digital Ltd., consisting of the lowercase letters 'd', 'p', and 'a' in a stylized, rounded font.

A circular logo with horizontal lines, containing the text 'dx 128 processor'.

dpa

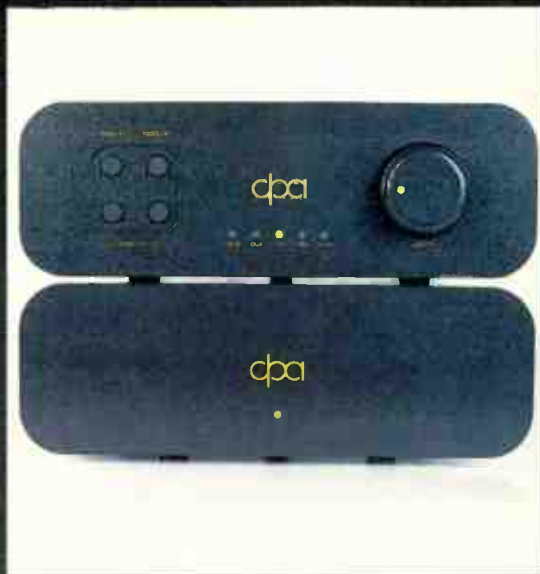
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Warrington.  
Tel: 0925 828009

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## Oxford Audio Consultants

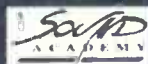
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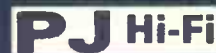
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42 St. Andrews Street,  
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Northern Ireland.  
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## KJ WEST ONE

26 New Cavendish  
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# AT OUR KEY DEALERS

## dpa digital ltd

Unit 7, Willowbrook Technical Units,  
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Phone: 0222 795621 Fax: 0222 794267



Cover Photograph by  
Paul Hartley Studio 071-482 3768

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Editor  
**Noel Keywood**

Assistant Editor  
**Dominic Baker**

Production Editor  
**Ferewini T. Michael**

General Manager  
**Mark Winfield**

Marketing Manager  
**Richard Johnson**

Advertising Director  
**Caroline Knott**  
Advertising Tel: 071-266 8969

Advertising Executive  
**Amanda Sweeney**

Design Engineer  
**Andy Grove**

Technical Assistant  
**Nick Lucas**

Contributors  
**Eric Braithwaite**  
**Richard Brice**  
**Giovanni Dadomo**  
**Peter Herring**  
**Simon Hopkins**  
**Dominic Todd**

Cartoonist  
**Freddy Ahmet**

Distributed by:  
COMAG, Tavistock Road, West  
Drayton, Middlesex, UB7 7QE  
Tel: 0693 44403

Origination by:  
Aldford, Lancing,  
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Fairwood Industrial Park,  
Aldford, Kent, TN13 2FB  
Tel: 0733 627042

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Hi-Fi World is pleased to  
announce "ABC Membership  
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first audit certificate for the  
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We hope to publish a  
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October '94 issue.



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and  
CANADIAN  
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**DIY SUPPLEMENT**

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**ADVANCED 3-WAY LOUDSPEAKER**

Build KLS3, our advanced carbon-fibre cone three-way loudspeaker, designed by Dominic Baker.



**HIGH QUALITY HEADPHONE AMPLIFIER**

Richard Brice gives full details on his single-ended Class A headphone amplifier.

**BOOK REVIEWS**

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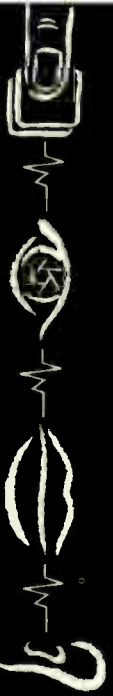
**COMPETITION** 66

Again we've upped the odds on winning, offering no fewer than three TDL/Rotel systems this month, from huge RTL3s with a Rotel pre/power amp, downward.

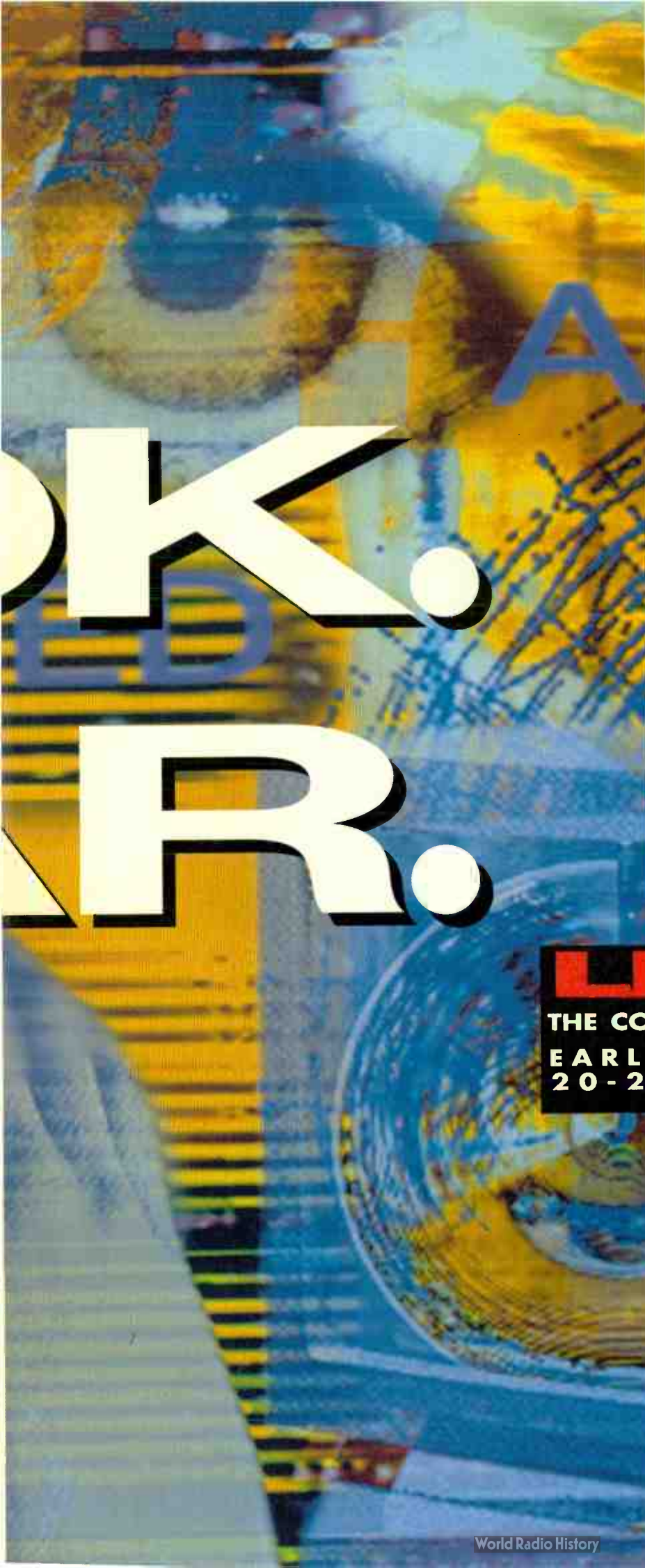


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# THE WORLD



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Europe House, World Trade Centre,  
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## PROAC UPGRADE RESPONSE ONE S

ProAc have upgraded the performance of their miniature Response One S loudspeaker. The principle modification is the use of a new bass/midrange driver, having a transparent cone and offering greater rigidity and improved damping. Along with a re-designed crossover this is said to give the Response One S a more extended and powerful bass along with a cleaner and more open midrange.

The modification has been incorporated into all Response One S loudspeakers since January '94; older models can be updated by your local dealer for £150, or by ProAc if returned to the following address:

Celef Audio/ProAc  
Highpoint House,  
Riding Rd,  
Buckingham Road Ind. Est.,  
Brackley,  
Northants. NN13 1AA  
Enquiries Tel: 081 953 8933



## OVAL GOLD DOME TWEETER FROM AUDAX

Audax have recently revealed a new tweeter fitted with an oval gold dome. But, unlike conventional tweeters, it has no voice coil and no magnet. The tweeter works on the piezoelectric principle, using a piezoelectric polymer film coated either side with pure gold. The polarised film is clamped to an elliptical ring with a sealed and pressurised chamber behind it. It is supplied with a matching transformer and is suitable for systems having a sensitivity between 86dB and 94dB.

The new gold dome has a moving mass around twenty times lighter than a conventional 20mm dome, which gives the new unit the transient clarity of the best electrostatic units, along with the power handling of a conventional driver. We hope to have one in for test for the next supplement.

Harman Audio UK  
Unit 2,  
Borehamwood,  
Herts. WD6 5PZ  
Tel: 081 207 5050



## KAR'S AFFORDABLE FLOORSTANDER

Keswick Audio Research have recently launched a new floorstander, the Volante. Using a 6.5inch, silicon damped paper bass unit, designed in-house, and a 19mm polymer dome tweeter, the Volante claims a high 90dB sensitivity, making them suitable for low power valve and transistor amplifiers alike.

The Volantes are available in a choice of finishes: satin black lacquer, mahogany and dark or light cherry, all for a very reasonable £499.

Keswick Audio Research  
54 Coach Rd,  
Outwood,  
Wakefield,  
W. Yorks.  
WF1 3EX  
Tel: 0924 870606





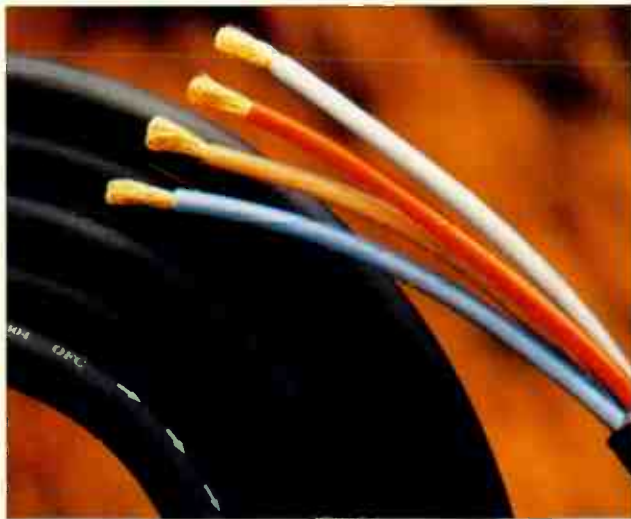
## SONY LAUNCH NEW RANGE

Following the spring trade shows, Sony will be introducing a new range of hi-fi components which should be entering the shops as you read this. Following on with the success of their 'UK sound' components, Sony have introduced a bigger range for this year. These include a MOSFET integrated amplifier - TAF244E £199.99; two other UK design concept amps.; a tuner with RDS, the STS505ES £249.99; four cassette decks, three with Dolby S including a twin deck, ranging from £179.99 to £299.99 and two CD players - CDP915E at £249.99 and CDP715E at £299.99.

One of the most interesting products though, or worrying if you're a manufacturer, that will be appearing is the MHC-7900AV mini system. Although equipped for AV, minute in size and covered in flashing lights, it does have something appealing to offer the audiophile. The loudspeakers use an electrostatic mid and treble unit - watch out Quad! But as if that wasn't enough for a mini-system, their bass units use motional feedback - watch out Tannoy! We are eager to hear how good they are.



Sony UK  
Sony House,  
South Street,  
Staines,  
Middlesex.  
TW18 4PF  
Tel: 081 784 1144



## NEW CABLES FROM PATH

Latest additions to the IXOS range of cables are two Superstrand cables, 603 and 604. 603 is made up from 336 x 0.1mm 99.999% pure copper strands and 604 a bi-wire version using 630 strands of 0.07mm copper for the treble and 15 x 0.15mm strands for the bass, again 99.999% purity copper is used throughout.

Path Group  
Unit 2,  
Desborough Industrial Park,  
Desborough Park Rd,  
High Wycombe,  
Bucks.  
HP12 3BG  
Tel: 0494 441736

## VITAVOX SHOW OFF THEIR RANGE

Vitavox have produced a new catalogue detailing their extensive range of drive units and microphones. The range includes normal cone loudspeakers for music reproduction, horn loudspeakers, pressure drivers, underwater loudspeakers, microphones and much more. For a catalogue contact:

Vitavox Division  
Secomak Ltd,  
Honey Pot Lane,  
Stanmore,  
Middlesex.  
HA7 1BE  
Tel: 081 952 5566

## PHILIPS MOVE AUDIO PRODUCTION TO SINGAPORE

Philips recently moved the remainder of their Business Audio Group to Singapore. "That's where all the activity is these days", said Angelique Paulussen from their Dutch press office. "The group is now headed by a Singaporean, but it has many European staff too". Only 20 people dealing with audio remain at Holland's European headquarters in Eindhoven, Holland. All those responsible for product strategy, conceptualisation, design, development and production are now sitting close to the equator where the commercial, as well as the local climate is somewhat hotter than anything they've been used to.

Production is now carried out at various factories scattered throughout Asia, but especially in Malaysia. This leaves only the most fundamental audio research in Holland (and Belgium). Of 6000 people employed worldwide in audio design, development and manufacture, a majority are now located in the East.



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The choice of dealer should be given the same care and attention as is given to your choice of equipment, so that you may receive the kind of quality service and advice that compliments equipment of the same standard. The type of service you ultimately receive will reflect on your overall enjoyment of the product. A long-term association with a professional dealer has real benefits and will serve as your personal contact for information and advice on the Manufacturers latest Innovations

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- MANCHESTER 50/52 Deansgate. Tel: **061-832 1600**



## LOUDSPEAKER PYRAMID

Using Bandor drive units, and available in either active or passive form, the APEX100 is a new pyramid shaped loudspeaker from Questech Systems. The cabinet is sealed (infinite baffle), with an internal volume of around 48litres and a standard finish of oiled American walnut.

The APEX100s are available with a standard passive crossover which allows for bi-wiring or a fully active crossover. The model shown has an extra tweeter fitted which improves power handling.

Questech also stock a range of loudspeaker components for the enthusiast, including inductors, polypropylene capacitors and hardware.



**Questech Systems**  
2 Wheatsheaf Way,  
Linton,  
Cams.  
CB1 6XB  
Tel: 0223 891091

## A NEW DIRECTION FOR KEF

KEF Audio have appointed a new Managing Director, Ray Lepper. Ray has had a long association with KEF, working as president of Craftwise in America and more recently as Managing Director of KEF Electronics of America. Ray took over from existing Director Frank DiGirolamo on 20th May '94.

**KEF Audio**  
Eccleston Rd,  
Tovil,  
Maidstone,  
Kent.  
ME15 6QP  
Tel: 0622 672261

## MATSUSHITA ANNOUNCES PROFIT FALL

Matsushita, one of the world's largest electronics companies and owner of the Technics and Panasonic brand names, announced a pre-tax profit fall of 21% up to the year end of March 1994. However, since the final figure was no less than £817million, perhaps this was not too worrying for them. It may not match British Telecom's £2.3billion, nor Marks & Spencer's £850m, to put the figures into context, but it is well ahead of apparent competitors like Philips, for example. A large slice of income and profit came from the success of Jurassic Park, produced by MCA, whom Matsushita bought a while back to get into software production. Audio sales in Japan are stagnant.

## PIONEER ANNOUNCE PROFIT FALL

Pioneer suffered a whopping 39% fall in profit, down to £42million at year end March 1994. Product sales fell due to the high Yen reducing exports and slack home demand, Pioneer said.

## A MINI WITH STYLE

Denon have recently introduced a new mini component system, the D-F10. It is aimed at the kind of person who appreciates high quality sound, but isn't prepared to turn over their front room to get it. It is elegantly styled and comes complete with remote control, but unlike many of the Japanese midi systems, each of the components can be purchased separately. The basic system comprises CD player and amplifier which retails for £499, the full system including cassette deck and tuner £999 and Denon's own UK design 'speakers are available for £150 extra.

**Hayden Labs.**  
Chiltern Hill,  
Chalfont St. Peter,  
Gerrards Cross,  
Bucks. SL9 9UG  
Tel: 0753 888447



## JVC ANNOUNCE REDUCED LOSS

JVC announced a net loss of £125million for the year ending March 1994. Although this is the third year in which the company have made a loss, it is less than half last year's result and the company is optimistic about the future, expecting to turn a profit over next year's trading. Matsushita (Technics & Panasonic), which owns 52.4% of JVC, will be sending in a new president all the same. Again, stagnant home sales and exports hit by the strong Yen are to blame, the company said.

## THORN EMI PROFITS RISE

Music sales are in good shape at Thorn-EMI, Colin Southgate, managing director said recently. Profits have risen 22% to hit £382.4million. Much of this was contributed to by music sales, which rose by no less than 25%. As a growing strength in the music industry, Thorn is divesting itself of other activities to be able to concentrate better on what it now sees as its core business. This includes the sale of Thorn lighting.

The company's HMV record store chain also experienced an increase in profit to £6.1million, also enjoying a 25% increase in sales. However, with a turnover of no less than £404million, profits here look meagre, so there would appear to be plenty of room for improvement.

*analogue replay*

Project  
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Townsend  
Wilson Benesch  
Basis  
Pink Triangle  
SME  
Sumiko  
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Transfiguration

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Pierre Lurne  
Micromega  
Counterpoint  
Mark Levinson  
Audio Alchemy  
Pink Triangle

*valve amplification*

Audio Innovation  
Trilogy  
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Lectron  
Conrad Johnson  
Lumley Reference  
C.A.T  
Copland  
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*solid state amplification*

Rotel  
Aura  
Jeff Rowland

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Primare  
Mark Levinson**

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Proac  
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Audionote  
SD Acoustics  
Impulse  
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Framworks  
Leider**

*audio-visual*

**Harman  
Lexicon  
JBL**



## Integrating the Notes

Noel Keywood finds  
Audionote's OTO single-  
ended integrated valve  
amplifier holds the music  
together rather well.

The gun's chamber sounded close - very close. It spun and the firing mechanism gave a resounding crack which echoed around the room. It was a small thing, a sound effect, but it sounded very real; at this point I suddenly became acutely aware that I was listening to an exceptionally good single-ended amplifier. When events seem to hang in the room, to rebound off the walls, taking over the room completely, the magic of a single-ended amplifier is at work.

I hadn't put on No Name on the Bullet to listen to a spinning chamber; I'd put it on casually just to see how the OTO SE would handle something from CD that might be anathema to it - the heavy bass, searing treble and thoroughly synthesised effects of Language Barrier. Could the OTO handle Robbie Shakespeare's rumbling bass lines, I wondered, or would it wilt, producing a pale interpretation; would the hard, synthesised 'hand claps' on this CD be gently, euphonically smoothed over? This sort of music was never meant for an 8watt amplifier. The menace of the gun was unexpected, forcefully underlining the fact that a good single-ended amplifier can sound almost too real.

Apart from the spectacular way the SE will invasively throw an event into a room, a trick it manages with vocalists as well as spinning gun chambers most

listeners will be glad to know, it also has more than enough muscle to deliver fulsome deep bass with an adroitness that belies its paper specification. Hard treble transients weren't gently smothered either and orchestral climaxes filled the room with little sign of strain; the OTO came over as an amplifier with apparently unlimited power reserves - it has a very big sound.

The traditional strengths of a good single-ended amplifier are primarily superb resolution of timbral colour and vividly realistic image construction. Sweet, easy treble is another plus point and the OTO SE had all of these properties in full measure. Simpler purer recordings than Language Barrier show up these strengths most clearly. The sweet resonance of the guitar strings at the start of All That You Have Is Your Soul showed just how much vibrancy and colour exists in Tracey Chapman's acoustic guitar as she carefully lays out the simple introduction to this song. The low, gruff tones of her voice seemed wonderfully close and real, echoes within the studio around her adding to create a breathtakingly intimate perspective.

With this sort of material the OTO SE seems unduly quiet in itself too; there's no hiss or hum, but also no mush or modulation noise. This deeply quiet background works to bring a wonderful

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sense of dynamic range to classical music in particular: subdued passages in Rachmaninov's Piano Concerto No 2 sounded sweet and clear; they didn't appear to get lost within that strange something that seems to pollute solid-state at low levels, forcing Ashkenazy's delicate touch to fight its way through a sea of dullness and haziness. By conveying such low level delicacies with tactile clarity, crescendos sweep past with unstrained majesty; there's no need to jump for the volume control. The OTO remained smooth and pure at these moments, keeping first and second strings clearly separate, for example. In fact, it handled every situation with aplomb, bringing a silkiness to strings, yet giving them fine delineation too, imparting seismic power to kettle drum, yet a sweet ring to triangle.

I got very similar results from LP. If anything, the OTO SE had heavier but very clean bass through this input, but it provided the same liquid sound from LP as the EAR834P phono preamp, both using valve amplification. I have to say that with a Goldring 1042 MM cartridge in an SME312 12in arm together with a Garrard 401 on a Martin Bastin Maxplank plinth, LP easily outperformed CD in terms of sound quality, something the OTO SE's all-valve phono stage contributes towards. This is definitely an amp for vinyl lovers. It produces very little hiss with high output MMs and will even accept high-ish output MC's like the new Ortofon MC10 Supreme, for example.

Regular readers will know that I can be counted as a complete believer in single-ended amplifiers. I've heard quite a few and, of course, we have our own in-

house designs. As a listening experience, good ones are startling - and the OTO SE is a very good one. All the same, they do have drawbacks.

Amplifiers like this need to be paired with loudspeakers that go loud with little power and present a very uniform load to an amplifier as well. Since such speakers do not exist commercially, we've designed two of our own so far and I used the latest, KLS3 (described in our Supplement this month), with OTO SE.

Bear in mind this qualification. OTO SE is more speaker sensitive than conventional amplifiers and needs to be partnered with care. Hopefully, dealers will be able to tackle this problem, advised by Audionote. But even with the high sensitivity of our own KLS3 I was still careful not to play it too loud. This is not an amplifier for any old loudspeaker, nor for a big room, or headbangers.

Audionote have, all the same, packaged the amplifier to make it look as conventional as possible. The front panel is high because it hides valves and, of course, the inevitable bevy of transformers needed to keep them working. Inside lie Audionote's own modern paper-in-oil dielectric capacitors in critical positions for optimum sound quality, such is the degree of speciality of design. This is an all-out audiophile's amplifier, for the fully paid up believer, yet it has a normal looking sheet metal case (non-magnetic aluminium in fact), is listable and will just slide into a standard equipment rack.

There's a balance control, CD and Tuner inputs, Tape IN/OUT and a Phono input. The phono amp. is an all-valve design too; valve amp phono stages are commonly solid-state, to minimise hiss.

Audionote fit the usual IEC mains socket at rear, plus a line of six speaker sockets that between them give 4 $\Omega$  and 8 $\Omega$  output options.

Switch on and a dull red indicator on the front panel lights up. There's no thump, hiss or hum to be heard from the speakers. In spite of its unusual circuit topology, the OTO behaves like a good valve amp; music fades in and out slowly at switch on and off.

Anyone who values breathtakingly close vocals, super smooth strings without hardness or screech and a generally fulsome and relaxing sound is likely to be entranced. Classical music can benefit greatly; so can rock, providing super-tight funky bass lines are not top of the listening agenda. In my case, the OTO SE handled bass lines very well, but that was because the loudspeaker I used was well damped in itself. With a lightly damped speaker, the OTO will not exercise much control and rock fans are likely to protest.

So the OTO SE is a sensitive and specialised amplifier. Properly matched to good loudspeakers, however, and used within its limited power output (which I didn't find a problem, but I don't play loud) it offers a superb listening experience, in my view easily justifying its price which, by esoteric hi-fi standards, is relatively modest.

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## MEASURED PERFORMANCE

Single-ended valve amps produce significant amounts of distortion, especially as they approach full output. Since this is never very high - 20-30watts at most - even at low levels distortion is not insignificant. With the OTO it measured 0.5% at 1watt, most of it second harmonic. At full output (8watts) the figure increased to 2.2%, comprising equal amounts of second and third harmonic. Whilst the amp is run within its output limits only second harmonic distortion will be generated at typical average music levels, higher harmonics affecting short term peaks. In my view, the 0.5% figure is about as much as it is wise to tolerate at normal music levels, but in use the OTO SE, contrary to what these figures might suggest, sounded clean and relaxed, as do most valve amplifiers.

Frequency response extended downwards well, reaching 8Hz. However, high frequencies rolled off a little early, reaching -1dB at 20kHz, although this is no different or worse than either an Aura VA-50 nor a Linn Majik-I, both solid state. Noise was low, in view of the extremely high input sensitivity of 45mV.

The moving magnet disc stage (47k $\Omega$ ), was sensitive enough at 0.38mV for moving coils, yet it has a very high overload ceiling of 150mV, so it can be used with both MMs and MCs. It was quiet (with MM) and has a warp filter, which is wise, preventing subsonic warp signals saturating (magnetic overload) the output transformers, something that happens at just a few watts below 10Hz or so. Equalisation was accurate enough, but high frequency response reaches just 17kHz (-1dB). Since many cartridges peak up by a few dB around 18kHz, this isn't such a bad thing.

Single-ended amplifiers can have a magic sound, even though they don't measure so well. In this respect, the OTO SE differs little from the norm. It is, however, very flexible, with a well engineered disc stage. **NK**

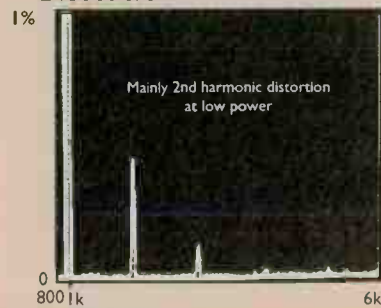
## TEST RESULTS

Power	8watts
CD/tuner/aux.	
Frequency response	8Hz-20kHz
Separation	65dB

Noise	-82dB
Distortion	0.5%
Sensitivity	45mV
dc offset	none

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Frequency response	60Hz-17kHz
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Noise	-54dB
Distortion	0.5%
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Overload	150mV

## Distortion



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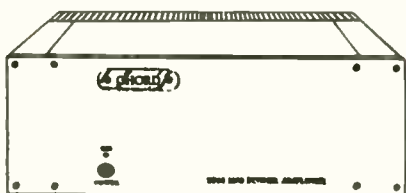
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**H**ewn from solid Walnut, the Callas loudspeakers quite literally provide a scent of esoterica. They're an Italian thoroughbred, with an apparent history of craftsmanship behind them. If told that the wood was painstakingly hand carved and finished over a period of months, you wouldn't

disbelieve it, such is the quality of their finish. It has a rough, oily texture, the roughness I suspect being deliberate to emphasise the fact that humans, not machines, crafted these speakers. And why not? At £850 for a 'speaker not much bigger than a budget bookshelf model, you need as many enticing

features as possible to lure potential customers. Few will complain; I certainly appreciated the dense, woody feel of the Callas.

Fortunately, these speakers are not sheep in wolves' clothing. Removing the grilles revealed two high quality Focal drive units, neatly rebated into the baffle.

There is a less expensive (£750) version of the Callas which uses Wharfedale drive units and a mahogany finish.

The tweeter is instantly recognisable from its inverted-dome Kevlar diaphragm. This has the advantage of providing slightly narrowed, but even dispersion. It reduces the amount of treble hitting the walls and ceiling, whose destructive reflections result in a loss of focus. The Tonigen ribbon tweeter is another example of a narrow (vertical) dispersion tweeter, this unit being well known for its superb imaging properties and clean, precise treble.

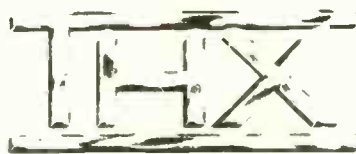
The bass unit is a similar size to the KEF B110 used in an LS3/5a, but has a chunky, cast chassis. Its cone is made from sturdy polypropylene fitted with a supple rubber surround, so I'd expect fairly punchy and solid bass. Sitting in the centre of the cone is the dust cap, which has an interesting shape, similar to that of a hazelnut whirl. This is a dual voice coil driver which, with some clever crossover engineering, can be made to produce solid, deep bass from a relatively small cabinet volume.

The crossover itself is a high quality affair. Close tolerance polypropylene capacitors and air cored inductors are used throughout to minimise performance variations between samples. Here, another advantage of the inverted dome is put to use. Generally, any reasonably sized bass unit starts to break up around 3-4kHz, resulting in roughness in the

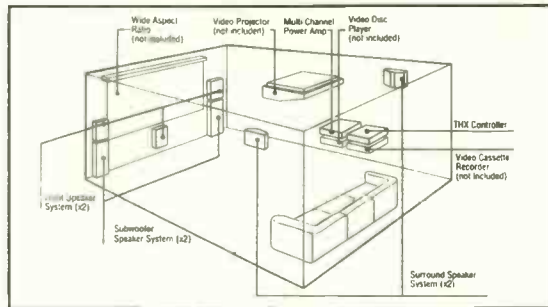
# From the Wood

**Maria, Maria . . . Dominic Baker meets UKD's real wood Callas loudspeakers.**





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upper midrange. The inverted dome tweeter extends further down than most, allowing the crossover point to be set at a lower than usual 2kHz. This means that the bass unit is rolled off long

handles. The dry, crisp, fast sound of the tweeter was not matching the warm sound of the bass midrange unit too well, something a low crossover point emphasises.

get enough of a central image for performances to become reasonably convincing. Having said this, the fantastic ambience and stage depth these speakers provided from good recordings more than made up for any weakness in this area. They give the listener a very rewarding insight into the music and the manner in which it was recorded.

The Callas loudspeakers offer a winning combination. They are beautifully finished and, additionally, use high quality drive units which deliver an open and detailed sound. They measure well too, giving a basically accurate portrayal of the tonal balance of a piece of music. I found them to be a lovely package ●

*“ The Callas loudspeakers offer a winning combination. They are beautifully finished and, additionally, use high quality drive units which deliver an open and detailed sound. ”*

before it starts to break up, hopefully resulting in a cleaner, smoother mid-band.

Although the internal cabinet volume of the Callas is very small and the bass unit a mere four inches across, it produces weighty and powerful bass, making it ideal for those with a small listening room. The polypropylene cone adds some colouration to the sound, but it's a pleasant one, adding some richness and warmth which turns the sometimes hard and dry presentation of CD into a more amenable experience. The bass has a sweet tone too, following bass lines with vigour and in a tuneful manner.

The dry kick drum on Grant Lee Buffalo's country style acoustic set had plenty of atmosphere and detail to it; the initial impact triggered from the foot pedal and the following echo from the studio was clearly evident. This album also highlighted the superb qualities of the treble unit. It was exceptionally clear, layers of fine detail appearing that helped toward a vivid portrayal of the upper harmonic structure of a steel-strung acoustic guitar and the bright metallic chime of cymbals.

Grant Lee Philips' gruff vocals were also clean and well projected - as were Courtney Love's on 'Miss World'. The midband I found was very smooth; the dense, inert cabinets also kept these speakers free from boxiness, allowing the drivers to display their fine properties. The only gripe I have about the midrange is that female vocals could lose a little body, due to some emphasis of their upper registers. Suzanne Vega, for example, who has a dry, hollow voice could become even thinner, losing power. Strings too, suffered from this thinning effect, becoming too reedy, although this was less immediately evident.

I suspect that this is due to a combination of things. Firstly, the lower-than-usual crossover point puts vocals very close to this region. I could clearly hear them coming from the tweeter, showing just how much information it

The Callas produced a large scale sound stage even in a small room, with fine stereo separation. By toeing them in a little further than normal, I managed to

**CALLAS** **£850**  
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**MEASURED PERFORMANCE**

UK Distribution made a good choice when they chose to import the Callas loudspeaker. They are beautifully finished in real wood, and well engineered too. The frequency response plot below shows a very smooth midrange and treble with just the slightest dip between 5-7kHz and a slightly raised midrange at lower frequencies. Neither of these features are detrimental though; the rise in the midrange will push detail forwards, giving them a lively sound, but the dip between 5-7kHz should ensure they don't become too sharp.

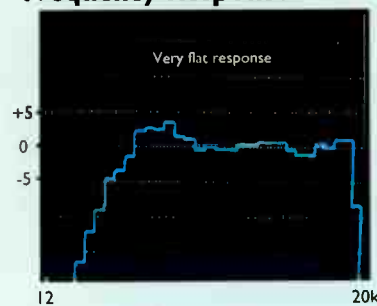
In the bass, the Callas has a subtle lift that will add power and fullness to lower registers, but they may boom if used too close to a rear wall. If you do need to use them in near-wall position, I'd suggest lightly stuffing the rear firing ports with foam; this limits the output from the port and will clean up the bass.

Surprisingly for a quality miniature, the Callas are above average sensitivity. I measured a healthy 87dB at 1m for a nominal watt (2.8V) of pink noise. Budget miniatures need to be sensitive to enable them to be used with low powered budget amplifiers, but more expensive quality designs commonly trade sensitivity for a little extra bass, in the expectation that partnering amplifiers will be adequately powerful.

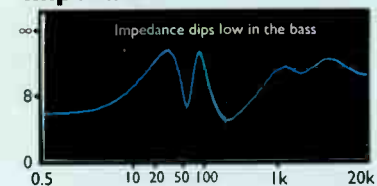
An overall impedance of 7.8Ω means that the Callas will need around half as much current again as most British loudspeakers, which tend to hover around the 10-12Ω area. The overall impedance is dragged down by very low impedance in the bass, around 3.5Ω. This will demand current from an amplifier but most modern solid-state amplifiers should be able to cope.

Providing a strong solid-state power amplifier is used, the Callas should be capable of very good results. Their flat response will give them a good overall tonal balance. But because of their low impedance in the bass I'd recommend a quality 50watter for best results. **DB**

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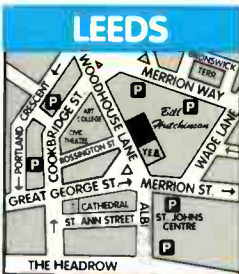


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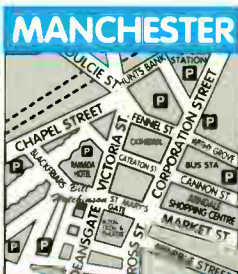
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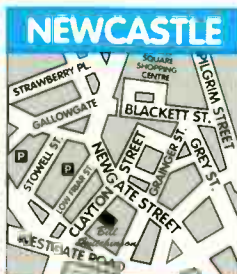
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ROTEL

Suddenly, our choice of really good CD transports is increasing. Arcam started the ball rolling some years ago with the sombre looking, but clean sounding Delta 170 transport, a unit I used happily for a year or more. It survived all the horrors of hi-fi reviewing, from being used as the filling in a technological jam sandwich - things on top, things below - in a picture shoot, to becoming an involuntary measure of gravitational force. (Newton was lucky to be around when the only things that dropped on your head were apples.)

Then Micromega demonstrated the delights of Philips' rare CDM-9 Pro mechanism to us - we were convinced. Faxes were sent to various obscure factories in Europe: please can you supply CDM-9 Pro for Hi-Fi World's CD transport?

Opening my cupboard marked Euphemisms, I find the word 'entertaining' as one most suited to describing the antics of Philips' Modules division. In the end we admitted defeat and gave up. But we did, in the process, find out a bit about the mechanism that now resides in both

Mission's new transport, reviewed with their DAC in our July issue, and selected for use in Audiolab's 8000CDM Compact Disc Transport, reviewed here. Now there are three good quality, UK-made transports widely available in Britain, from Arcam, Mission and, now, Audiolab

Anyone using CDM-9 Pro has our admiration. Both in their tenacity at dealing with Philips, the world's dottiest C.E. company, and in their belief that it is worth it just to get hold of this transport. Pro is a version of CDM-9 whose genesis we know nothing about and whose

# ELITE TRANSPORT

**Audiolab join Mission and Micromega in using the specialised Philips CDM-9 Pro CD transport mechanism in their new 8000CDM transport. Noel Keywood was eager to listen.**



existence was unknown to humankind until it popped up in a Micromega. This sort of obscurity reminds me of a long research paper I once spotted in an AES Journal on the behaviour of a circular electrostatic membrane - meaning a Quad ESL-63 - written by Philips Research Laboratories. Philips just do these things, without telling anybody and often without any commercial spin-off, it seems.

CDM-9 Pro has a Hall effect motor with improved speed control over the standard unit. For rigidity of structure and freedom from vibration, it is built on a machined steel base plate that sits on a suspension system. The laser uses a glass lens in place of a plastic one, for improved spot focus. Like other companies, Philips supply much of their kit in all-but-complete form - just bolt it into a box and - presto - you're in business. Not CDM-9 Pro. If you want this one not only do you have to negotiate your way through Philips' labyrinthine commercial channels to get hold of it, but you must also design all the control circuits and operating logic.

the CDM-9 Pro transport mechanism - the bit that spins the frisbee and swings the laser. It is housed in a wide case (44.5cms) that just slots into a typical equipment rack (48cms max) and there's considerable depth too (33cms), but height is low at 7.4cms, giving the slimline appearance that characterises Audiolab products. The case is solidly built, feeling heavy and rigid. The disc drawer slides smoothly; it uses the usual Philips tray finished in grey Nextel. Audiolab use their own green liquid crystal display panel which lacks the contrast of LED displays, but is not deficient in legibility; I could read the large numerals of the time and track readouts from 18ft away.

As expected from the meticulous approach that Audiolab bring to product design, the 8000CDM has a wide range of facilities, not all of them found on other players. The full contents of a disc can be read any time during play as a reminder, as well as elapsed and remaining time of a track playing. Total remaining time can be read too, useful when taping. There are

have emphasised other features, like full Index scanning.

The rear panel carries the normal 75Ω electrical output, but via a BNC socket instead of the usual phono. A gold plated adaptor is included as a standard supplied item. A standard optical output is fitted too, as is a fully balanced AES/EBU output. This is preferred by studios, since it hum cancels when long lines are used and it has a carefully defined transmission, line and termination impedance (110Ω). Although many users say they now prefer this type of line, Philip Swift of Audiolab felt there was little in it, providing the normal 75Ω line was well engineered in transmission and termination impedance. I did swop between the two in listening tests and could detect no obvious differences, but the lines were very short. Over longer distances the situation may possibly change. The remote control transmitter works on line-of-sight, unlike some.

Since I never programme a CD player the lack of programming was of no concern to me, but the significance of its omission is for potential buyers to decide. I found the 8000CDM easy to use and it's a smooth operator too.

*“ From the harmonies of Londonbeat's Falling in Love Again, to the Berlin Radio Symphony Orchestra's choir on Decca's Carmina Burana, the 8000CDM transport painted a big canvas between the speakers. ”*

Just as well of course. Phil Swift, Audiolab's managing director, felt - like us - that this keeps the messers away. Anyone using CDM-9 Pro must not only be determined to use it, but able to use it too. Philips make products they don't want everyone to buy!

So the new 8000CDM comes with

single and full disc repeat modes, as well as A-B repeat. However, no programming of any sort is available, either on the player or from the remote control. Press, say, 7 on the remote control's keypad and the transport simply plays that track; the keypad cannot enter in a sequence of numbers to be played. Instead, Audiolab

#### SOUND QUALITY

Transports are not meant to have 'a sound'. But they do, for reasons we do and do not understand. Sync-locking is a technically plausible innovation with a hypothetical, and real, it turns out, impact on sound quality. By using one master clock to lock DAC and transport signal processing together, the problem of jitter and inaccurate signal regeneration in the DAC from the conventional SPDIF feed is eliminated. From my experience of living with DPA's sync-locked DACs (PDMI Series 3 especially - a wonderful unit) and, now, with Arcam's sync-locked Black Box 50, I'm convinced of its benefits. This is an aspect of transport sound quality we do understand.

Less easy to understand, but perhaps for the same reasons that sync-locking is effective, is why the transports of budget CD players do not seem to provide the same, clean, tidy sound as dedicated independent transports. In outline theory at least, they should do an equally good job. However, UK manufacturers now tell me that the quality of the digital output signal from mass produced CD players is often poor, being asymmetric, polluted by jitter and distorted by overshoot. This, they say, is where a dedicated transport gives improved results and better sound quality in consequence.

I've outlined these arguments to illustrate a few points. One is that sound quality differences between transports are often subtle and difficult to pin down subjectively. The other is that additional factors, such as interconnects, also affect matters, complicating the situation considerably in some cases.

I assessed the Audiolab 8000CDM



transport against a known quality benchmark, the Arcam Delta 250 transport. First, both were successively played through Audiolab's own 8000DAC, then they were swapped over to play through Arcam's Black Box 50 DAC, with and without sync-locking between the two Arcam units.

With Audiolab's 8000DAC I found the transports had different presentations that became progressively more apparent with time. Generally, the 8000CDM had the better sound staging of the two, throwing up a cohesive panorama of sound between the speakers with consistently stronger centre-stage imaging. From the harmonies of Londonbeat's *Falling in Love Again*, to the Berlin Radio Symphony Orchestra's choir on Decca's *Carmina Burana*,

the 8000CDM transport painted a big canvas between the speakers. In almost direct contrast, Arcam's Delta 250 transport appeared less cohesive, but more dynamic and challenging in its presentation. It brought home both the energy and virtuosity behind Hideko Udagawa's strenuous bowing of violin, elevating it from performance, as the Audiolab would have it, to spectacle. In a similar manner, John Lee Hooker's gravelly vocals were more forward with the Arcam.

My only conclusion here was that a final choice must rest upon taste and expectations. Anyone wanting a smooth, cohesive and mildly laid back presentation with excellent sound staging should choose the Audiolab transport. More challenging dynamics came from the Arcam Delta 250.

Much to my surprise - and consternation - differences were less clear when listening to the transports through Arcam's Black Box 50 DAC, without sync-locking. The Audiolab 8000CDM again produced superb sound staging and the strong dynamics of the Black Box 50 seemed to complement its own qualities extremely well; the two worked together superbly! As I've found before, there's something a little unsettling about the Arcam Delta 250 transport working in conjunction with its own DAC, bizarre as that may seem. And here, I must admit, I am a little lost to describe the effect. It was not obviously more dynamic than the

Audiolab transport, but it was less cohesive, as if individual performers and instruments were issuing forth in a unrelated performances. Changing leads and such like had little influence on this.

However, perhaps this comparison is academic, because nobody would use the Arcam Delta 250 transport with the Black Box 50 without sync-locking - and with

transport alone. I also ran it against a Teac P500 Esoteric and again found differences to be small, the Audiolab surprisingly appearing to possess slightly more forceful lower bass, even though it is difficult to understand how this could be so.

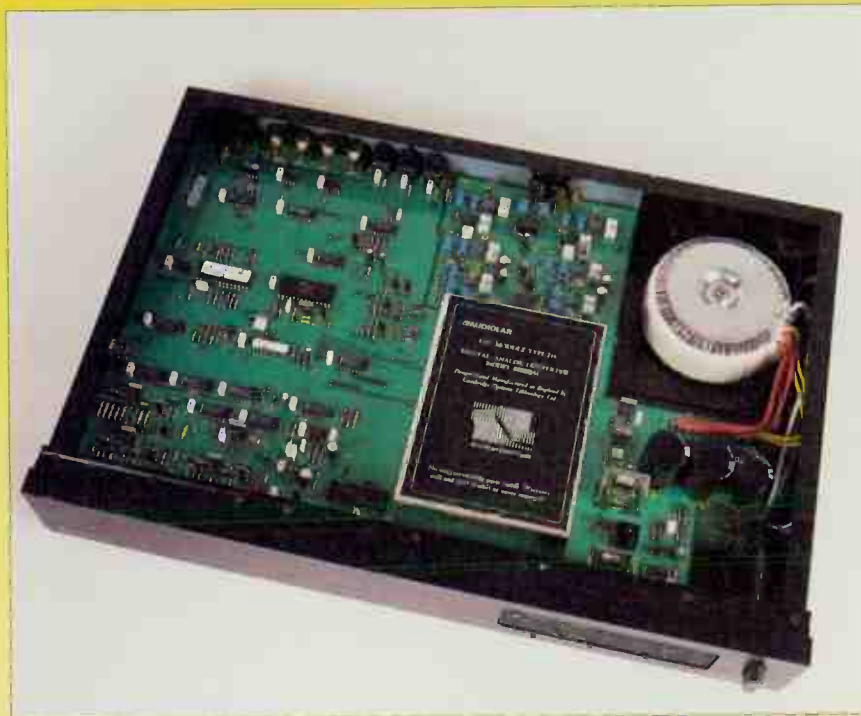
Most people would surely buy the 8000CDM to partner Audiolab's own 8000DAC. In this role it offers a high standard of sound staging with a slightly more distant perspective than others. In conjunction with the 8000DAC - the two will set you back around £2000 - a wide, cohesive sound stage is provided, characterised more by smoothness and fluidity of presentation, than by vivid dynamics and detailing.

The 8000CDM transport is distinguished by a wide array of facilities and a superb remote control. In short, it's another thoughtfully designed, high quality product from Audiolab that manages to combine features with

performance and reliability. No wonder founder Philip Swift pulled it out of a brand new Porsche Carrera 911 when he visited; well designed and built hi-fi still sells ●

**Audiolab 8000CDM** £1249.90

**Cambridge Systems Technology Ltd.,  
Spitfire Close,  
Ermine Business Park,  
Huntingdon,  
Cambs PE18 6XY.  
Tel: 0480-52521**



sync-locking switched in the Arcam combination put it in the bag. Individual fine events, such as the rattle of beans in a gourd shell produced by maracas came over with such pin-sharp clarity and superb delineation in the time domain that non-sync-locked converters sound temporally soft or vague in their leading edge construction by comparison. The rich array of percussive sounds typical of African music came over with fine clarity and crystal sharp precision at the start of 'Adouma', by Angelique Kidjo, for example. Whilst the Audiolab 8000CDM transport laid out the performance beautifully, again showing how composed it was in sound staging, it lacked the event delineation of the sync-locked Delta 250.

But perhaps my comparisons are unrealistic. Would anyone pair an Audiolab 8000CDM transport with an Arcam DAC? I doubt it, but I made this comparison to be sure of the qualities of the



**R**otel have built up quite a reputation over the years for good sounding affordable hi-fi. Although the looks - with the exception of the upper-bracket Michi range - are nothing special, they all share a no-nonsense approach where nothing is wasted on fripperies - and this includes the '930AX tuner. In a year which has seen RDS percolating down the Sony range, even into a clock radio, Rotel has eschewed even that useful accessory, instead offering twenty presets, without any naming function, plus a mono button as the only extra.

But what counts with Rotel is the sound - and this relatively inexpensive tuner sounds very good indeed. It's also less light-weight physically than many rivals, which suggests something a little more serious inside.

A couple of days' listening held no regrets for temporarily depriving myself of vinyl or CD as sources. As listening continued on into the second night, Chabrier's *Espagnole* greeted the close down of Radio 4 before the shipping forecast, so I turned to GLR, finding it handing over to the BBC World Service. And there arose a curiosity, hinted at in the Measured Performance column, which I read afterwards - honest! Switching to mono, even from stereo Jazz FM, the sound has just a degree of extra precision and focus to it. That's not an aural illusion, nor am I talking about imagery, but a small access of additional cleanliness. There is otherwise a degree of blurriness of lateral placement, but it is well within the bounds of the acceptable for a mid-price tuner, let alone one which is only £175. Rotel apologised for a recent price increase. So what? So it's still one of the great bargains.

Focus in itself was well on a par with models in the £300 range, but remarkably free from any minor, let alone major, vices which still often surface even in that bracket. Centrally-placed announcers tended to be a little blurred and slightly broadened, but the Chabrier piece was splendidly wide and realistically expansive. Even a good degree of depth and ambience was present, the orchestral sections seeming precisely placed and tonally very accurate, with none of the upper-midrange accentuation or diminution that has first violins and seconds merging indistinguishably, for example.

In fact the Rotel's tonal accuracy is of a very high order. Listening to some Blue Note jazz recordings on Jazz FM, the real tonal qualities of alto and tenor sax were sublime. By comparison with the Quad FM (much more expensive, remember), there were only two relatively unimportant areas of contention. For double the money, you gain the subtlety of the harmonics of solo instruments in the upper reaches. And the clarity of sound of brushed cymbals, which on the Rotel sounded 'swishy', with more pigs' bristle in the brush than wire, is greater. Even then, however, hard-struck cymbals



## PLAYING

**While Rotel's budget tuner may lack frills,**

### MEASURED PERFORMANCE

The Rotel has a flat audio frequency response to 10kHz, as our analysis shows, but it rolls off a little early, measuring -1dB at 13kHz. A slight peaking exists at 10kHz and this may well add a little brightness to the sound. Stereo separation was high and spurious output of 19kHz and 38kHz low.

Distortion was a little high on the stereo information through the decoder, but not on the mono information. Since centre-stage images figure most strongly in our perceptions I'd expect the low 0.07% mono (i.e. centre image) distortion result to have most effect on the sound, which will be minimal. The 0.3% of second harmonic on stage-left and right will also play a role, albeit a benign one, since most of it was second harmonic distortion, which is subjectively innocuous. So, on balance, the RT-930 should have a clean sound

uncoloured by distortions.

With 1mV or more from the aerial hiss sank to -71dB minimum (full quieting). In this respect the RT-930 is like every other tuner - it needs a strong signal to give best results. This is why an outdoor aerial is so important in most locations.

Selectivity was very high at 82dB and sensitivity quite good at 2µV with mono signals and 32µV with stereo signals. There is no signal strength meter; a 'tuned' display comes on at or above 4µV, a very low threshold. Output measured 600mV, high enough to drive most power amplifiers direct, so this tuner can feed passive preamplifiers.

The RT-930 measures well in all areas. It is a well designed budget tuner.

**NK**





# TUNES

**Eric Braithwaite finds it lacks nothing in thrills.**

rang quite clear and vivid; percussion was excellent: clean and dry, tight and deep. A budget tuner rarely reproduces a whole drumkit with this kind of individual delineation of snares, side-drums and kick-drum, tending to concentrate on the beat rather than what makes it up. The Rotel went down deep without the forward exaggeration that makes, say, the Arcam Alpha 3 attractively but artificially lively. Not that the Rotel isn't lively enough: it holds a beat, grips a rhythm and plays a melody. At least, with the usual caveat about the nastiness of the compressed rock stations which it doesn't enhance.

It has the twin virtues of being both analytical and enjoyable, two things that are sometimes thought of as contradictory. On Jazz FM Billie Holliday sounded packed with emotion; but the recording, should you be distracted by the quality, had a tape-hiss that couldn't be disguised. Listening to news broadcasts, the background hum of some reporters' tape machines emerged with such irritating clarity that it was a relief when the continuity studio came back on line. When Vanessa Feltz on GLR asked a studio guest to 'close up on the mic' to be heard more clearly, the broadcast was probably monitored on a Revox or a Quad, but the engineers would have heard the hollowness they wanted to correct on the Rotel.

No bass boost; no spitting; no hollowness. So is there anything wrong? Frankly, practically nothing apart from a slightly narrower perspective than tuners twice the price bring, and just a smidgin of hollowness in the upper mid-band, about as obvious as a lark's tongue would be by the side of an ox's. At least on FM.

On AM, although Rotel deserve credit for allowing us to listen to Long Wave as well, the RT-930AX stumbles into the usual potholes. It would be less offensive if the FM quality wasn't so spectacularly good, surviving Argo pre-amplifier, a pair of power amplifiers and two different pairs of speakers, each of which individually were between three and ten times its price. I've heard worse AM sections; but a few years back Yamaha's TX-400 did much, much better. AM shares FM's equable and clean temperament, but is very subject to burbles and whines unless the transmission is fairly strong and neighbourly, as Virgin's is for me. Average marks here, only, but then, only Audiolab's 8000T can really be said to make AM listening less than a hi-fi pain in the Beavis and Butthead line these days.

Have I said it already? I'll repeat it anyway. Rotel's RT-930AX is a glowing little bargain. Real quality at a very realistic price ●

**Rotel RT 930 AX** £175  
**Gamepath Ltd.,**  
**25 Heathfield Stacey Bushes,**  
**Milton Keynes,**  
**Bucks. MK12 6HR**  
**Tel: 0908 317707**

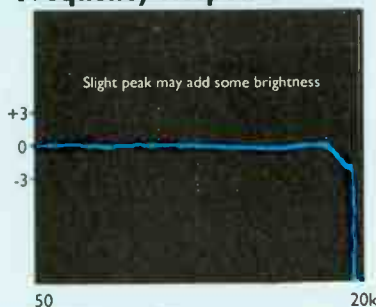
## TUNER TEST RESULTS

Frequency response	3Hz-13kHz
Stereo separation	41dB
Distortion (50% mod.)	0.2%
Hiss (CCIR)	-71dB
Signal for minimum hiss	1mV
Selectivity (at 0.4MHz)	82dB
Sensitivity	
mono	2µV
stereo	32µV
signal strength meter	
'tuned'	4µV

### Distortion



### Frequency Response



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# A LONGER DEFINITION

**Tannoy have placed the D500 in the middle of their Definition range;**

**Dominic Baker and Dominic Todd take up their own positions.**

I've been eagerly awaiting Tannoy's D500s for some time now. For me, they promised to offer the effortless dynamics of the D700s, together with some of the charm of the stand mounting D100s. The D500s are floorstanders, using a similar, but smaller, line up of drive units than the D700s. They have a rich

and classy feel to them, but I must agree with Dominic Todd (who comments at the end of this review) that the black lip around the top detracts from their appearance. Not that this is reason for discounting them as a quality loudspeaker.

These are the third model to join the new Definition series, definition that is,

'speakers in the Definition range, the D500s are about playing music loud, and enjoying it. With this in mind, I selected Inspiral Carpets' cover of 'Saturn 5' and wound up the volume. The strong bass line that beats out the rhythm on this track powered forwards, filling the room and shaking the windows. Even at these

with a capital D for dynamics. The D700s excelled in this area. The kick behind every bass note was enough to pin me to the wall, but as with the D700s some precautions must be taken to get the best from them. From my experiences with other Definition series 'speakers, I decided to measure the 500s first. As I'd suspected, although sensitive they're an awkward load to drive. This presents a few small problems. A powerful amplifier capable of driving low impedance loads is needed, but because Tannoy's dual-concentric units can sound sharp or spitty with some amplifiers a sweet sounding model is needed for best results.

There are few of these around, Sugden's AU41P and Quad's 606 being suitable, but I hang on to my old Deltac 50S for this kind of work. It's only 50watts, but can double its power output into 4ohms, and has an unusually sweet and smooth sound for solid-state. So, with the 50S I began my listening.

With an amplifier that can drive them properly, the D500s are capable of awesome bass. I had to remove the bungs in the ports to lift bass level up so that it would fill my quite large listening room, but the bass remained deep. The 500s haven't quite the same slam as the D700s, but they do seem to have a little more warmth to their presentation, at least in the bass, which makes them less intense over long listening periods.

Even so, they have an incredibly taut and well controlled presentation. As with the other two

kind of levels the D500s are bearable, an apparent lack of compression or distortion giving them a superbly clean sound.

Surprisingly, although having such a powerful presentation, the speakers can be quite subtle when required. They coped well with a variety of female vocals, from Denise Johnson's silky smooth and rich vocal chords on Primal Scream's 'Free', through Tanya Donally's eerily expressive tones on Belly's album Star, to Courtney Love's twisted 'Doll Parts' on Hole's Live Through This. In each case the character and emotion behind vocals was clear, the varying styles of accompanying instruments made plain by the space and atmosphere within which they breathed.

A feature the D500s definitely share with their bigger brother is their ability to convey a full scale sound stage. They image reasonably well too, providing a strong sense of height and depth. Give them a good recording and they'll paint the picture extremely well, especially considering their size; precise imagery is normally the province of smaller stand mounters. So the dual-concentric unit, at least in this application, does very well indeed.

The D500s don't have quite the same awesome dynamic range of the D700s, but they have 90% of it and what they lose in this area is traded for some welcome warmth behind their presentation. With a good amplifier they are capable of producing a very realistic presentation of the music they are fed. They do have quite a different presentation from the norm, though, so I'd strongly recommend a lengthy demonstration before you part with the readies. And remember too, big speakers like these can give quite different results from room to room, so try to get a listen at home.

**Dominic Todd says...**

After the elegant D100s and imposing, yet subtle D700s, I found the D500s rather ungainly. This is due to an unnecessary black ridge around the top of the speaker that clashes with both walnut and rosewood finishes.

Fortunately, Tannoy have been rather more successful with sound quality. Coupled with a well matched Musical Fidelity A1000 and Pioneer PD-S901, the D500s immediately took on the 'big speaker sound' reminiscent of their bigger brothers.

Material from William Burroughs' 'Words of Advice' showed the Tannoys

to have prodigious bass; the dual-concentric unit gave high levels with little strain.

Another dual-concentric strength, that of imaging, was also excellent for such a speaker. William Burroughs sounded suitably morbid, but had superb presence, maintaining his distance from the rest of the mix. The Miles Davies style brass backing was similarly uncompressed, being given the dynamic range it needed.

There was a downside to their dynamic and spacious soundstage, though. Tripping Daisys' 'Blown Away' had rather too forward a balance.

Worse was a clouded upper mid-range that I haven't experienced on a Tannoy Six or D series dual concentric before. This had the effect of congesting the vocals slightly.

*"Give them a good recording and they'll paint the picture extremely well"*

Apache Indian's 'Moving On' demonstrated the D500's effortless dynamics, which seemed at odds with their harshness in the upper midrange. The general effect was engaging though, despite bass notes occasionally hanging around longer than they should. Vocals had fine projection, if occasionally some edginess.

As flawed as the D500s are, they do have their niche. Used in a room of reasonable proportions (to avoid the nasal midrange experienced in smaller rooms), and matched with warm sounding ancillaries, they offer the perfect tonic for a dull system. ●

**D500s** £1470  
**Tannoy Ltd.,**  
**Rosehall Ind. Est.,**  
**Coatbridge,**  
**Strathclyde,**  
**ML5 4TF**  
**Tel: 0236 420199**

**MEASURED PERFORMANCE**

The dual-concentric driver that Tannoy use measured best slightly off axis. This is interesting, since in the past when listening to their dual-concentric drivers I've found them a little sharp when directly facing the listening position, and smoother when firing straight down the room.

The two response plots below show the difference. On axis the response is basically flat, but there is an obvious dip around 4-5kHz. A few degrees off axis, and the dip is starting to fill in quite substantially, which will give a smoother sound with the treble becoming less obvious.

The rest of the response, as I mentioned earlier, is essentially flat with the bass just starting to lift slowly towards the bottom end. I'd expect the D500s to have solid and weighty bass in most rooms.

Like the D700s and D100s, the new D500s are sensitive, producing 90dB sound pressure level for a nominal watt (2.83V) of pink noise measured at 1m. This means that they will go louder than most for the same volume setting. But, like the D700s, they have a crippling impedance, hinted at by their low overall figure of 4.8Ω. It starts low in the bass, around 3Ω and then rises to 35Ω through the midband, finally dipping again to around 6Ω at 20kHz. To drive the D500s properly in the bass, they're going to need a powerful solid state amplifier that can drive low impedance loads well.

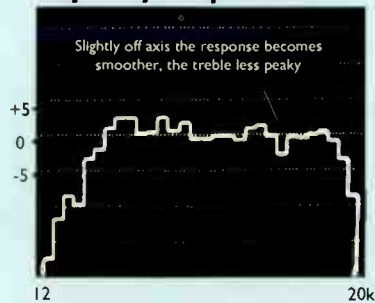
In summary, the D500s have a well mannered frequency response and will sound at their smoothest when firing directly down the room either side of the listener. Like the D700s, they are difficult to drive, needing a powerful solid state amplifier to get the best from them. Most

integrated amplifiers will struggle with them. A high quality independent power amplifier is likely to give best results. **DB**

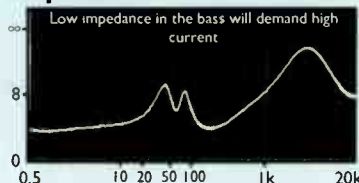
**Frequency Response - on axis**



**Frequency Response - off axis**



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# NATIONAL VINTAGE COMMUNICATIONS FAIR

**Noel Keywood goes in search of vintage audio at this year's NVCF '94, held at the NEC, Birmingham.**

In spite of the title, I didn't drive to Birmingham to pick up an ear trumpet. Not that the Vintage Communications Fair doesn't have them; I saw plenty of gramophone horns - their acoustic cousins - as well as benches full of old radios. No, my quest was for the old hi-fi that's seeping into 'radio meets' these days, due to its steadily increasing popularity. The grapevine had already told me there'd be plenty of it - and there was.

The National Vintage Communications Fair is held in Britain's National Exhibition Centre (NEC for short). It's a one day event that occupies a large hall and casts its net wide. Old radios abound, from 1920s Gecophones through to 1950s Pyes. There are vintage televisions, juke boxes, cine cameras,

telephones - even vintage light bulbs!

Although still very much a 'Crafts' fair, drawing dealers and private collectors alike, all selling from trestle tables, the NVCF is obviously becoming popular. "I travelled up by coach at 4 a.m. this morning, but an American dealer had flown in and beat me to a rare book I was after" a frustrated collector told me. "This fair is very convenient for me" said Freidrich Kammerzelt. "I can fly in straight from Munich - and already I have bought many rare valves and some Leak amplifiers. There are some real bargains here".

The rising popularity of the NVCF was borne out by the jostling crowds, stands with vintage hi-fi attracting a lot of attention, I noticed. There were plenty of



**A stand full of 78s. "People buy them because they can't get the performance on microgroove and also because they like the feel - and some of them use the old gramophones too" proprietor G.J. Howl told me. Tel: 021-556-2434 (Wednesbury, West Midlands).**

Leak and Quad amplifiers, a box of Quad tuners (£10 each as seen), a couple of Garrard 401s loafing around on the floor (£65, £120), a 19 valve Fisher 800C receiver (£250), rare Pye amplifiers (£450) and an even rarer Leak TL 25. "This is the event of the year - you get a

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lot of different people and a meeting of technologies" John Howes, stallholder and organiser of the Audio Jumble, told me.

This aspect of the NVCF had struck me too. I'd never met Len Kelly before, who runs a bookshop in Tiverton, Devon



**Jim Fish of Wilson valves: "Business is excellent; the resurgence in audio amps is staggering. We are exporting right around the world, to South Africa, Canada, Hong Kong - even China." Tel - 0484-654650/420774 (Huddersfield)**

(Tel - 0884-256170) specialising in Broadcasting and Communications books from all periods and parts of the world. He had a wide selection of audio books from the late Donald Aldous' collection, many signed by their authors.

I was taken aback to see a collection of Eddystone radios, having set out recently to find out more about this company (in my teens I built a huge communications receiver, fitting it with an utterly superb Eddystone



**John Howes enjoying the interest. He brought along, amongst many classic audio items, Pye HF25 25watts output power amps. "They're rare - you don't see many around" (£450 restored). Also on display were RCA New Orthophonic power amps, Quad IIs and Quad tuners to dispose of "as seen" at £10 each, plus much more. Tel - 0892-540022 for details on next Audio Jumble.**



**Gary Skeeber of Midland Valve Hi-Fi was showing a fascinating wide range of budget bits and bobs. In the picture are Leak Stereo 30 transistor amplifiers (£2), Leak Troughlines (£30), an early Leak AM tuner (£5) and Tripletone integrats (£8). He had a clearance sale at the end of the day where even these prices were reduced!**

dial and drive whose silky action and weighted spinwheel drive I'll never forget). The collection was from Eddystone themselves, now a part of GEC and still trading "We're aware of our history and we like to show just out of enthusiasm. These days we make FM transmitters for most of the broadcasters", said Chris Pettit, managing director who was looking after the display. "Eddystone Radio was started in Birmingham in 1923 and it is still in Birmingham" he told me, "so we felt we should be here".

Other memories were revived by a collection of fifties record players, including Dansettes. I'd completely forgotten that some time in my teens I'd built a few of these, complete with Mullard 3watt valve amps (single-ended no less) and EMI full range elliptical loudspeakers, just to prove a better sound could be had if the job was done properly (old habits die hard!). "Nobody is interested apart from me it seems" Adrian Parker told me (contact him on 0922-479849). "I've got 300 or so record players at home. Some of the best record players I brought along today have gone already, including a miniature Cossor, an EAR and a Pye Black Box".

An interesting 19-valve Fisher receiver in full working order, plus numerous other items, had been brought up from St Ives, Cornwall by Stan Halfyard, an enthusiast who had taken a stall just to clear his house of unwanted bits and pieces (Tel - 0736-798393). I came across many stalls like his, piled high with hi-fi bric-a-brac, including both restored and original condition items. "Some

people want to have something restored and working, others want originals for the purpose of restoration" one stall holder told me.

With three sizeable restaurants serving this one hall, as well as drinks and snacks trolleys being pushed around through the crowds, the NFC looked to be a fine venue for any show. Organised by Jonathan Hill, author of the Cat's Whisker (well, that's the one on my bookshelf), the NVCF will be held again at the Pavillion in the NEC. It is scheduled for Sunday May 14th 1995. There's now also a "Hobby and Heritage Directory for Collectors of Sound and Vision



**A brace of small Eddystone radios, from the factory museum. For Eddystone User Group, sales, service, spares: Tel: 021-475-223.**

Technology" that accompanies the fair. It lists many of the specialist dealers and clubs around Britain and - I'm very glad to see - in the States too. Price is £3.50, post free from NVCF, 2-4 Brook Street, Bampton, Devon EX16 9LY (tel: 0398-331532).

All enquiries about the show should be directed to this address too. Jonathan Hill told me the NVCF "is a collectors fair, open to anyone who wants a stall, not just dealers". And audio? "We had a lot of enquiries about classic audio this year" he said, "it's becoming a very strong interest these days, so there'll probably be even more audio next year" ●



**Hidden on the floor was a rare Leak TL25A mono power amp. "I'm using it to fish for another" he told me, "its not really for sale, but it's worth around £200".**

**Tel 021-722-2317. Gary Skeeber**



**"We just like clearing out our bits and pieces - all valves and audio only" an enthusiast told me. They included Leak Varislope III and 0.1 pre-amps, plus a Garrard 401.**

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JPW Sonata V Celestion 1 JPW Minim	226.95	273.95	296.95	319.95	335.95
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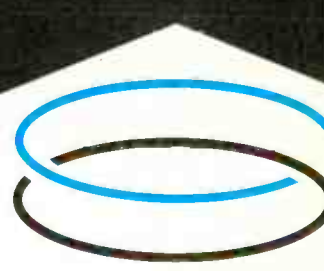
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OVER FOR FULL DETAILS ▶

Slipping in just below the £1000 mark, the Orelle SC-200/SP-150 amplifiers could be a popular choice for audiophiles looking to upgrade their trusty integrated to their first pre/power amplifier. The competition is getting tough between £400-£600, where super-amps such as the Audiolab 8000A, Sugden A21a and many others firmly sit. Similarly priced pre/powers can't match their performance, the cost of the extra box stealing funds from what's placed inside. So, pre/power amplifiers are sliding upwards in price to get away from integrated competition.

However, at this higher price level, pre/power amplifiers are given the design space they need. Instead of skimping and saving to keep the price low, extra goodies are added to persuade buyers that they are superior to the mass of integrations available for a few hundred pounds less.

These goodies are aimed at the audiophile on the Orelle. There's no headphone socket, tone controls, 'speaker switching etc., but inside there is a wealth of quality components. Silver plated switches, Alps volume control, Holco precision resistors in critical places, polypropylene capacitors and van den Hul cable for the 'speaker outputs of the power amplifier.

Externally, these amps look suitably minimalist too. The power amplifier has just a power switch; the pre-amp. adds volume, selector and tape monitor controls to its similarly sparse front panel. The casework is attractively styled; the deep curve of the fascia, the shelf at the bottom and the domed control knobs add dimensionality to the front panel. Orelle use Arcam style construction comprising extruded alloy front plate with pressed steel case, to remain competitive, but they achieve a slightly sturdier product.

Around the back of the pre-amplifier is a line of gold plated phono sockets giving the SC-200 five line inputs, a tape monitor and optional MM or MC phono input. Ours came in standard line level only configuration, but the MM board can be added for just £29 and MC for £64, which seems very reasonable indeed.

Orelle also provide both active and passive outputs, giving the SC-200 great flexibility. For high output sources such as CD, and where a short interconnect between amplifiers is used, the passive output avoids the components of the main circuit, simplifying the signal path.

But, say you wanted to use a low output source, such as a Leak Troughline, into an insensitive power amplifier, the SC-200 has enough gain in active mode to cope with the task.

The power amplifier uses good quality gold plated phono sockets and chunky gold knurled binding posts. There is only one set though, so for bi-wiring the side entry holes may have to be used. The power amplifier uses MOSFET transistors to give it a healthy 75watts output (Orelle's conservative figure, see Measured Performance), so it should be able to drive most 'speakers to high levels, even those with very low sensitivity.

I left the Orelle overnight to run in, the pre-amplifier had done the rounds with other journalists, but the power amplifier was brand new. As a good solid state reference I used our trusty Audiolab 8000C with 8000M monoblocks, a little more expensive, but of similar power output.

I hooked up the Orelles using the passive output on the pre-amp first, which



# ORELLE OBSERVATIONS

**Dominic Baker takes a close look at the Orelle SC-200/SP-150 pre/power amplifiers.**

proved to give plenty enough output to drive the SP-150 from CD. In fact, I found that the SP-150 could drive every 'speaker

The sound did become a little more up tempo though, with a little more punch in the upper bass adding pace and attack.

*“ It was tuneful too, possessing enough grip to allow volume to be edged upwards further and further without it losing control of the 'speakers. This is an amplifier that you could really party with.”*

I tried to very high levels without strain, the bass always having terrific control and punch.

There was a lightweight quality to the midrange and treble that is possibly the result of the pure sounding, high quality components used. It isn't exactly a thin sound, but it did lack a bit of warmth and body, especially with CD. But vocals were smooth enough and free from any roughness.

Primal Scream's 'Movin' on up' from the album *Screamadelica* has a lot of high frequency percussion on it, which became splashy and vague at the top. It wasn't harsh or uncomfortable in any way, just confused. 'Damaged', with its simpler, more delicate treble, managed to hold together much more cohesively, the treble becoming sweeter and smoother as the pressure relaxed.

With less processed programme material the Orelle seemed more at home. Frank Black's 'Sir Rockaby' from his new album had a terrifically deep and weighty bass line. It was tuneful too, possessing enough grip to allow volume to be edged upwards further and further without it losing control of the 'speakers. This is an amplifier that you could really party with.

When compared directly with the Audiolab the Orelle scores very highly. It was free from the slight coarseness or grain that the Audiolab has through the upper mid and treble, only becoming confused with frantic percussion. The sound stage wasn't quite as wide open as the Audiolab and was limited in stage depth, but it's finely focused through the midband, giving a clearer picture of the performance. The Audiolab is fantastically dry and well controlled in the bass, but the Orelle has the edge when it comes to absolute bass depth. It also has more richness at the bottom end, giving it an easier character to listen to over long periods.

Switching over to the active outputs of the pre-amplifier, the Orelle lost a little of its civilised approach through the midband and developed a hint of grain in the treble. It was still cleaner than the Audiolab, but the margin had narrowed.

BMX Bandits' 'Scar' had real slam. The jangly and cold sounding electric guitars projected through the mix and were given superb clarity; the impact of the kick bass leapt from the 'speakers. And in a different style, Grant Lee Buffalo's 'The Hook' was clearly focused and incisive in its delivery. The passive option is definitely

the smoother one, but the forwardness and the way detail is forced at you in active mode I found impressive.

The Orelle SC-200/SP-150 pre/power doesn't have quite the same magic of the Sugden A21a, or the wide range of facilities of the Audiolab 8000A, but it does have plenty to offer all the same. This combination has enough power to drive almost any loudspeaker up to party levels, it is smooth and detailed enough to satisfy all but the most serious audiophile, and it is competitively priced. Steer clear of loudspeakers with sharp treble and the Orelle should create a very powerful and rewarding sound ●

**SC-200** £399  
**SP-150** £499

**Orelle Hi-Fi**  
**Unit 11,**  
**I-MEX House,**  
**6 Wadsworth Rd,**  
**Perivale,**  
**Middx.**  
**UB6 7JD**  
**Tel: 081 810 9388**

#### MEASURED PERFORMANCE

The SP-150 MOSFET power amplifier had a healthy output of 100watts into 8ohms, enough to make even insensitive loudspeakers go loud. Unlike some UK MOSFET designs, this one could swing current into a low four ohm load without thermal limiting, making it suitable for all loudspeakers, not just high impedance types. Output rose little to 110watts though, due a significant drop in maximum output swing, suggesting mediocre power supply regulation. All the same, the power amplifier has plenty of volts to swing across high impedance UK loudspeakers in particular, which commonly measure around 10ohms. These need volts more than current. However, there was little change in overall distortion level with the increased current demand of a four ohm load, a good sign. The SP-150 has plenty enough muscle to handle a wide range of loudspeakers and make them go loud, even in a large room.

Downward extension of frequency response was good, reaching 4Hz - plenty low enough to reproduce subsonics from CD. At the top end output was maintained up to 68kHz, high enough to avoid any warmth in the sound. Over this wide bandwidth distortion was low, even at high frequencies, reaching 0.02% maximum. This avoids obviously sharp treble, but the presence of odd-order harmonics (3rd, 5th, etc) suggests high feedback around MOSFETs of mediocre linearity, which may tinge the treble a little.

Low noise and satisfactorily high input sensitivity figures were achieved, together with low d.c. output offset, the only problem here being some d.c. 'bounce' of

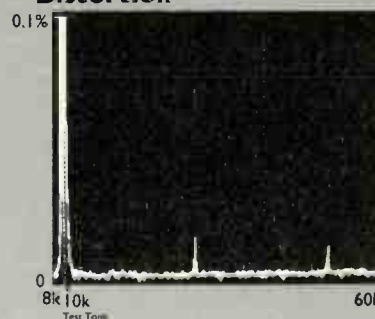
up to 60mV when the volume control was moved. If this control is within a d.c. feedback loop, it needs to be taken out. However, since volume is not constantly on the change whilst listening, the amplifier should be stable enough in use.

With good reserves of power, low distortion and wide bandwidth, the SC-200/SP-150 amplifier combination should give a good account of itself. Its exact sonic character can only be established in listening tests. **NK**

#### TEST RESULTS

Power	100watts
CD/tuner/aux.	
Frequency response	4Hz-68kHz
Separation	74dB
Noise	-84dB
Distortion	0.005%
Sensitivity	240mV
dc offset	5mV

#### Distortion





# World



## THE BEST - QUAD IIs

I'm glad to find a magazine that seems to be genuinely interested in discussing products that offer true high fidelity, irrespective of their price, vintage or apparent credibility.

Recently I have had cause to replace an old pair of Magneplanars with some overbearingly large horn speakers from Living Voice, and in the pursuit of an amplifier to work with them (anything will drive them since they have a sensitivity of 104 dB/W!) I have had the opportunity to try a very large number of highly regarded pre and power amplifiers within a relatively open budget. I have eventually settled on a pair of Quad IIs, using original KT66 valves, which I purchased for the princely sum of £225.00. I heard nothing that comes close, even when listening to amplifiers costing over 20 times that amount.

Other high fidelity, low cost items I use include the excellent Syrinx PU2 Gold arm (yes I know it's a bugger to set up), Croft Micro A pre amp, and Audio Innovations 5800 MC Transformer (preferable even to Audio Note silver types). Unfortunately I have yet to find a cartridge to compete with my Koetsu.

So what is the point of my letter? To encourage those readers who still think that high fidelity means high prices to open their ears and minds to all products that are available to them - I am so glad I did.

**Richard Palmer**  
Hatfield,  
Hertfordshire.

Hi-Fi as a subject can and does need to appeal to a

broad church. Not everyone has infinite amounts of cash to throw around and, as you usefully illustrate, money is no arbiter of quality in any case. This gives everyone a chance to enjoy music, including the impecunious (as contributor Richard Kelly would say of those who are skint!).

I've owned Quad 22/IIs and they certainly are sweet but, lacking 104dB/W loudspeakers I had to part with them, 12watts being just too little at the time. (This was in the 1980s). Hopefully, loudspeakers will evolve to offer higher efficiencies in future so more people will have a chance to savour the delights of low powered amplifiers like these. **NK**

## PRIZE PRIZED

May we take this opportunity to thank you for the superb CD based system that we won in the January issue of Hi-Fi World.

Please accept our apologies for not writing sooner but, as you can imagine, since setting up the system every spare moment has been spent re-evaluating our CD collection. What better way to spend an evening the listening to real hi-fi as selected by professionals rather than just reading about it? At last my wife and I are able to sit back in the knowledge that the system has been chosen for 'sound' rather than for the number of items within a certain budget.

Our original system, comprising Sony separates together with Wharfedale speakers, produced what appeared to be a reasonable sound. However, on hooking up the prize system the quality was immediately apparent.

The clarity and attack stood out, the bass, whilst not appearing to be as extended, could actually differentiate between the notes being played. Subsequent A/B tests clearly show our original Sony set up to suffer from a boomy, muddy bass line which tended to fill the room rather than display what was actually being played.

For your information we are currently using Tandy gold interconnects, Monster cable and Apollo CKD 24 stands spiked top and bottom. In our opinion these feel sturdier than the Target stands as featured in the article. Our local hi-fi shop, Fantorpes of Hull, allowed us to compare both makes and were

extremely helpful in all areas. This together with absolutely no pressure or hard sell was a very refreshing occurrence.

With regard to our musical tastes, these centre around rock groups such as Marillion, Tom Petty, Level 42 and Joe Jackson, the latter producing most of his CDs in DDD format which together with Paul Simons' 'Concert in the Park' show what the system is capable of producing. The latest Marillion release 'Brave' really allows the Missions to display their bass handling ability, which is quite amazing for such small speakers.

## Letter of

### DISC TROUBLES

Until reading 'Not Fade Away' (HFW June '94) I considered the bronze patina on some discs rather fetching. All that glistens is not gold. Another illusion bites the dust.

A careful inspection of my 408 CDs revealed 19 discs with the pretty bronze effect we now know to be rust. Eleven discs are clearly identifiable as PDO pressings. Eight have similar inner ring codes, but do not carry the PDO legend. The record companies vary, but the most common (in my collection) affected labels are Academy Sound and

Vision (ASV) and Decca. All discs were bought between November 1991 and April 1994. I have no way of knowing when they were pressed. At least 9 PDO pressings are unaffected.

All the discs still play, but I cannot compare sonic quality as I have no control duplicates. Just 19 out of 408 does not seem too bad until you realise that it represents an investment of some £228. If your conclusion is correct then I will possess, in time, a pretty, but expensive collection of metallic doughnuts! It has been suggested that I convert

Send your letters to Hi-Fi World Letter Page,

# writes

All that remains now is to sit back and let the music drift over on us whilst reflecting on our extreme good fortune. As for the Sony separates, they still supply disc, tuner and cassette facilities and may well be upgraded to provide Dolby Pro Logic with the addition of a suitable decoder in due course.

**Graham and Jillian Douglas**  
South Humberside.

I'm very pleased that you enjoy your prize. It just goes to show that real hi-fi can be bought for as little as £700. Readers might like to know that the system comprised

Yamaha CD-X570 CD player (£240), Rotel RA-935BX amplifier (£199) and Mission 760iSE 'speakers (£149.90). The three components were selected for sound quality, not for looks, convenience, styling etc, so we are pleased that you agree this criterion was met. Part of the point behind the Systems Test was to stress that proper hi-fi can be as affordable as a midi-system, but offers superior sound quality. I hope you continue to enjoy your new system and never consider buying a midi-system again!

**DB**

## EVOLUTION

I have really enjoyed your enthusiastic and varied read,

especially Dominic Baker's evolution with Quad electrostatics and valve equipment. I'm waiting for Dominic to discover Tannoy's Monitor speakers.

This brings me to my reason for writing. I wonder whether you would be interested in reviewing my Leak Stereo 60 amp. It has a passive pre-amp attached to blend with the Art Deco style, all chromed with black transformers. It is the best valve amplifier I've had (and I've had a few). It sounds great through my 15" Tannoy Gold Monitors.

I also have a very mint Garrard 301 which gives a superb dynamic range, as well as a recently-serviced Nakamichi LX5 cassette deck; I keep trying other items all the time. Also, old Marantz 16 bit CD players such as my CD 54 has a very analogue sound, unlike these bitstream affairs.

I would like to completely endorse your review of the NAD 402 tuner. I've bought

one and think it is better than my old Revox B261 tuner (I sold the Revox to buy valve equipment).

I am disabled and cannot afford esoteric prices, however, I believe that my system would give any other a good run for its money.

**David Hirst Earlsdon, Coventry.**

Every day the postbag arrives with more letters from people in a similar situation to yourself. Most were once avid hi-fi enthusiasts, building their own valve amplifiers, modifying turntables and constructing loudspeakers, but they quickly vanished - or so it appeared. I suspect the arrival of seemingly high quality hi-fi at affordable prices from Japan and a lack of enthusiasm for anything other than black-box reviews by U.K. magazines were major factors in this. I can't tell you how pleased we are

continued on page 45...

## the Month

them into clocks.

I was glad to note that PDO had co-operated with your investigations. It remains to be seen how co-operative they are with the wider public. I am writing to PDO to ask whether they will be prepared to replace the discs. I anticipate two major hurdles -

- 1) PDO's willingness to admit liability and
- 2) The current availability of "fresh" pressings.

Incidentally, no Nimbus, EMI or MCA CDs were affected, nor were any of the wonderful HFW samplers.

Thank you for bringing this to our attention. I will let you know what response I get from PDO.

**Phil Jones Rhondda Mid Glamorgan**

Thanks for your statistical breakdown. It provides further insight into the extent of this problem which, whilst not being as bad as some newspaper reports would suggest, appears to be worse than Philips/PDO know or are prepared to admit. We hope it can be resolved to everyone's satisfaction. **NK**

64, Castellain Road, Maida Vale, London W9 1EX.

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Next, try the Alpha 5 tuner. Again, don't let its surprising

affordability seduce you. Instead, listen to broadcast sound that is natural, clear and dynamic, without annoying sibilance or harshness.

Finally, feast your ears on the Alpha 5 CD player - quite simply, the best value high performance CD player ever produced by a UK manufacturer. And, September's What Hi-Fi? agreed, calling it "the player to beat" and giving it a class leading 5 star rating. They concluded, "it's one remarkably transparent player, seeming to be at home with all genres of music, and equally enjoyable with all."

Just listen. Close your eyes, open your mind, and see the light.



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# Mastering Metals

**Are Super Metals worth the extra cost over standard metal tapes? Noel Keywood tests five of the very best blank cassettes.**

**S**ony's extravagant claims for their new Super Metal Master tape caught my attention. With DCC and MD sales stagnant, emphasis is returning to the cassette. Could a new super-metal like Sony Super Metal Master lift cassette performance up to a level approaching that of DCC and MD? Is this what we should look toward for the immediate future?

Whilst I was interested to see if Sony Tape, who have consistently turned out a good product, had produced something really special in Metal Master, in the back of my mind I was aware that it would most likely rival, but not significantly improve upon other premium metals, like TDK

MA-XG and Maxell Vertex.

Aware that even a normal metal tape like TDK MA at £2.75 or thereabouts looks severely expensive to most buyers, I decided to broaden this report to show how a 'cooking' metal like MA compares with Super Metals, to reveal what the £8 or so difference between them provides. But since only those with pockets deeper than the Mariana Trench will be enthralled, Maxell's rival to MA, Maxell MX, was included too, to see how effective it's become.

Conveniently, TDK have just reformulated and improved MA and the International Electrotechnical Commission (IEC) have just released a new standardised or benchmark metal

tape (IEC IV) to which cassette decks should, ideally, be factory adjusted. So there's plenty of activity in this field at present, but does it add up to much as far as the impecunious buyer in the street is concerned?

Modern metal tapes are, these days, superior to ferrics and chromes by a significant margin. In particular, they give clearer and better defined treble. Where early metals often sounded brittle and coarse, today's metals can provide sweet and especially smooth treble. In fact, they are beginning to pull ahead in all areas of performance; cassette decks are barely able to keep up. With a good deck though, from my own experiences with a Nakamichi ZX-9 and, of course, more metals than Rio Tinto Zinc, I can assure you that they really do give fine recordings. Similar results can be obtained with an affordable £500 Nakamichi DR-2.

Now back to the new Sony Metal Master.



### SONY SUPER METAL MASTER

I used the new IEC IV Primary Reference Tape (manufactured for the IEC by TDK) and set bias to a level commonly found in commercial recorders (+4dB). This means the test results show what you would

experience if you recorded on Super Metal Master on a conventional cassette deck without first bias tuning to match it in.

Its frequency response has steeply rising treble, +4dB up at 20kHz. This is far too much treble to be acceptable, so a deck with adjustable

metal bias is a must. Otherwise, apart from excessive treble, Super Metal Master at this bias has high overload margins (MOLs and SATs), very low tape hiss and ultra-low modulation noise. So in essence it is a super tape, but it won't work properly on buggers recorders.

So you shouldn't use a tape like this without tuning it in to flatten treble - and here's where we sail into problems. Until a year or two ago, only Nakamichis had variable metal bias and even now, few decks have enough variation to cope with a tape whose properties are so extreme. So, chances are, you'll need a Nak. to use Sony Metal Master.

No problem, I hear you say, I have one/will buy one tomorrow. (Recession - what recession?) Bias will have to be increased to get response 'flat', but this also raises midband overload (MOL315) and lowers treble overload (SAT10k), changing overall tape performance. All the same, the advantages and drawbacks of Metal Master then become more

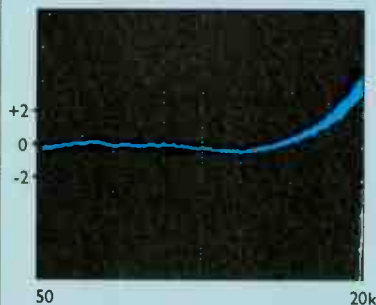
### MEASURED PERFORMANCE

	SONY S.M.M.	TDK MA-XG	MAXELL VERTEX
Treble level (10kHz)	1.2	0.6	0.8
Overload			
mid-band (MOL315Hz)	5.2(7.5)	5(7)	6(7.2)
treble (SAT10k)	1.8(1.4)	1.5(1)	2.8(1.5)
Hiss	-59	-59	-58
Modulation noise	-59	-43	-48
Sensitivity	0	+0.5	+0.5
Dynamic range	64.2(66.5)	64(66)	64(65.2)

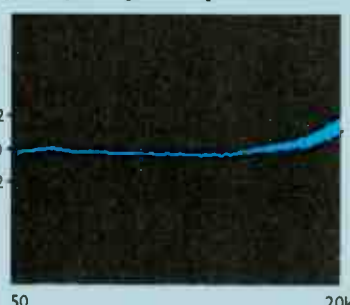
All figures are dB; high bias results in brackets.

Test notes: Recorder - Nakamichi ZX-9; IEC IV Primary Ref. tape - MJ507A; metal bias - +4dB (+5.6dB); hiss IEC A wtd.; Ref level - IEC 0dB; mod noise - band noise from 1kHz-3kHz stimulated by 3150Hz tone at 0dB. Tests substantially to IEC 94, made on Hewlett Packard 3561A FFT.

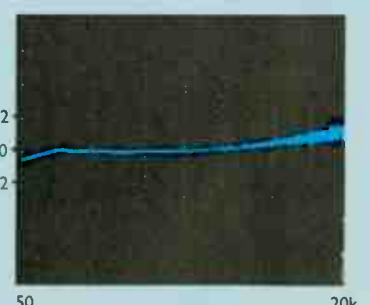
### Frequency Response (standard bias)



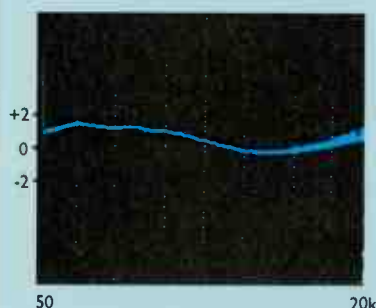
Sony Metal Master has strong treble lift that needs to be corrected with an adjustable bias control.



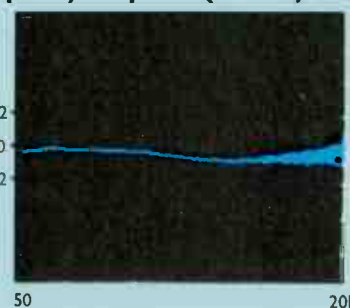
Less treble lift and flatter response makes both MA-XG (left) and Vertex (right) more compatible with a wider range of cassette decks.



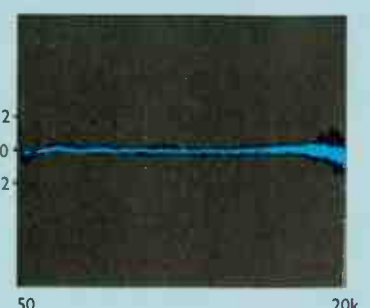
### Frequency Response (bias adjusted)



Even when bias is adjusted optionally, the Sony dual-layer tape gives a wonky response.



Increasing bias gives a flat response to both MA-XG (left) and Vertex (right).



obvious. Our analysis shows that, like many dual-layer tapes (remember ferri-chromes?), this one has a wonky frequency response, one with a dip in the middle, that cannot be made flat by bias tuning.

That's the major drawback of going for dual layers. The benefit is the highest overload level of any tape on the market - +7.5dB (MOL315). Combine this with super low hiss and modulation noise and you have a tape with the highest dynamic range, no less than 66.5dB (MOL315-hiss).

So Sony can justifiably claim Super Metal Master is the best - it beats everything - providing you don't mind its curvy response and the need for a super deck, like a Nakamichi.

The only other observation I ought to make is that it would be possible for Sony to provide a special Metal Master tape option on their top decks where appropriate bias and record equalisation (for flat frequency response) were manually switched in. This would greatly facilitate its use.



### TDK MA-XG and MAXELL VERTEX

With MA-XG and Vertex, both TDK and Maxell have, respectively, shied away from producing a tape with a frequency response like Sony's Metal Master. In consequence, their

performances fall a little short, albeit by marginal amounts, but their compatibility is superior. Both offer a flat frequency response when tuned in (by increasing bias) and a similar dynamic range, 66dB with MA-XG and 65.2dB with Vertex. MA-XG has super low hiss (bias noise) but Vertex runs very smoothly, possessing super low modulation noise.

I have to say that from experience I find Vertex incredibly neutral, smooth and sweet sounding in the treble, on my ZX-9; it's my preference. TDK MA-XG is a little grainier and Metal Master tonally odd because of its non-flat frequency response. I tend to use Vertex with Dolby B (75dB dynamic range) or Dolby out, according to source quality, since noise reduction can compromise quality a little.



### BUDGET METALS - TDK MA & MAXELL MX

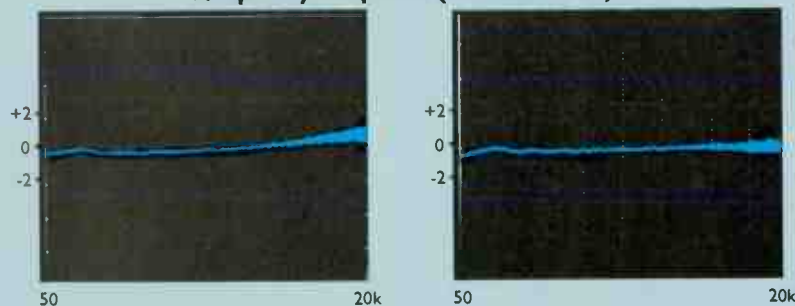
But you probably don't want to spend so much on a blank tape. You don't really need to either, because new (reformulated) TDK MA - the market leader - and new (also reformulated) Maxell MX offer superb value and I'd recommend anyone to try them. Both are highly compatible in that they give a flat frequency response identical to that of the new IEC IV Primary Reference Tape. Tune them in and they'll sound tonally neutral.

Both also have very high overload margins at normal metal bias levels and both now have low hiss. TDK MA has a dynamic range of 63dB and Maxell MX 63.6dB, with MA possessing the slightly brighter sound. These tapes are really good value. They have 3dB less dynamic range than super metals, but around 3dB better dynamic range than most ferrics and chromes in the midband and around 9dB at 10kHz. It's an audible advantage and, for serious tapeists, possibly worth the extra ●

### TEST RESULTS

	TDK MA	MAXELL MX
Treble level (10kHz)	0.6	0.1
Overload		
mid-band (MOL315Hz)	5.4	5.4
treble (SAT10k)	2.8	2
Hiss	-57.6	-58.2
Modulation noise	-42	-40
Sensitivity	0.5	0.5
Dynamic range	63	63.6

### Frequency Response (standard bias)



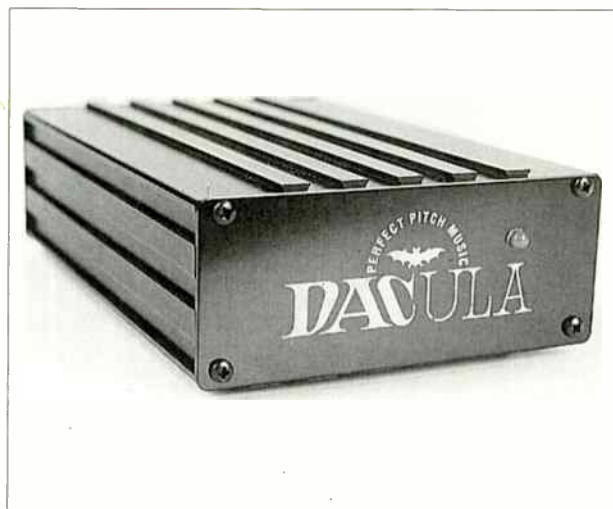
Both MA (left) and MX (right) give a flat response making them compatible with a wide range of cassette decks. The lift in the treble will give MA a slightly brighter balance.

Maxell UK Ltd.,  
3a High Street,  
Rickmansworth,  
Herts. WD3 1HR  
Tel: 0923 777171

TDK UK Ltd.,  
TDK House,  
5 - 7 Queensway, Redhill,  
Surrey RH1 1YB  
Tel: 0737 773773

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...continued from page 39

at Hi-Fi World to see so many enthusiasts, who have been ignored for the last twenty years or so, still alive,

Home Cinema, etc. NAD have been busy selling 402s hand over fist. It is good to know that the UK still responds to quality hi-fi.

We would love to review

the correct bias adjustment for cassette that seems so important in your technical reports, when recording onto differing brands of tape. I bet a lot of readers would welcome

involved in their hi-fi and its performance, making it a more enjoyable leisure time activity. But it is difficult to know how many times, or how often, to feature such articles. Setting up cartridges and recording bias are topics that have been covered over the last few years. We understand that you may have missed them, but many regular readers won't have.

There are two solutions however. Give us a call and we'll send you the relevant back issues, or write to us, asking how you would, say, fit a moving coil cartridge to a Rega arm, and we'll answer it in the magazine for you. If we get enough queries from readers, we'll have a HOW TO section, where you can ask anything about setting up your hi-fi. **DB**

#### REEL THEATRE

I am on holiday here from Australia and I have had an interest in hi-fi since the mid 50's, so I was delighted to read letters of the calibre provided by your contributors.

I am not a formally trained technical person but I have several items of hi-fi equipment – both valve and solid state – for most of which I have service manuals. Over the years I have built a signal generator, and a millivoltmeter. I have also bought an 'el cheapo' oscilloscope. With these basic tools – plus hours of patience which a properly trained person would not need, (nor could he afford!) I can usually locate and replace naughty components which sometimes make their unwelcome presence known in my equipment – none of which has any real relevance to the purpose of this letter, but I just love to tell anyone who will listen!

I have owned a Vortexion W.V.A. tape recorder for over 30 years. I have a Vortexion C.B.L. (over 20 years) 3.5 watts per channel with which I

continued on page 47...



Selling hand over fist : NAD's 402 tuner.

well and hard at it!

Perhaps because this sort of enthusiasm has passed unnoticed and unacknowledged, hi-fi has advanced very little over the last few decades - in fact some would even say it has gone backwards in some respects. For example, your Garrard 301 is regarded as one of the best turntables around even today and both myself and Noel both own and use Leak Troughlines and Garrard 401s out of choice. Valve amplifiers can be state of the art and horn loudspeakers are highly respected.

It's good to see, however, that there is also some affordable modern equipment around that offers superb sound. The NAD 402 tuner is a real lesson for the industry. When everyone else is talking about THX, Dolby Stereo,

your amplifier in the context of a Reader's System, but we have little time these days. It has been months since we visited a reader, being flat out on other projects, just for the present at least. However, we have planned a restoration article on the Leak 0.1, the first part of which is in this issue, so there will be something to keep you amused. **DB**

#### NOVICES

How about a page every month dedicated to relative novices, like myself, on everyday maintenance/tweaking, e.g. fitting a new cartridge and the technical details that one needs to know in order to get the best out of the equipment without damaging records - fitting a replacement tone-arm even.

And what about achieving

a column of this type as not everyone has the knowledge or the experience to carry out the aforementioned tasks that you may consider the norm. Perhaps a page per month is a little too much to hope for, but there must be quite a number of jobs that hi-fi owners usually get their dealer to carry out, but if they are shown how, might consider themselves. Also, more group tests, budget equipment, accessories. (I know, you've heard it all before!)

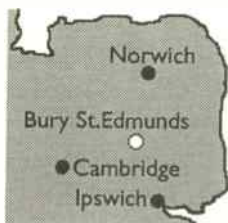
Keep up the very good and impressive work – we need you as much as you need us!

**Derek Anderson  
Kirkcaldy,  
Fife,  
Scotland.**

The articles you suggest are very important, because they allow readers to become

# Hi-End Hi-Fi in the heart of East Anglia.

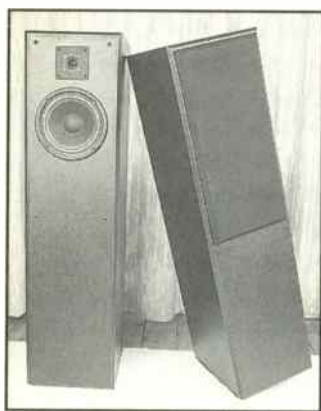
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"RINGMAT gave a sharper, cleaner, more solid sound, with better fine detail and clarity. On complex material the improvement in stability and focus was remarkable; easily comparable to an expensive tonearm, cartridge or power supply upgrade... Any drawbacks? None I could detect..." **Jimmy Hughes (Audiophile, October '93)**

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cartridge with its nude stylus. All of a sudden, much more of the music, and the space in which it was performed, was evident. I'm sure that the legions of Linn and Rega owners out there who still play their LPs will want to make the modest investment required for a major improvement in vinyl play."

**Andrew Marshall**

(Audio Ideas Guide, Winter '94)

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### RINGMAT DEVELOPMENTS

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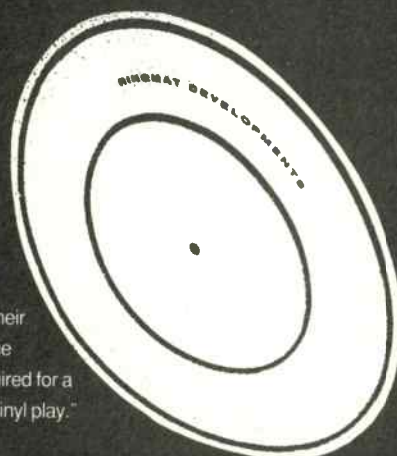
Tel.: 0277 200 210 Fax: 0277 201 225

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GERMANY: Fortissimo, Düsseldorf, tel.: 211 482 372



...continued from page 45

have been filling a small theatre (120 seats) with music and sound for over 20 years – shades of Mr Boardman's letter in the Supplement! I have a Ferrograph 634 and a Ferrograph Series Seven, both picked up 2 years ago for the ridiculous price of \$75 each! Both complete with the excellent Ferrograph Manuals, and the 634 even has a spare motor for the capstan!

Finally, a question. If there is a Ferrograph Owner's Club still in existence in the U.K. would someone let me know so that I may apply to join before I return to Australia in June. Thank you so much.

**G. S. Sollors**  
**Port Talbot,**  
**West Glamorgan,**  
**South Wales.**

I wrote directly to Mr Sollors so that he would receive this information before he left for Australia, but here is the reply for any other interested readers. **DB**

You're in luck. There isn't an owners club as such, but Ferrograph are still going strong in the UK. They have contact names for many Ferrograph owners and collectors, and are willing to put them in touch with each other. You can contact them at:

**Ferrograph Spares & Service,**  
**Suite 7, Cookson House,**  
**River Drive, South Shields, Tyne & Weir.**  
**NE33 1JX.**  
**Tel: 091 427 7774**

#### LINE PROBLEM

I would like to make some comments regarding the review of the Castle Howard speakers.

How Dominic Baker can say that Transmission Line bass is similar to Quarter Wave loading seems to me ridiculous. The Transmission Line has a long path that is filled with acoustically

absorbent material, which absorbs the rear wave of the drive unit, eliminating any sound of the cone from the rear, this usually being a very inefficient type of enclosure. Quarter Wave loading, on the other hand, is a type of horn enclosure and uses very little damping, usually a small amount in the top of the tapered line. Acoustic pressure is high at the drive unit and small movements of the unit manifest in much larger movements of air at the port out of the bottom of the enclosure. This type of enclosure tends to be very efficient.

Ivor Humphries in Gramophone gave a very favourable review to the Howards comparing them to the Quad ESIs, showing drawings of the tapered pipes (there are two) and also gave a little background history of Quarter Wave loading.

I would like to finish on a less critical note and thank Richard Brice for his headphone amplifier, but could he publish a power supply unit for the design in the near future?

**Derek Hooper**  
**Warley,**  
**West Midlands.**

I agree that the theoretical transmission line is so long and so well stuffed with absorbent that no sound comes from the end of the line, but I can't think of one practical transmission line 'speaker that could claim this. In the real world the line is short, lightly stuffed, and the output from the line is actually used to add to the low frequency output of the 'speaker. I say that the Quarter Wave loading used by Castle is similar in principle to this: i.e. the output from the 1/4 wave horn is used to add to the low frequency output of the 'speaker. Subjectively, the effect is very similar.

I didn't want to confuse or mislead readers by suggesting that the Howards

were horn loudspeakers, because they definitely are not. We aim to explain things in a simple and understandable manner, so I'm sorry if this simplification confused you.

Unfortunately, that would result in resonances at all the odd numbers. That would be clearly unacceptable and Castle have ingeniously worked around these constraints.

On the other hand, a horn



The Castle Howard - horn or transmission line?

The answer to your final query is yes, look in this month's supplement. **DB**

There is a link between quarter-wavelength loading and the transmission line. Any practical implementation of a transmission line can be regarded as a hybrid of various operating principles. At higher frequencies the upper chamber acts as an infinite baffle, but as frequency declines the 'line' acts as a quarter wavelength pipe and, later, as a non-resistive reflex port. A theoretical transmission line would have a falling bass response, as Mr Hooper points out: 'very inefficient' (in the bass). It is the 'tuning' of the line that sustains its efficiency to very low frequencies.

In its simplest form, a quarter wavelength design can be achieved by placing a suitable drive unit at the end of a straight open pipe.

speaker usually places its drive unit facing into its 'throat'. This increases efficiency over a wide operating band, but a horn has to be very large indeed to sustain, let alone enhance, bass frequencies.

I trust that this goes some way to clarify the interaction between these operating principles.

**John S. Wright,**  
**Managing Director,**  
**TDL Loudspeakers.**

#### LOOKING FOR NEUTRALITY

My main gripe with hi-fi magazines is that there is little indication for equipment that is neutral. I accept that unbalanced systems may require 'balancing' with non-neutral components. I accept that there may be no single definition of 'neutral' acceptable to all. I also accept

continued on page 55...

# WARM WELCOME

**Dominic Todd welcomes Onkyo's smooth sounding DX-750 CD player.**

**Will it K.O. the opposition?**

However good Onkyo's new DX-750 CD player may be, its price pitches it right into one of the most cut-throat sectors of the market, where £20 either way can make the difference between make or break. Priced at £349.95 the Onkyo faces stalwart competition in the form of the Marantz CD52SEII (£299.95), not to mention the Rotel 965 Discrete (£375) and Pioneer PD-S802 (£349.95). Also, it should not be forgotten that for a mere £50 more there are quality British machines available, such as the Orelle CD 480 and Aura CD 50. None of these players are going to give up their market share without a bloody fight, and for Onkyo to carve out a niche for itself, this player needs to be more than simply competent.

The build quality and warranty get it off to a good start. No other CD player at this price can boast a standard three year warranty, where if the product goes faulty in the first year it is simply replaced. Onkyo are obviously pretty confident about the quality of their machines and the general solidity and slick 'well oiled' feel does much to reinforce faith in the product. The build quality is certainly streets ahead of the Marantz, matching that of the Rotel, but with a smoother action to the controls.

Although Onkyo UK see the 750 as an audiophile machine (for the moment it's the most expensive Onkyo CD player available in the UK), this doesn't prevent it from being laden with gadgets in true Onkyo fashion. On top of all the usual features one would expect at this

price, the 750 comes with a non-defeatable three stage dimmer, peak search, variable level and headphone output, optical output, music calendar, time edit, memory reverse, an FTS type music file and no less than 5 repeat modes. In short it's a button pushers' dream.

Whether or not it can truly be called an audiophile machine is a different matter. The 750 lacks the special transformers, twin DACs and copper-plated chassis of more expensive, export only, models. However, there are a couple of special features that should provide it with a unique sound. FPCS (Fine Pulse Conversion System) takes the form of a customised digital filter, designed to make a better 'educated guess'

## MEASURED PERFORMANCE

Can you turn digital into analogue? Pioneer think so and now Onkyo have followed them. The idea of making CD sound more like LP is perhaps a little bizarre - it'll make somebody, somewhere in Philips cry, there's no doubt. In my opinion it's also a very dubious practice, grounded on the most shaky engineering hypotheses. CD cuts off dead at 21kHz; LP does not. Back in the late '70s, JVC CD-4 extended LP out to 40kHz or so, double the bandwidth of today's CD, for example.

Shaky idea No 1 - to make CD sound more like LP, extend its output up past 21kHz. Shaky idea No 2 - do it by any means possible, even if everything above 21kHz is distortion, not music. Pioneer did it with the PD-S801. It rolled off upper treble and, amongst other things, sounded dull but warm. Onkyo have avoided the upper treble roll-off, but strong aliasing products exist above 21kHz our measurements showed. They roll down smoothly in level up past 30kHz. Whilst this produces an analogue like pattern on an analyser screen, which perhaps excites the development engineers, it nevertheless comprises unwanted signals. They become strongest when high level, high frequency information exists on disc, meaning certain instruments like close-miked steel string guitar excite the system most. Although

technically dubious, it's still best to judge this sort of thing on the basis of sound quality alone, since there may be hidden benefits.

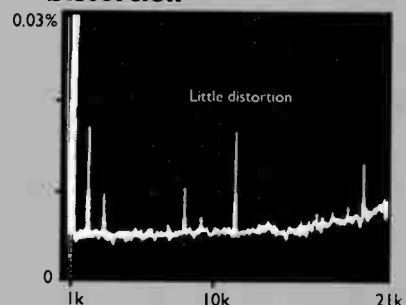
Frequency response has a treble peak which, in my experience can add a spit to the sound of CD. Distortion was reasonably low, however, approaching bitstream standards, and all other parameters measured normally.

The Onkyo is different. I was never a fan of the Pioneer Legato Link player's sound, but others were. Perhaps Onkyo have made the system work. **NK**

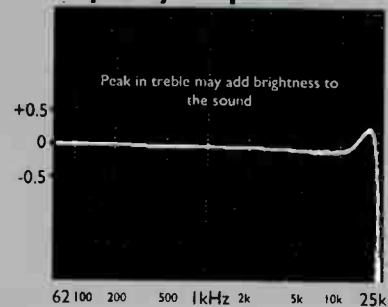
## TEST RESULTS

Frequency response	4Hz-20.5kHz	
Distortion %		
-6dB	0.009	0.009
-30dB	0.036	0.036
-60dB	1	1
-90	37	36
-90dB dithered	29	28
Separation dB	left	right
1kHz	104	95
20kHz	76	76
Noise	-108dB	
with emphasis	-108dB	
Dynamic range	100dB	
Output	2.2V	

## Distortion



## Frequency Response







(Onkyo's words, not mine) as to the value of the missing data, by using adjacent data. The outcome of this is supposedly a warmer and more natural sound, much in the same vein as the Pioneer Legato Link which also tries to emulate analogue sources. So much for CD being 'perfect sound'. More and more manufacturers seem to be trying to make it sound like vinyl!

Another unique Onkyo feature is the AccuPulse Quartz System, which essentially is an anti-jitter device. Onkyo use their own one-bit D/A converter and die-cast aluminium central disc tray to complete the package.

With the 750 wired up to an Orelle amplifier and Mission 763i speakers, I began by listening to Basia's 'Time and Tide'. Despite a slight trace of unnatural sibilance and an 'edge' to vocals at high levels, Basia's voice displayed fine projection and plenty of height too. This feeling of spaciousness was compromised somewhat, though, by the percussion which was a little too 'obvious', never seeming to integrate properly with the rest of the mix. However this wasn't a serious problem, and it's a trait many budget and mid-range CD players are afflicted with. Despite the slightly artificial sounding treble, detail was only average.

On the plus side, the Onkyo never sounded thin or 'shut in', with a wide soundstage and good depth filling the room. The ample bass on this particular album was kept under tight control, no mean feat when the speakers involved can be prone to bass 'bloom'. Dynamics within the music were also crisp, although perhaps not quite as clean

sounding as the Marantz CD63. The flip side of this was that the 750 avoided the dryness of sound that can affect the CD63. The Onkyo had a fine grip on the music, and as such was pleasant and relaxing to listen to.

Danny Thompson's 'Dargai' was smoothly presented making it unflagging to listen to, but, at the same time, the Northumbrian pipes sounded constrained, almost as though the piper

*“ The Onkyo had a fine grip on the music, and as such was pleasant and relaxing to listen to.”*

didn't quite have his heart in it. The double bass had a suitable 'woody warmth' to it, but wasn't quite as extended as it should have been. The 750 has its heart in the right place, though, with all discs tried sounding unprocessed and free from any obvious digital nasties.

The Onkyo was confident and controlled with most types of music I could throw at it, although a Freakpower disc did just show up a slight softness in the mid-range, which was noticeable on other discs too when I compared the 750 back-to-back with a

Marantz CD63. Otherwise, there was good depth to the sound and vocals sounded natural. As with previous discs, however, this warmth also brought about a softening of the transients.

Overall, sound quality reminded me very much of the Pioneer Legato Link system which is similarly flawed. At times both machines can bewitch as the music ebbs and flows in the manner of a good turntable. Yet, the two systems can also sound artificial, with too tight a grip on dynamic contrasts and occasionally recessed mid range.

The Onkyo DX-750 is a difficult machine to sum up. For ease of ownership, however, it has to be the first choice with solid build quality, a smart finish and an excellent three year warranty. But other aspects of the machine aren't quite so simple. The design is neat and can't be faulted operationally, but at the same time doesn't have the understated elegance of an Orelle or Aura CD player, for example. The sound quality is a real mixed bag, too. It certainly sounds smooth and expansive, but listening carefully reveals an odd mid-range and a softening of dynamics. This is a machine where a demonstration before purchase is not merely recommended, but vital. In the right system, with the right type of music, the 750 can present a convincing case for itself ●

**DX-750**  
**ONKYO UK**  
**401-405 Nether Street,**  
**London N3 12G.**  
**Tel: 081-343 2082**

**£350.00**



**This freshly cleaned record is the same one pictured on the opposite page - believe it or not!**

# WASH AND BRUSH UP

**A wet-and-dry record cleaner, the Nitty Gritty Mini-Pro sweeps Eric Braithwaite away.**

A combination of turntable, squeegee and vacuum cleaner, the Nitty Gritty does wonders for record pollution. It doesn't do a lot for noise pollution - except when its on the vinyl; it sounds like a thirty-year-old vacuum cleaner. This is not a device which allows you to clean one record while playing another. Unless the one you're playing is a recording of someone hovering the carpet . . .

Part of a reviewer's work, especially for one addicted to vinyl, like me, is

getting their hands (and knees) dirty scrabbling about in dusty junk shops and among the cardboard boxes under market stalls. The trouble is that the prizes, good as they often are, tend to be just as grubby as the buyer after this mining operation.

This is where record-cleaning machines like the Nitty Gritty become indispensable - nay, a boon, even. I became nearly as addicted to the cleaner as I am to the plastic it cleans. First off, or rather on to the revolving platter, was a

copy of Seiji Ozawa conducting Messiaen's Turangalila Symphony, found in a cardboard box in a junkshop and moderately mucky and immoderately well finger-printed. Uncleaned, it was nigh-unlistenable, with a high percentage of cracks and pops and a general noise level that would have it banned from Heathrow.

Mercifully, the Nitty Gritty Mini-Pro is a spot more automated than the last Nitty Gritty I had in my hands. For one thing, the cleaning fluid, supplied in a bottle, is pumped up manually, using a plunger, into a narrow trough which wets a velvet-like sponge, rather than being applied with a pad and elbow grease. A dozen pumps were sufficient to wet the LP. For another, a lift-up transverse arm holds a similar pad, so the MiniPro cleans both sides of an LP at the same time. A small platter holds the record, while a

drive wheel, sprung so it applies pressure to the outer edge of the LP, spins it. Switch the machine on and the cleaning fluid is applied evenly over the LP surface. Slightly warped records, however, need two or three goes for an even coating.

Five or six revolutions later, and the same three-position rocker switch is pressed to turn on the suction pump, quite a powerful affair and the item that is responsible for the vacuum-cleaner sound. Again, four or five revolutions are sufficient to ensure an impressively shiny, and slightly warm, black disc. Putting the LP back into the same old sleeve is definitely a case of new wine in old

*“The whole perspective of the recording on this particular LP, with its twenty-seven years of accumulated carbon monoxide, nicotine and heaven knows what else was also decidedly clearer.”*

bottles; I used pristine Nagaoka ones.

Now back to the Turangalila. Among a busy hive of percussion there's the striking sound of the ondes martenot, a kind of drunken electronic wind machine. Before cleaning, this instrument had displayed a distinctly muddy sound which polished up nicely. The whole perspective



A dirty record ready for cleaning.

of the recording on this particular LP, with its twenty-seven years of accumulated carbon monoxide, nicotine and heaven knows what else was also decidedly clearer.

A word of warning, however. No cleaning method will disguise groove wear. I installed a Koetsu Black for this test, simply because mine at its venerable age tends to render surface noise more noticeable, and while the sandpaper effect was reduced by a good fifty per cent it was, alas, still noticeable. Nonetheless, that was a very effective result for just two or three minutes' cleaning. Pity it doesn't clean up the dubious language of gangsta-rap while it's at it.

Compared with the manual one-side-cleaning Nitty Gritty, the MiniPro is well worth the extra cost. It takes a good deal - all, in fact - of the drudgery out of the business and the vacuum suction seemed to me to be more effective at sucking up the detritus in the grooves. The sliding plastic tray under the base of the machine which catches the used liquid included some surprising fragments which a going-over with a carbon-fibre brush had obviously failed to dislodge beforehand. There is a slight snag with this tray, however: it is shallow and fills up rather quickly. It should be emptied after a couple of cleans to avoid spillage.

Speaking of which, while Nitty Gritty provide a kind of miniature toilet brush for keeping the cleaning pads free of stray animal hairs, they should also provide a funnel to help the cleaning fluid negotiate its way from its bottle into the Nitty Gritty's tank: when the bottle is full it's a bit tricky. If you use a kitchen funnel, as I did, remember to rinse it afterwards; even though the mix of distilled water and isopropyl alcohol isn't toxic, it's only a tonic for records, not humans.

With typical Californian insouciance, the Nitty Gritty's instruction manual claims 'this record cleaner will make your records sound so good that you may injure yourself in the excitement of listening to them. Nitty Gritty will not be responsible for accidents caused by falling out of one's chair or wild leaping about.' Stiff upper lip, and all that... I didn't do myself an injury, or caper about with abandon after listening to the records I cleaned, but the underlying truth of the claim isn't one I'd feel like submitting to the Advertising Standards Authority for adjudication ●



The cleaning fluid is applied before vacuuming dry, the headline shot shows the final result.

Nitty Gritty Mini-Pro

£599

# HITTING THE HIGHS

**Eric Braithwaite finds Impulse H7s**

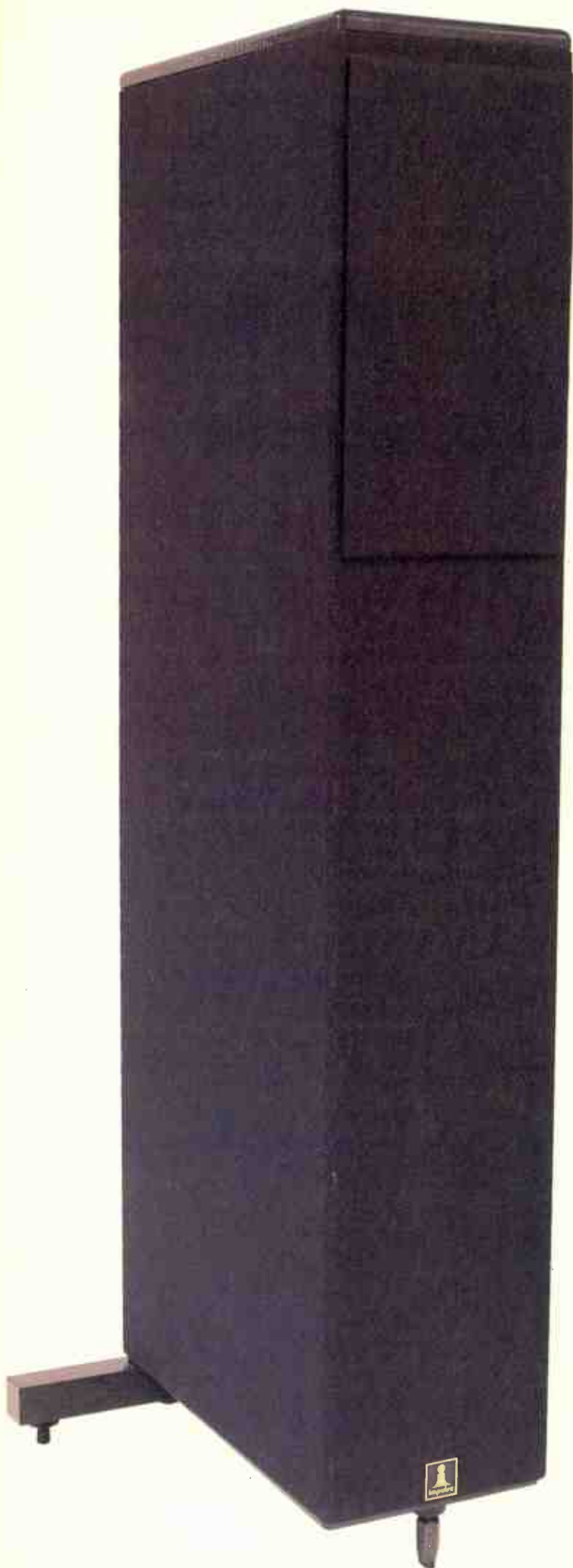
**fine on vocals,**

**but strong on the highs.**

**L**istening through the H7s to Martin Newell's 'pome' from *The Greatest Living Englishman* about the Orgasm Ray Gun - which, in case you don't know, aids parliamentarians and others to aspire to happiness by artificial means - reminded me of a couple of things. One was that last time I heard a pair, some months ago, the Impulse H7s did quite a fine job on vocals, as they did with Newell's 'Liverpool Scene Revival' pub-recorded poetry. The second was that if a week is a long time in politics, in loudspeaker manufacturing six months are an aeon.

After I originally heard the H7s I was somewhat mystified to hear one or two dealers say they were too bright for comfort. From the perspective of my own armchair, that was not something I would have gone overboard about. A bright, forward midband and upper-mid, yes. A noticeable - though not too intrusive step at the crossover point between the two drive units, yes. And less bass than a box this height might lead some to expect, also yes. However, the last should not be overstressed, because we're not talking big horns here; we're talking about a very slim-line floorstander.

Now, this pair had me mildly unnerved. Last time I was neither wearing rose-tinted spectacles (mine are tinted grey) nor high on indiscriminate enthusiasm. But there's no doubt that



second time around the H7s were different and, sadly, the difference was more to their detriment than otherwise.

I had noted before that the H7s tended to suit relatively sparse acoustic arrangements and vocals. They were at their best with jazz quartets - the John Scofield Quartet's splendid mix of horn, bass and drums sounding quite spectacular. This time, Bobbie Cryner's eponymous CD came bubbling over on

dynamic sound. When it comes to rhythm guitar or plucked strings, the speed of attack the H7s are potentially capable of is very good indeed; but on this pair, with some notes in the upper midband and treble losing power, the dynamics were reigned back.

This meant that on Earthworks' latest album, the virtuoso percussion work had very sharply-defined cymbals, but with a distinct sting in the tail.

manage with equanimity. Again, however, it was rather a mixed bag of fruit, since though the acoustic bass kept rhythm, its dynamics were uneven, producing a degree of syncopation in this complex design that wasn't altogether intended by Bill Bruford

Potentially - and in the light of experience - the Impulse design clearly has the ability to produce thrills without frills. Put through a so-so production, like the rather compressed A Trick of Memory by ex-Jethro Tull's Martin Barre, and the H7s delivered it unenhanced. This particular pair, however, hinted at the potential while not being able to quite fulfil it. Sample variation, perhaps, in the drive units? If the driver manufacturers had had a quick spell with an Orgasm Ray Gun, perhaps this conclusion - like some of the more powerful, more complex music played in the reviewing session, would have come to a more favourable climax ●

*“The ethereal also gave way, rather surprisingly, to the numinous, since the spread of the choir proved difficult to place, as did the orchestral forces in Tchaikovsky's Sixth.”*

the Impulse mini-horns with well-projected vocals and guitar, but with a 'glitteriness' in the upper registers which struck me as a little less than lifelike, while the way steel guitar and fiddles were presented was less happy, both harder-toned than they should have been. Cryner is by no means one of the huskier Country singers, but her voice is richer than the Impulse speakers would have you believe.

So far, however, not so bad, since the H7s produced a creditable acoustic and a reasonable degree of vitality. At their best, these speakers can be surprisingly revealing and lively. For best results, full forward projection and sheer power, they have to be pushed, and pushed almost to the limit of the rather cheap-looking mid-bass driver. In this case, an Oreille SC200/SPI50 didn't produce the steamhammer effect that was required; an Audiolab 8000C and 8000M monoblocks turned out the muscle, but at the cost of over-emphasising some effects that warmer amplification might have rendered less worrisome.

It was not long, however, before a couple of traits which had been evident in the previous pair, but were by no means as obtrusive, surfaced. Victoria's Missa O Quam Gloriosum is a beautiful, ethereal, piece, but some of the boy sopranos had a hard edge which I've not heard in the St John's College Choir before. The ethereal also gave way, rather surprisingly, to the numinous, since the spread of the choir proved difficult to place, as did the orchestral forces in Tchaikovsky's Sixth.

Once noticed, the 'shelving' effect at the crossover point tends to distract attention from the H7's obvious potential for what otherwise would be a clean, tightly-driven and compact

Equally clean-edged were the horns, saxophones sounding wonderfully fruity. This album has some extraordinarily broad mixes that hang free of the speakers, and pushed with power, the H7's boxes were left behind and the music poured freely into the room in the way that only horns really ever

**IMPULSE H7** £835  
**Impulse Loudspeakers,**  
**5 High Parade,**  
**Streatham High Road,**  
**London SW16 1EX**  
**Tel: 081 - 766 0474**

**MEASURED PERFORMANCE**

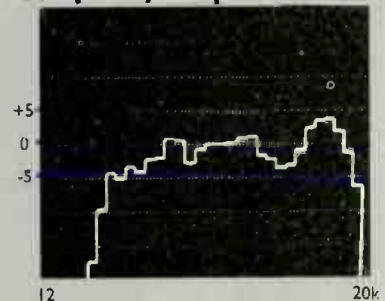
The Impulse H7s are this month's "we developed it using our ears" piece of hi-fi and, as is so often the case, they don't measure too well. They have a very strong treble output, one that will definitely sound bright. And it's detached from the rest of the response by a deep crossover suck-out, so expect to hear the metal dome tweeter as a separate entity to the midrange. Bass is very light as well, so they'll need to be placed close to a wall.

Looking at the impedance curve things become a little clearer. Impulse recommend valve amplifiers for use with their 'speakers, which are affected by strongly changing impedance. The hump in the impedance curve through the midrange will increase output, reducing the crossover dip. Likewise, the vertiginous dive in the impedance curve around 10kHz (down to a mere 2.5Ω) will reduce the treble output of most valve amplifiers, even those with high output and plenty of feedback, bringing the speaker's response closer to flat.

A flat response with a flat impedance curve would achieve the same thing, put less stress on the amplifier, and allow the 'speaker to be used with any amplifier.

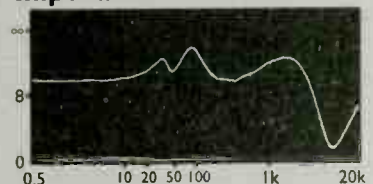
With a low output impedance solid state amplifier the H7s will sound bright, but with a valve amplifier the results may seem more balanced. DB

**Frequency Response**

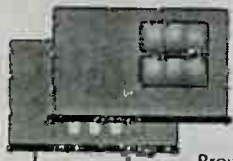


Crossover suck-out and peaky treble (at right)

**Impedance**



Severe impedance dip at 10kHz



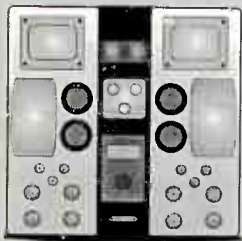
Prophet



Genesis



Unisis



Synergy

*Explosive bass dynamics, a midrange clear as a bell & shimmering treble.....  
.....A tighter rendition of Music....*

*In a world of black boxes, valve amplifiers like this are scene stealers.....*

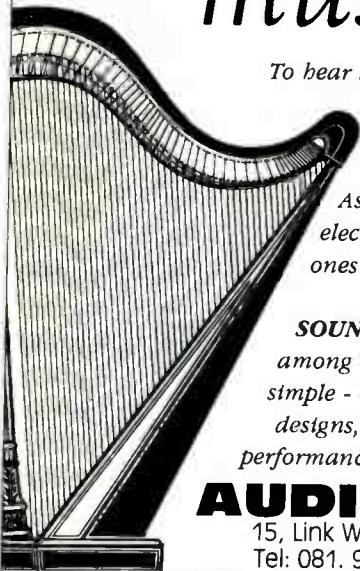
*Hi-Fi World, June 1994*



*A Sense of Rhythm*

Tube Technology, Design & Manufacturers of High Quality Tube Amplification & Distributors of Gold Aero Vacuum Tubes. Please enquire for further information on our range of amplifiers and Vacuum Tubes. ~ Foxhills Farm, Longross Road, Ottershaw, Surrey, KT16 0DN, England. Tel: 0932 873444 Fax: 0932 873012 ~ Pictured; *The Genesis 100 wait All Tube Monoblocs.*

# Electrostatic speakers for the *love* of music



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**Conceptual Design - Sound Engineering**

Kinshaw Electronics Ltd 84 Pendarves Street, Tuckingmill, Camborne, Cornwall TR14 8RE Fax: +44 (0)209 711939

...continued from page 47

that with age, our hearing ability drops from 20kHz to 15-16kHz. Having said all this, there must be, at least as a minority, punters who want to build neutral systems. If I am representative of this group's needs then I would ask of you, when recommending products, that you highlight those products that when used with other 'neutral' products that form the link in the chain, recreate the original performance as closely as possible. Or are there aspects I haven't considered?

New subject: valves. If a well designed valve amp is as good as, or better than, a well designed solid state amplifier, why are there no reviews of affordable valve power amps (Croft, Audio Innovations, etc)?

Regarding your World Favourites: why does Goldring dominate MM cartridges? Why is there such a limited choice of cartridges over £100? Why is the amp section so limited (CJ, Audio Research, Krell, Audio Note etc)? Similarly with speakers? Why are the ESL63s not mentioned?

A letter of mine was published in your December issue but I was disappointed that an MC cartridge was suggested for my MM amp! When I chastised EB in a subsequent fax, I suggested that you drag him to the dungeons for his sin. As I have not seen any signs of him of late, I assume you still have him locked up. Free him - all is forgiven!

**Manolis  
Kroussaniotakis  
Nicosia,  
Cyprus.**

Ah yes, the concept of the neutral system. This is a great idea, but I've learnt from experience that that is

all it can ever be. As a concept it is rooted back in the technologically go-getting Seventies and it is occasionally re-invoked nowadays, quite understandably since it seems eminently sensible.

Neutrality is, I can assure you, impossible to agree upon and is usually perceived as existing in the best items of the time, making it a relative value being constantly revised. This makes appending neutrality to an item a subjective judgement garbed as an absolute. It works up to a point amongst a peer group, often helped by a little coercion, but happily for us all, such groups - small and large - eventually break down.

Such a group, perhaps an influential one comprising engineers/reviewers or, in U.S. marketspeak 'opinion formers', may well conclude upon neutrality in a product, but that neutrality is illusory, existing only until a more neutral item comes along.

I believe many people would describe quality loudspeakers with

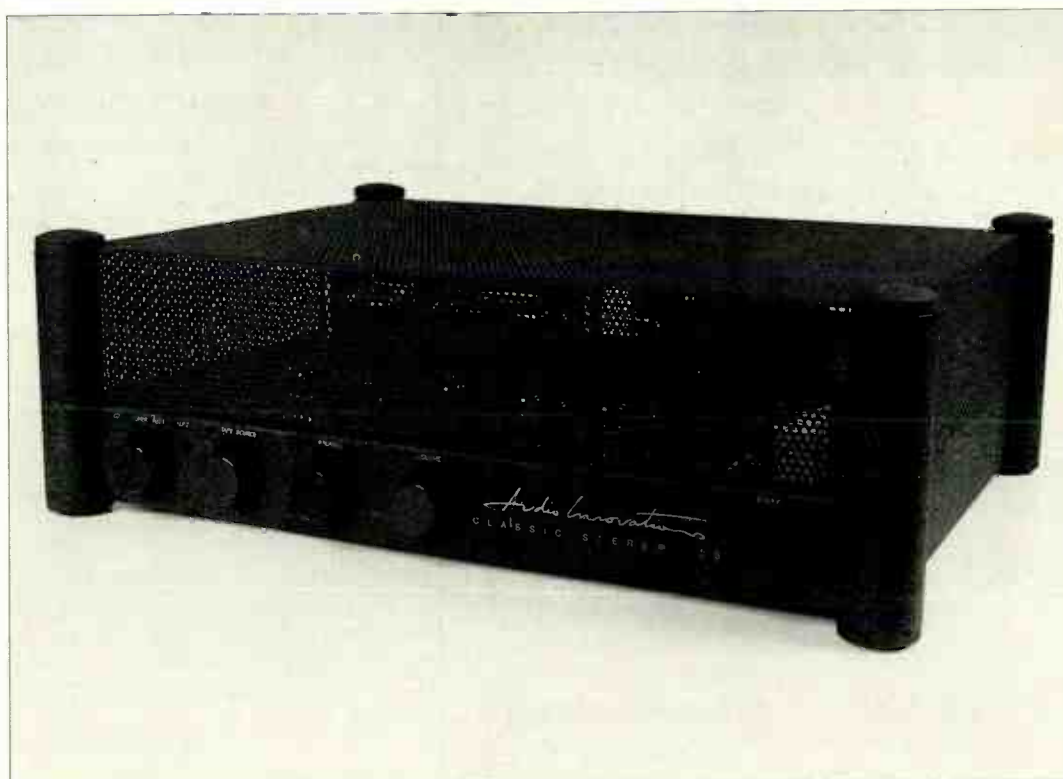
polypropylene cones as 'neutral', yet I also know of someone who insists such speakers invariably have a plastic 'quack' that he finds intolerable. Recently, we've been listening to hi-tech carbon-fibre cones and, you know, he was right!

In amplifiers the notion of neutrality can better be supported by apparently objective tests, eliminating fallible human judgement. But this only leads us straight into the arms of the largely discredited proposition that if it measures 'perfectly', it is perfect. Here we get into deeper waters, especially around a subjective test devised by Peter Walker that seems to confirm the proposition. It is one that few listeners agree with in practice, however, including us.

Finally, the other problem with reviving this notion is the speed with which it will be hijacked by every Jimmy in the business, misused and then fall into disrepute again. The Seventies were littered with 'neutral' loudspeakers, and

similarly with Monitors and, worse, Reference Monitors. In retrospect, a lot of these things were technical abominations. And what about Musicality and Musical sounding items - remember that one? 'Neutrality' is a specious concept it seems to me, one that's already been done to death once. I doubt whether it will ever be revised seriously, but doubtless it will continue to be used loosely.

We have reviewed affordable valve amps, including Audio Innovations, but there aren't so many of them widely available. Massive power amps with four figure price tags are greeted with some scepticism in these regions, but Audionote appears in this issue, which I hope more positively addresses one of your requests. Goldring MMs dominate because there seems little better at the price these days and Quad ESL-63s have disappeared from World Favourites for reasons completely unknown to us. They'll be put back in. **NK**



Affordable valves : the Audio Innovations Classic 25.

# WANTED

We wish to buy all kinds of secondhand Hi-Fi equipment from budget to exotic, old or new, working or not, odd items or complete systems.

- TURNTABLES - Japanese, Linn, Rega, Thorens, Lenco, Garrard, Dual, Michell etc.  
Belt Drive, Direct Drive, Idler Drive, plus Tonearms and Cartridges.
- AMPLIFIERS - Small ones, Large ones, Good ones, Bad ones, Valve ones, Transistor ones.  
Japanese, Armstrong, Rogers, Leak, Quad, Meridian, Pre-Amps, Power-Amps etc.
- RECEIVERS - Japanese, Goodmans, Leak, Armstrong etc.
- TUNERS - Analogue ones, Digital ones etc.
- CASSETTE DECKS - Single, Twins, Old Top Loaders etc.
- REEL - REEL - Revox, Aiwa, Philips, Ferrograph etc. Reels of Tape
- CD PLAYERS - Geriatric ones, Modern ones, Multibit ones, Singlebit ones.
- SPEAKERS - Big ones, Little ones, Famous ones, Forgotten ones, Brown ones, Black ones, inc. Diamonds, Goodmans, Maxims, Celestion, Dittons etc.  
Bookshelf ones, Floorstanding ones, Drive Units, Crossovers.

JOB LOTS OF ACCESSORIES, DEALERS TRADE INS., CLEAR-OUTS, DISCONTINUED MODELS, EQUIPMENT RACKS, CABLES, PLUGS, RECORD, TAPE, CD COLLECTIONS, GOOD, BAD, OLD, UGLY, BULKY, TINY, WORKING OR NOT.

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## V' audio

Hi-Fi Consultants

### Future Attractions

By the time this advert appears we should have the following exciting items on demo.

A) Electrocompaniet new super fidelity units; initially this will consist of the EC-4 line-stage pre-amp (1460), it's matching ECP-1 MM/MC phono amp (£625), and the ampliwire 100 SF dual mono balanced 2x100w power amp (2140). Class A performance during most operating conditions contribute to musical ease of the power amps. The units will be in the 'Larvikit' stone front finish as used on the Limited Edition Signature units, but can also be obtained with black acrylic faceplate and gold handles. Gold plated RCA Jacks and speaker terminals, as well as XLR's are standard. We are the first UK Dealer to have these units - see also Esoteric Audio Imports advert in this issue.

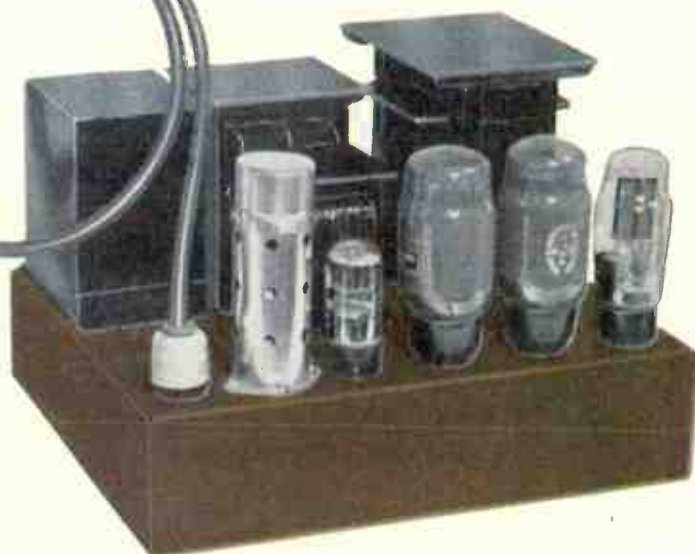
B) Trichord Research 'Pulsar' DAC outboard power supply improving even further the sound of this very popular unit.

C) The Triangle TE60 has impressed from the moment we heard it - near class 'A' sound, it does get hot - but sounds great on all our speakers. Now run in the Comete E Speakers are well worth a listen, especially for Acoustic/Jazz Fans. The TE60 is also an excellent pre-amp and is superb driving the TOCA 22 watt Pure Class A Power Amp into the Quad 63's

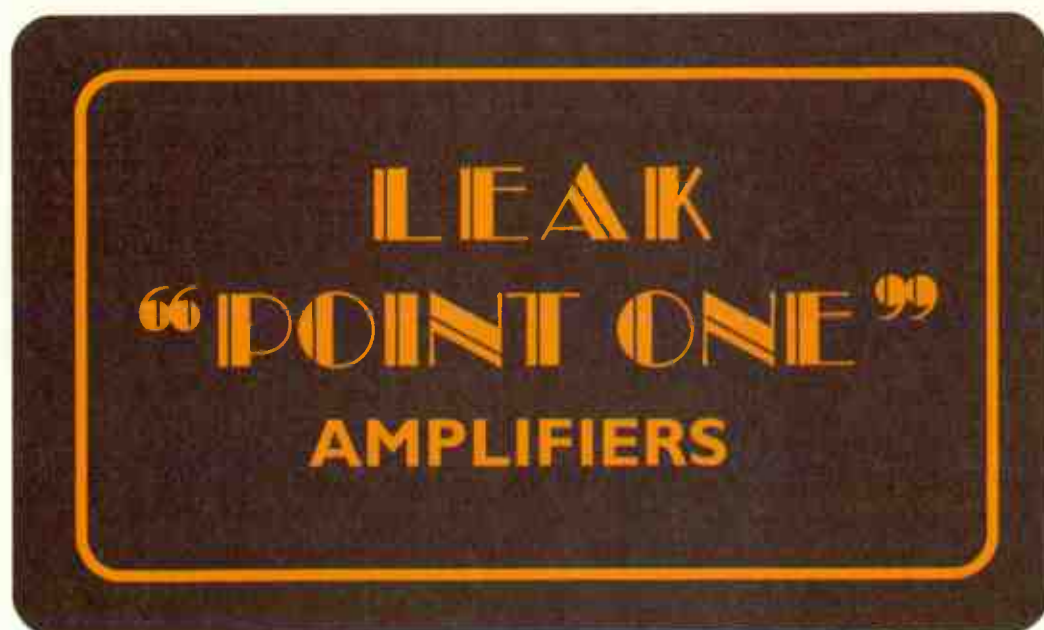
Ian C. Vaudin  
36 Druid Hill, Stock Bishop,  
Bristol BS9 1EJ.  
Tel. Bristol 686005



**RC/PA/U  
Remote Control  
Pre-Amplifier**



**TL/12 12 Watt Triple Loop  
Feedback Amplifier**



**By Graham Tricker of GT Audio.**

## PART I

The Leak TL12 'Point One' valve power amplifier was originally designed in 1945 and was revised in 1947. In revised form it remained in production well into the 1950s, in 1947 costing £25.15s. The 0.1 earned world acclaim as being the first amplifier able to achieve 0.1% distortion (hence the name), setting a performance standard for audio amplifiers of the time. Subsequently, 'Point One' became a trade mark of H.J. Leak and Co. Ltd.

The TL12, because of its designed-in reliability, accessibility (for replacement of parts), craftsmanship and finish was used not only for domestic music reproduction but also by professional audio engineers for broadcasting and recording and by telephone and telegraph companies.

The TL12 used Leak's triple loop feedback circuit, relying on a pair of triode connected KT66s to deliver 12 watts of power. The use of 26db of negative feedback was responsible for

its low 0.1% distortion rating. It should not be confused with the later and simpler TL12+ that had an entirely different valve line up comprising smaller EL84 output valves, an ECC81 phase splitter, an EF86 input valve and a GZ34 rectifier.

Original TL12 amplifiers are now very rare, since they've long been acclaimed by the Italians and Japanese, leaving very few left in the UK. Their dimensions are approximately 32cm x 25cm x 21cm

high and they weigh approximately 12 kilos each. They are quite a fair size for a valve amplifier, even by today's standards.

goes overseas since Britons don't really appreciate such things.

The cost of running Leak TL12s would be slightly greater than that of

a Leak Stereo 20, or a TL12+ , due to the fact that it uses the KT66 beam tetrode valve. The original GEC KT66 which the amp was designed

around is getting both scarce and expensive. The valve complement in the amp consists of an EF36 driver and ECC33 phase splitter, a pair of output KT66s and the GZ32 rectifier. Apart from the KT66s the other valves are relatively easily obtainable. As with all valve amps, the Leak's do have associated running costs, primarily that of replacement valves. However, the Leak circuits were designed to run the valves so gently that they would last up to 10 years without replacement. This was achieved because the valves were never overdriven and always designed to run well within the valve manufacturer's operating data.

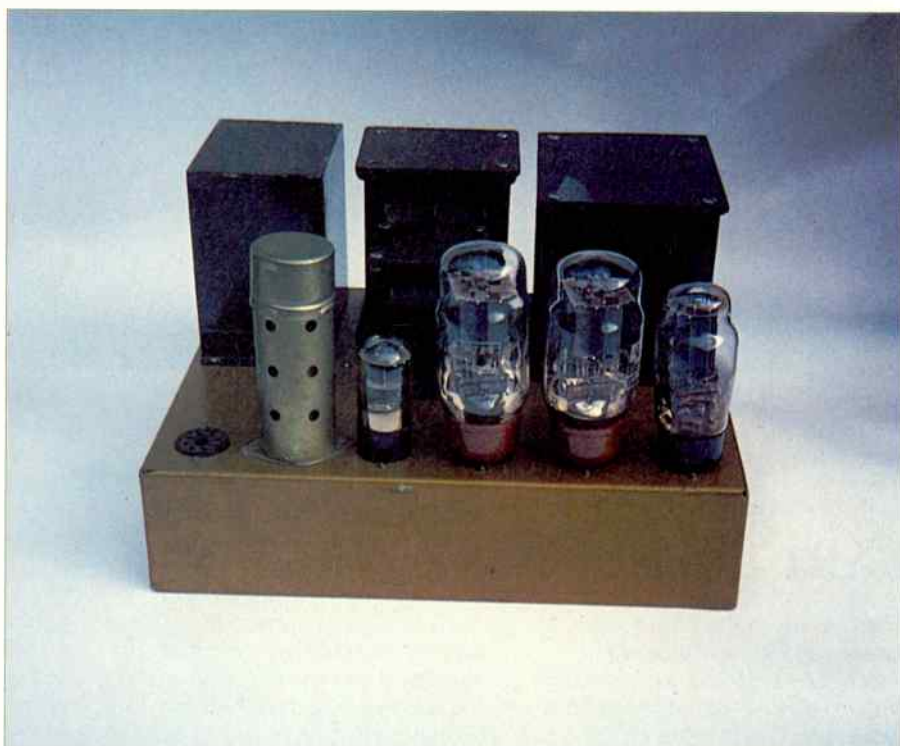
Although 12watts doesn't sound much power, when these amps were designed speakers were much more efficient, so anything more powerful was unnecessary. In the 70s and 80s, when speakers became less efficient, there was more



**Early Leak TL12s are now rare. Andy Groves, our valve amp designer, had a pair and confirms they have a sweet sound. Trouble is, whilst Brits were buying Japanese hi-fi, the knowledgeable Japanese were quietly buying British hi-fi, so Graham Tricker had to wait a year before these two units were unearthed by John Howes (left). Hi-Fi World spotted a thick wedge of £20 notes changing hands and came running!**

The attraction of the Leak TL12 has always been its great beauty of sound. It has the ability to reproduce music without adding any brightness or apparent unpleasant distortions to the sound. Voices, instruments or orchestras are reproduced with great naturalness, without any loss of dynamics. Because of the attention paid to detail in the circuit, components and construction of the amplifier, it can reproduce a sound stage very close to that of a live performance. Although rated at just 12 watts, sensitivity is high at 150 mV to produce full power. This is good compared to many power amps, both old and new, which need between 500mV and 1V.

Most Leak TL12s have now left our shores, so when they do become available they can fetch large sums of money considering their age. This is becoming increasingly the case for a lot of classic British equipment, but it



**Top view: At left is an International Octal valve holder input from the Leak preamp which carries HT (3) and heater supplies (4,5) in addition to signal (8). To its right is a can which covered and screened the EF36/37 input valve, which has a top cap. To its right lies the ECC33 phase splitter, then the KT66s and, at far right, the GZ32 HT rectifier.**

**Behind the valves you can see the main capacitor block at left, the output transformer in the middle and the mains transformer at right. In front of the output tranny sits a smoothing choke.**

demand for greater power output, which meant that output valves had to be run much harder, reducing valve life. Typically 2-3000 hours before replacement was recommended. Because Leak paid particular attention to reliability, there was no need to use matched pairs of output tubes, as with all self-bias amplifiers, although it does help. Bias adjustment is unnecessary too.

If a classic amp is being considered, you should always budget for spare valves on top of the cost of the amp.

Valves are consumables, much as tyres on cars.

When these amps were made, mono sound reproduction was the order of the day, but today you will probably want two for stereo. This is a drawback of the TL12, because during the course of its manufacture there were a number of variations and you need to find two identical units so that both channels sound the same.

Although the basic circuit stayed the same there were, for example, variations in the construction of the transformers. The early designs used an open frame design where one could see the core, as well as the wires going from core into chassis. Later types had side covers fitted to the transformers, filled with a bitumen compound. These transformers have smooth sides and look more modern. It goes further than this, as not all the transformers on one chassis were either open frame type or potted – a lot of TL12s had a combination of the two, which means getting two the same is very difficult.

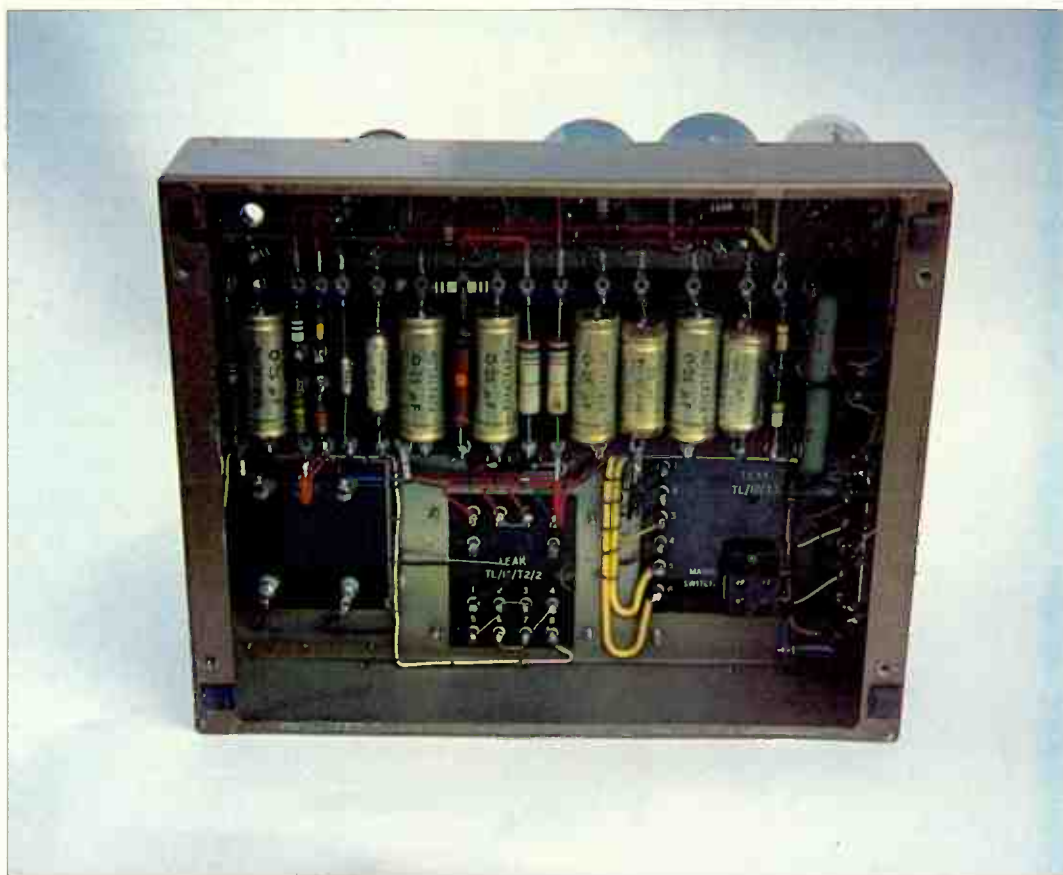
The BBC used this amp fitted inside a monitor loudspeaker. This produced a variant fitted with an attenuator unit and a sensitivity control. They were manufactured to a higher standard than the ones for domestic use and had an output transformer which has a range of

tappings better suited to present day loudspeakers.

The TL12 was designed in conjunction with an RC/PA/U control unit (preamp). There are a number of dealers who specialise in this type of equipment but scouring junk shops, book fairs, jumble sales could result in a lucky find. My pair took approximately one year for me to track down, so you may have to be patient.

Prices start at around £500 per pair for amps in working order but mint examples can cost considerably more. When purchasing amps such as this, if you are paying the above prices then they ought to be demonstrated as working. For single TL12s, expect to pay £100 – £200 depending on condition.

If you are buying without a demonstration, it may be worthwhile checking the output transformer with a multi-meter. The other major thing to look for is oil leakage from the main capacitor block. If there is a leak then the capacitor will fail. For proper restoration, a new capacitor block will have to be made, which will be costly. A further point to remember is that the amp uses metallised paper capacitors which after years of use can become 'leaky', which with the grid coupler will cause the valves to over-run, resulting eventually in failure.



**Underview:** Look for obvious signs of damage, either from overheating, or more likely from amateur repairs. The capacitor block at bottom left can leak oil. If so it may need replacement.

It is wise to check continuity in all transformer windings, especially in the primary of the output transformer (top four pins on central transformer unit).

## LEAK TL12 SPECIFICATION

Power	12watts
Frequency response (1dB)	5-25k
Distortion (1kHz) (equal 2nd & 3rd harmonics)	0.1%
Hum & noise	-80dB
Sensitivity	150mV
Input Z	1MΩ//10pF
Output transformers	
TL12/T2/2	4/8/16/32Ω
TL12/T2/1	2/4/8/16Ω
Mains input - 200-250V a.c., 120W (100-125V U.S.)	
heaters - 6.3V / H.T. - 440V	
Valves	
2 x KT66, 1 x EF36 or 37, 1 x ECC33, 1 x GX32	
Weight	12kgs
Dimensions	32 x 26 x 21 cms

OTHER MODELS - TL10, TL25, TL25A, TL50.

## PART - II

**The cost of restoration and usage. What can and cannot be replaced. Circuit diagram and parts identification. Quality of parts. Final performance and how to get the best from the restored amp. Matching preamps and speakers.**

# LIVING VOICE LOUDSPEAKER SYSTEMS

Audio signals can be of infinite complexity.

Their content is prone to corruption during any part of the processes of recording and reproduction.

Given that it is possible to store and recover this information with some degree of accuracy, (a debatable but necessary starting point) audio engineering's prime concerns are with the electronic amplification of that information and its conversion back to mechanical energy in the form of sound.

Both the amplification and the transducer used for the conversion will inevitably distort the signal. The art of good audio design lies in minimising the amount of distortion that occurs.

In each stage of amplification some distortion will be introduced, although most arises as a by-product of the output device's attempts to control an unco-operative loudspeaker. The ease with which the loudspeaker can be controlled varies depending on both frequency and level. It therefore makes good sense to employ the most load tolerant output devices possible in the amplifier, whilst keeping the number of gain stages to an absolute minimum.

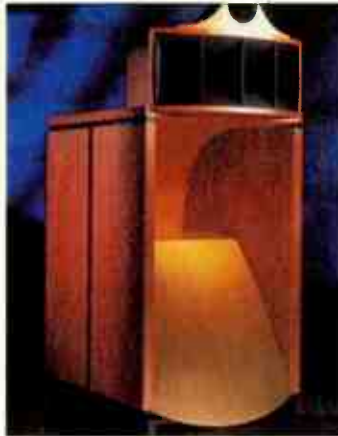
Simple low powered amplifiers that fulfil these criteria have become more widely available over the past few years. Until now, the full benefits of this simplicity have not been readily apparent as most commercially available loudspeakers are too difficult to control accurately.

Loudspeaker drive units operate by passing a varying signal through a coil which is suspended in a magnetic field. The coil is usually coupled to a diaphragm and moves backwards and forwards following fluctuations in the input signal. As it is difficult to arrange a magnetic field that remains constant over a large area, the accuracy with which the coil and diaphragm follow the signal deteriorates as the excursions become larger.

If a loudspeaker drive unit can be constructed whereby the coil and diaphragm assembly can move a great

deal of air easily for a very small excursion then it will not be necessary to use as much power to generate the required amount of sound. A technique that achieves this more effectively than any other is Horn Loading and involves coupling the diaphragm to the air by using a flared horn. By arranging that the horn opens out at an optimally calculated rate, very effective coupling can be achieved with minimum distortion.

The loudspeaker can then be said to be an efficient transducer and will be easier for our idealised simple amplifier to control.



The AIR PARTNER & TONE SCOUT Loudspeaker systems use the principle of full range horn loading to optimise their efficiency. Both are 3-way designs with crossover points at 500 Hz and 10 KHz and sensitivities of 108 & 104 dB/1watt @ 1 metre.

LIVING VOICE has worked closely with SECOMAC-VITAVOX and other EC based manufacturers on the development of proprietary bass and midrange drive units.

The bass drivers are straight-sided, undoped, paper cones mounted in sturdy cast baskets attached to huge magnet assemblies. The decay of the Bass unit's response is very smooth and does not present significant problems in the octave above crossover.

The bass horn is constructed entirely from High Density Birch Ply and is veneered using only "Crown-Cut" veneers.

The mid-range units are pressure drivers featuring a rigid dome driven by a 75mm diameter coil operating in an intense magnetic field. The dome and coil former is single piece of 50 micron thick, chemically stiffened aluminium. With the coil wound directly onto the dome there is direct drive with no intervening adhesive joint. The magnetic field is powered by a heavy ring magnet of Titanium, Nickel and Cobalt alloy.

Once again, the high frequency performance of the driver must decay smoothly and this is achieved by a phase corrector in the centre pole of the magnetic circuit. A complex arrangement of precision machined, tapered plugs form three concentric air channels angled to join each other in the heart of the unit.

These drivers are directly coupled to a genuine, multi-cellular high frequency horn formed as a single piece aluminium casting. The assembly is encased in a matching, veneered cabinet.

The extreme treble response of both designs are handled by smaller horn loaded pressure drivers.

The astonishing efficiency of both the AIR PARTNER & TONE SCOUT allows them to reproduce all types of music with an appropriate sense of scale and ease. When used with suitable ancillary equipment they offer a level of resolution and realism that can truly be described as peerless.

**Definitive Audio Import/Export Tel. 0602 813562**

## IN THE SEPTEMBER ISSUE

With summer reaching its peak, we'll be finding the sunshine in hi-fi this month. Watch out for the September issue, with 150 pages of audiophile delights - you'd be mad to miss it! Here's just a small selection of what we hope to bring you -

### TURNTABLES GROUP TEST

If you thought vinyl was dead, think again. We've found four superb turntables around the £400 price mark that offer sound quality in the first division.

### LEAK TL12 - PART II

Following on from Part I in this issue, Graham Tricker takes you through the restoration of this classic amplifier. Practical advice on what to replace, and where to get the components.

### RESTORE OR RENOVATE?

Is it best to restore a classic amplifier such as the Leak TL12 to its original state, or renovate it by improving on the original components and, perhaps, design? Haden Boardman discusses these much argued options

### HARMAN KARDON LS-0200

Following the success of the 0300 and 0500 loudspeakers from Harman Kardon, we take a look at the budget 0200s.

### SPENDOR SP7

An elegant new two-way floorstander from loudspeaker specialist Spendor. Custom designed and built bass units accompany traditional engineering excellence.

### 300B KIT AMPLIFIER

At last, our 300B kit amplifier is ready! We describe in detail the final design - and why it took so long!

Hi-Fi World is still only £2, but with more editorial than most rivals. With the most enthusiastic and expert editorial team in hi-fi journalism, can you afford to miss it? Make sure you don't by filling in this order form and handing it to your newsagent. ▶▶



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MAGAZINE MARKETING

Is hi-fi a dying subject? Recently, with the demise of Audiophile magazine and the publication of a new set of Audit Bureau of Circulation (ABC) figures showing UK hi-fi magazine circulations in steady and apparently irreversible decline, many Jeremiahs in the audio industry have told me they think it is. All the talk is of A/V (AudioVisual) systems, which are to be the new thing.

In wealthy Japan and America especially, there's a growing market for A/V, due to various influences, including rising affluence and reasonably easy access to a widening variety of information sources. Cable TV, Satellite TV, interactive cable networks, multi-way telephone links, CDI, video rental outlets and global computer communications links, such as E-Mail are all sources of information seeking to find their way into the home via A/V systems (the computer is included here as part of an integrated A/V system).

Big media groups like News International (The Sun, The Times, The Sunday Times, etc), Pearson (Financial Times) and communications giants like AT&T and British Telecom want to sell you their news, information and entertainment services, present advertising and charge for the transmission of this material into the home. What the full implications are likely to be and whether you and I will buy, buy, buy is another matter altogether.

The demand for A/V potentially brings in big sales for a broad spectrum of electronics manufacturers, since a system needs a monitor screen, a TV tuner, a video recorder, possibly a video disc player, a special multi-channel amplifier with Dolby decoding and no fewer than five loudspeakers. That's a lot of kit. Deeply involved players are the major Consumer Electronics (CE) companies of course, like Sony, Hitachi, Panasonic and Philips, to

name a few, as well as Dolby who seek to promote their compression and surround-sound system for home use. The A/V phenomenon offers them rich pickings: they're all piling in.

How does this affect the average hi-fi enthusiast? Within this potentially massive new market for C.E. goods, transmission services and programme software, hi-fi takes a relatively minor role. Mr Globally Linked comes home in the evening and makes a choice from the huge range of media



## Reflections from Noel Keywood kaleidoscope

sources he has supposedly paid for, one of which will be CD, or perhaps MD/DCC. That's how industry today sees hi-fi, as a minor part of a major communications revolution. For them it heralds big, big sales, but forget hi-fi - we're talking A/V here. Hi-Fi as an independent subject is, in this scenario, a minor concern, the hi-fi enthusiast an outdated Neanderthal commonly cloaked in an anorak for easy identification and dismissal.

Declining sales of U.K. hi-fi magazines would appear to confirm this trend. In response, major publishers, you may well have noticed, are all starting A/V and Home Cinema magazines to cater for the new market and get a share of the huge advertising campaigns that are breaking.

Is hi-fi as a subject dead? No. It is hi-fi in an A/V context that is dying, since it forms just one small, almost inconsequential part of the larger overall scheme. At this level, hi-fi equipment has the same status as a television or a video

recorder. People don't buy magazines to read about these things, except in the form of buying guides - that's one reason why circulations are in decline.

All the same, hi-fi won't die. Making music is performance and listening to it a deeply emotional experience that is interpretive; it is not literal. People will always want to listen to music, in live form or well reproduced in the home. What militates for a continuing interest in hi-fi is the cogent and unique way in which music influences us and, from this, a need to hear it beautifully reproduced. What I'm talking about here is a deep seated human need. Where there's such a powerful need, there'll also be a means of fulfilment.

Uncatered for by major manufacturers and magazines, enthusiasts are becoming increasingly determined and dedicated, but they also operate away from the mainstream, underground if you like. A sense of community is found by small interactive groups. Hi-Fi Societies constitute such a grouping and they communicate at

their level, rather than through magazines or the overground 'industry'. We are talking about hobbyists here.

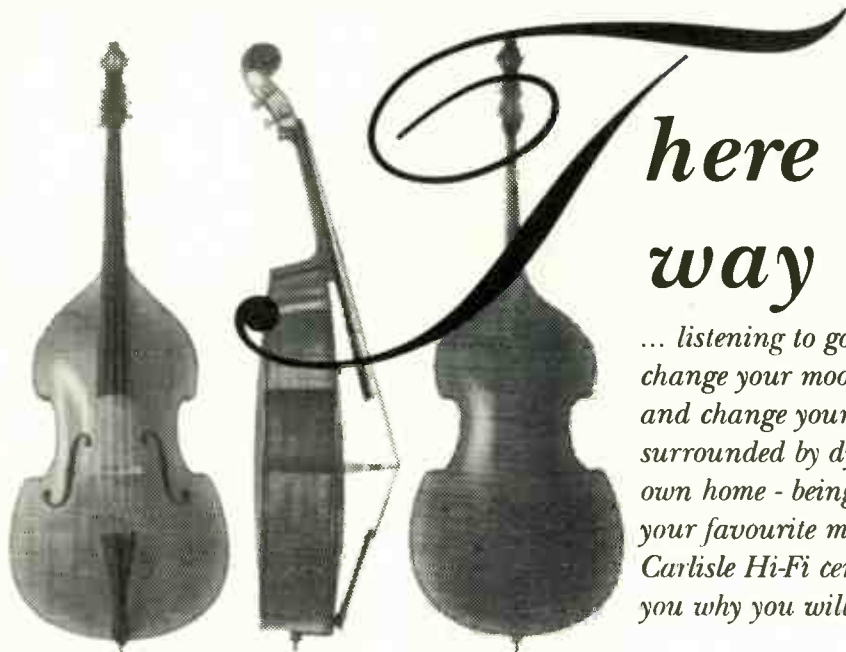
It is a fact, shown by Britain's Office of Population Census and Surveys, that people have more leisure time and more to spend on it. They are switching off from being a couch potato and switching on to active leisure time pursuits where they are in control.

Not unsurprisingly, such pursuits are increasingly popular. They are DIY, sport, gardening,

visiting country homes / museums and such like. Although DIY in this case means painting and sawing bits of wood, etc, it can equally embrace DIY hi-fi, which has the great benefit of being a wintertime activity (unlike most others) and vocationally useful too, especially if you are young.

Already in Britain I am starting to see hi-fi groups and societies growing stronger and more numerous, even while hi-fi in the A/V context declines. People are talking to each other about hi-fi, but it is taking place at a different, more specialist level than the overground publishers are wont to deal with. The advertising isn't there, neither are they.

Hi-fi as a subject will not die. We are not about to kiss goodbye to a means of furthering our enjoyment of music, a wonderful hobby and a shared experience. In effect, as the big companies lumber off to find new pastures, followed by the major publishers, it'll be reborn again in purer form, largely freed from commercial pressures and hype I hope ●



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If you possess any aspirations towards electronic design, and indeed if you have tried some already, I'm sure you will appreciate just how much maths is required. A computer (especially a 486 or 386 with a maths co-processor which can handle floating-point maths very quickly) will launch your design abilities beyond anything you could reasonably undertake on paper.

But what software should you look at? Well, there are many dedicated electronics computer-aided-design (CAD) packages that will assist your designing activities in four main ways: circuit analysis, circuit diagram drawing (usually known as schematic capture programs), PCB layout and mathematics programs.

Circuit analysis programs range from the comprehensive, and cerebral, family of SPICE circuit modelling packages developed at the University of California at Berkeley, which allow for generation and analysis of circuits and signals in the time and the frequency domain as well as calculating accurate a.c. conditions, to relatively simple a.c. circuit analysis programs like ANALYSER III from Number One Systems. Mixed digital and analogue simulation can be performed by the powerful PSpice package from MicroSim Corporation. Cheaper software may be less visually impressive, but it can still be very useful.

For instance, I've used ANALYSER to 'prototype' a RIAA amplification stage. I would have had to invest in hundreds (or perhaps even thousands) of pounds' worth of test equipment to have measured the response of a real circuit as accurately, whereas ANALYSER III costs about £100 for an entry-level program. It also took me about 5 minutes to enter the circuit into the computer. Compare that with how long it would

have taken me to build the circuit from scratch!

Schematic capture programs come in two families: those which are devoted to circuit drawing and which produce an output netlist (basically a text listing of all the components and connections) in various different formats required by PCB layout programs, and those which integrate schematic capture as part of the PCB design process. If you are really serious about electronics design you should look at the first type



# recorded message

Left by Richard Brice

because many of the integrated packages won't produce netlists in industry-standard formats. If you are interested solely in circuit design for your own edification and delight, the integrated packages represent very good value for money. Examples of integrated packages are: ULTIboard and ULTIcap from ULTIimate Technology, Board Capture, Maker and Router from Tsein, EasyPC from Number One Systems, Proteus from Labcenter Electronics (which integrates a circuit analysis program too!) and Ranger I from Seetrax. The two most widely used, industry-standard, dedicated schematic capture programs are FutureNet from Data I/O Corp. and Orcad. Both these programs are excellent, but probably a little expensive for the amateur.

Math packages offer powerful mathematical muscle to folks in many fields, not just electronics. The 'daddy' in this area (or should one say 'the mother of all Maths CAD packages') is Mathcad from Mathsoft. The newest

version of this software is Mathcad 4.0, which takes full advantage of the 32-bit architecture of the 486 (and later 386s) and, like version 3, runs under Windows. With the benefit of the Windows interface, this program is visually enthralling, enabling you to plot 2D and 3D graphs; it will also perform algebra, calculus and matrix manipulations for you. But be warned, despite an excellent manual this program is no substitute for a mathematical education; it requires a solid understanding of the mathematical principles involved to get much out of it.

Of course, this isn't a comprehensive review of the available software, which is a burgeoning market area with bigger, newer and better packages appearing every week. I've concentrated on electronics, rather than mechanical CAD. If you are more interested, for instance, in designing and building your own speakers, you might want to look at one of the many mechanical CAD packages like Autosketch for Windows to generate

drawings and cutting lists. Always remember to ring the manufacturer or local dealer and ask if a demo disc is available either for free or for a small charge. Many software developers supply a low-cost demo version (for example Pspice) which maintain full functionality, but limit data entry, which means, for instance, that only small circuits can be analysed or only small PCBs routed. These offer an excellent way to fully evaluate a program before investing in the full system.

**Circuit Analysis:**  
**PsPice**  
**MicroSim Corp, from ARS Systems 0276-685005**

**Analyser 3**  
**Number One Systems**  
**0480-461778**

**Proteus**  
**Labcenter Electronics**  
**0274 542868**

**Schematic Capture and PCB Layout:**  
**Orcad**  
**from ARS Systems**  
**0276-685005**

**FutureNet**  
**Data I/O Corp**  
**0101-206-881-6444**

**ULTIcap & ULTIboard**  
**ULTIimate Technology Ltd**  
**0734-812030**

**Proteus**  
**Labcenter Electronics**  
**0274 542868**

**Ranger I**  
**Seetrax 0705 591037**  
**Easy PC**  
**Number One Systems**  
**0480-461778**

**Maths:**  
**Mathcad Adept**  
**Scientific Micro Systems**  
**(0462-480213)**

Started just a few years ago, TDL had until recently been a small loudspeaker manufacturer of the second division. The big three (Mission, Tannoy and Celestion) felt they had little to fear from a company whose cheapest speaker, the TDL Studio 0.5, retailed at £500.

How wrong they have been. When TDL announced the introduction of a speaker for under £100, Reflex Transmission Line (RTL) speakers from £160 and floor standing RTLs for just £250 (still half that of the 0.5 remember), surprise and a good deal of calculator button pushing swept through the industry. What's more, the speakers turned out to be well finished (despite using vinyl wraps for the first time), had excellent specifications and sounded pretty decent too!

Two loudspeakers in the RTL range, the RTL 2 and 3, have already been reviewed in these pages - they were a resounding success. Here we set our sights a little lower and look at the price sensitive entry model, the TDL Near Field Monitor (NFM).

When they were priced at under £100, we all thought TDL must, quite simply, have gone mad. Now, at £119.95, they're still a bargain when the specification and competition is taken into consideration.

Our samples were finished in a surprisingly effective Rosewood vinyl wrap. Although vinyl effect wood finishes seem most at home on cheap kitchen units, this particular finish complemented the speaker well. A more conservative black Ash finish is also available.

Other pleasant surprises came from the use of decent binding posts (not the spring clip designs featured on Celestion 1s and the like), a decent quality crossover and a bass unit which is actually TDL's own design (rather than the usual cheap and convenient off-the-shelf item). Its 130mm doped paper cone is driven by a fair sized magnet for the price, and the unit is soldered to the connecting wires (almost unheard of at this price).

One part of the design which comes as no surprise, though, is the 10mm tweeter. From Audax, it is typical of the breed, appearing on some of the NFM's competitors, such as speakers from JPW and Richard Allan.

The design is rear-ported, so it needs to be placed about 6" from a rear wall.

The 88dB efficiency ensures amps of modest power (such as the NAD 302, Rotel RA930) are capable of powering it satisfactorily in a small room.

Being a small speaker, I expected the TDLs to work well with speech. They didn't disappoint. Fed by a Revox tuner

smoothness. It made the speaker very comfortable to listen to, but perhaps lacking in excitement.

Capercaillie's 'Sor aidh Bhuam an Barraidh' is an upbeat folk piece. Here the bass again seemed artificially boosted, which had the effect of slowing down its pace. It could also 'boom' and produce a one-note bass lacking in texture. Whilst the treble remained restrained, on female vocals at least, there was a refreshing lack of sibilance and 'tizz'. Vocals are clearly the TDL's strong point, remaining faithful to the original recording. The flute was confidently portrayed with fine insight to every breath and overall, the result was that the music 'jelled' and had coherence.

Despite the NFM's very real limitations, they still had my foot tapping - which means they must have got something right!

Changing the source from vinyl to CD showed a preference for the latter. Using Richard Thompson's latest album and 'Sweet talker', the treble livened up considerably. However, the speakers did still give the impression of trying too hard to produce effective dynamic contrast, which resulted in the bass wallowing again. It's the type of bass 'waffle' that small bass units in ported cabinets often suffer, but lightly stuffing the port with foam can often produce a partial cure. The 'speakers still had good grip on the music and never sounded strained with more effervescent tracks.

# MIGHTY MINIATURE

**TDL, better known for their floorstanding transmission line designs, have entered the fiercely competitive bookshelf loudspeaker market with their £120 Near Field Monitors.**

**Dominic Todd reckons they'll find success.**

set to Radio 4, the NFMs sounded superbly neutral and transparent. Speech was uncoloured and totally free from boxiness, placed in a soundstage far broader than one would expect for the size of cabinet.

With music, the TDLs were obviously more limited, but still they impressed me. From The Stranglers' 'Golden Brown' they produced reasonably deep bass, even when placed one foot away from the wall (to improve their imaging). However, the bass couldn't really be called solid; it was 'euphonic' (i.e. soft!) and somewhat slow in places. Percussion, too, seemed strangely softened, although it was all there, with a sense of space and a marked lack of harshness. The general impression was one of overriding

## MEASURED PERFORMANCE

These are TDL's first and, as far as I know, only non-transmission line 'speakers. The question I wanted to ask was - how were they going to deliver the bass TDL lovers are accustomed to?

The simple answer is: they can't. But although their bass certainly isn't as deep or strong as that of their transmission line designs, the NFMs still extend quite a good way down for their size. John Wright, TDL's founder and designer, has the bass unit built in-house, so its parameters can be tuned for optimum results from a compact reflex enclosure.

The rest of the response tells a good tale too. Midrange is reasonably smooth and not recessed in any way that would be

likely to impart box-bound colourations. Treble output is flat and level with that of the midrange, so I wouldn't expect the speakers to sound either dull or overly bright. They should have a neutral balance with good bass for their size, especially when used in close proximity to a rear wall.

Another plus side to these miniatures is their higher than average sensitivity of 87.5dB, coupled with a flat impedance curve. The former makes them especially suitable for the budget amplifiers they are likely to be partnered with; the NFMs will go loud with relatively few watts. The flat, high impedance curve (9.1Ω overall) will further ease the load on budget amplifiers,





Next I played Eric Clapton's Unplugged, just out of nostalgia, remembering that when this album was played through TDL Studio Monitors they were superb with such a 'live' recording. I was interested to see if the NFMs would display a similar ability, even with a price disparity of some £1880 between the two! Sure enough, the small TDLs did excel here. Timing was accurate

and the finely etched guitar wasn't overblown, as can sometimes be the case. This is an album without a deep, processed bass, so the NFMs weren't caught out and expressed themselves well, delivering an open, clean and punchy sound without hindrance from woolly bass.

The TDL Near Field Monitors possess fine build quality and a

specification that could easily be justified on a speaker costing half as much again; they enhance TDL's reputation as a speaker manufacturer. Whilst their sound quality is not perfect, against the competition at this price it's good enough to be near the top of the pack. By far their greatest weakness is overblown bass (even when placed a foot away from the wall), but even this could be moderated by careful speaker cable choice and experimentation with port damping. In any case, it's understandable that TDL have chosen such a balance in view of the fact that partnering budget amps and CD players are often bass light.

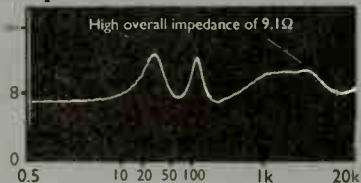
Forgive them their bass problems, match carefully, and the NFMs will reward with an involving 'big boned' presentation that belies their size and price. Alongside Tannoy 603IIs, Goodmans Maxims and Richard Allan Minettes, TDL's babies are well worth a listen. With these speakers, TDL are in the first division ●

demanding less current and being less reactive than most.

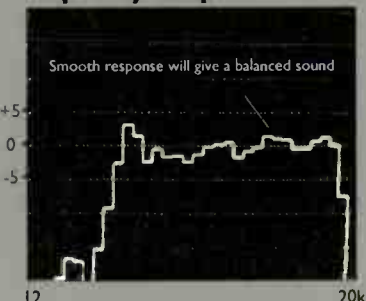
The NFMs are a well engineered and thought out design. They combine good bass with easy drive characteristics. A

good budget transistor amp. of a modest 30watts or so should be ideal. **DB**

**Impedance**



**Frequency Response**



**TDL NFM** **£120**  
**TDL Electronics Ltd.,**  
**Unit 2,**  
**Pilot Trading Estate,**  
**High Wycombe,**  
**Bucks. HP12 3AB**  
**Tel: 0494 441191**

# COMPETITION - WIN ONE OF THREE SUPERB ROTEL AMPLIFIER/ TDL LOUDSPEAKER COMBINATIONS

**T**his month we have some fabulous prizes on offer. Three of the finest cord systems available for the money in fact, combining the strengths of British loudspeaker engineering from TDL together with Rotel amplifiers fastidiously tuned for highest quality sound.

## 1ST PRIZE

Rotel's RC980BX/RB980BX pre/power amplifier driving TDL RTL3 loudspeakers

The first prize is a system with real power, able to deliver some of the deepest

and most controlled bass around. TDL's RTL3s are a floorstanding reflex transmission line using twin 6.5inch custom made polypropylene bass units. They accurately resolve low frequency content without sounding overblown.

Providing a firm grip on the RTL3s is Rotel's RC980BX/RB980BX pre/power amplifier. The preamplifier offers a wide range of inputs, including two tape loops and MM/MC phono. The RB980BX power amplifier produces a powerful 120watts, which into the efficient RTL3s should be

enough to fill even the grandest listening room.

## 2ND PRIZE

TDL's RTL2s were another group test success, coming top in our loudspeaker group test, December '93 issue. Particularly liked was their ability to open out a soundstage, producing a full scale performance. These are coupled with the superb Rotel RA-960BXII which produces 78watts of smooth, confident sound, our tests showed.

## 3RD PRIZE

This comprises a pair of TDL RTL1 reflex transmission line 'speakers and the Rotel RA-935BX amplifier so favourably received in our June '94 group test. Particularly liked was its neutral mid-band, detailed presentation and deep bass. The RTL1s are a small standmounter, but none the less are capable of superb results thanks to a custom designed bass unit.

To enter this fabulous competition for three super quality Rotel/TDL systems, simply complete the questions opposite.

Please send your entry on a POSTCARD or the back of a SEALED ENVELOPE, and completed in block capitals, to arrive no later than Friday 5th August 1994 to:

**ROTEL/TDL Competition**  
**Hi-Fi World Magazine,**  
**64 Castellain Road,**  
**Maida Vale,**  
**London. W9 1EX.**

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

In the event of more than one entrant submitting all the correct answers, the winners will be picked by the Editor from the hat in the order 3, 2, 1. We will endeavour to publish the results in the October 1994 issue. Purchase of the magazine is not a precondition to entry.

No correspondence about this competition will be entered into and the Editor's decision is final.

No employees of Audio Publishing Ltd. or any of the companies associated with production or distribution of the prizes may enter ●

### COMPETITION ENTRY QUESTIONS

1) When was the Rotel RA-935BX reviewed in Hi-Fi World?

- |              |             |
|--------------|-------------|
| A. April '92 | B. May '93  |
| C. June '94  | D. July '95 |

2) TDL are best known for transmission line 'speakers, but what does RTL stands for?

- |                            |                             |
|----------------------------|-----------------------------|
| A. Round Transmission Line | B. Reflex Transmission Line |
| C. Reflex Transport Line   | D. Reflex Transmission Load |

3) How powerful is the Rotel RA-960BXII amplifier?

- |             |             |
|-------------|-------------|
| A. 40watts  | B. 78watts  |
| C. 120watts | D. 150watts |

4) How many, and what size are the bass units in the RTL3?

- |                |              |
|----------------|--------------|
| A. One 6.5inch | B. One 8inch |
| C. Two 6.5inch | D. Two 8inch |

### THE TIE BREAKER (OBLIGATORY)

Ortofon are looking for a SLOGAN to characterise their commitment to vinyl. In no more than ten words, suggest something appropriate.

.....

We will endeavour to publish the results in the October 1994 issue. Purchase of the magazine is not a precondition to entry.

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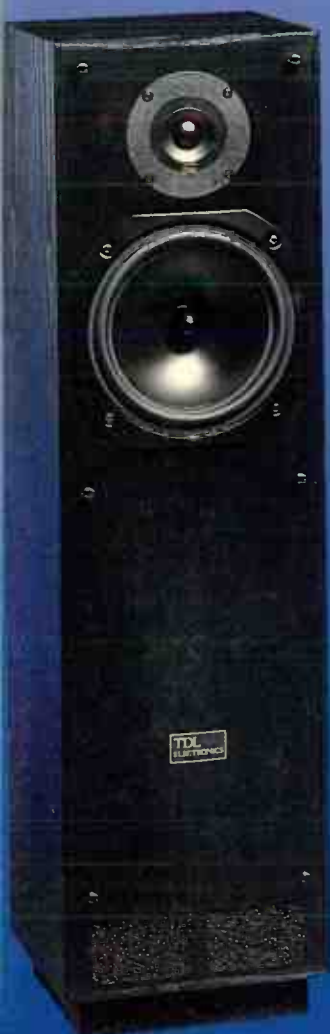
Rotel RA-935BX amplifier



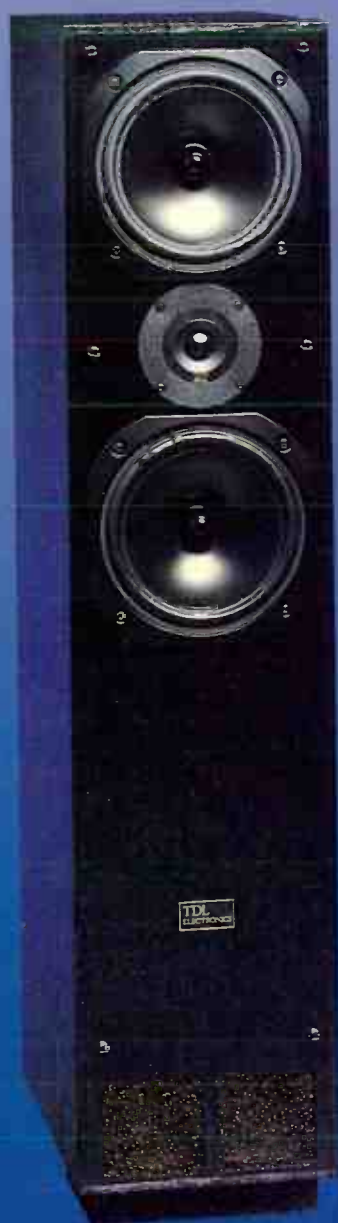
Rotel RC 980BX pre-amplifier and RB 980BX power amplifier



Rotel RA 960 BX



TDL RTL2



TDL RTL3



TDL RTL1

**JUNE ISSUE  
COMPETITION -  
FIVE PAIRS OF TOP  
KEF REFERENCE  
LOUDSPEAKERS**

No less than five lucky winners for this one. Here are the lucky winners:

1st prize of a pair of KEF Reference 105/3 loudspeakers goes to: Mr M. Ward of Hull

2nd-5th prizes of KEF Reference 101/3 loudspeakers go to:

1. Mr D. Larkin of London
2. Mr A.P. Chapple of Gwynllyn
3. Mr M. Passey of Newport
4. Mr M. Westmancoat of Sutton Coldfield

Congratulations to all the winners.



Recently I finally found time to visit specialist drive unit manufacturer Audax, down in Chateau-Du-Loir, near Le Mans in France (approx. 100 miles South of Normandy). The weather was fantastic and the food, as ever, fabulous. But the real reason for the trip was to find out what new drive unit materials are being developed for the future.

This visit, to a modern, hi-tech drive unit manufacturer who uses no less than twelve different cone materials in the standard catalogue range, is something many UK manufacturers would benefit from. It gives a cogent insight of what is possible with today's materials and technologies, as well as what lies ahead.

Regular readers will be familiar with HDA (High Definition Aerogel) as a cone material, a development we've been following over the last few months. HDA is made from an acrylic polymer gel in which a carefully controlled amount of carbon and Kevlar fibres are embedded. This is then heated in an oven to form an extremely rigid composite. It is ultra light and super strong, imparting high sensitivity and fast response to transients. It gives a detailed and crisp sound unmatched by most other materials. HDA has been used by Audax in a range of drive units for very high quality hi-fi systems.

However, in the professional recording/PA industry, high sensitivity and power handling are not new. Sensitivities of above 100dB are considered average. Many of the properties of HDA looked attractive, but it wasn't strong enough to survive extended high powers - so along came HD-I. This is made in a very similar way to HDA, but the carbon and Kevlar fibres are longer, giving greater strength.

At the moment Audax have just one model, a 15inch HD-I unit, available, but they are still developing the material and learning about its properties; prototype units for 6.5, 8

and 10inch HD-I units are already under way. This is just one of the new materials under development.

It's not just new materials they are investigating, but new technology as well. See this month's News section about their new, oval gold dome tweeter which is exciting people in the industry at present.

So, what is the advantage of these recent advances in drive unit technology? To start with, higher sensitivity and a higher overall impedance



Dominic Baker

## dB on the level

means less work for your amplifier. Most amplifiers tend to distort more as power increases, so for the same loudness a sensitive speaker will cause less distortion than an insensitive one.

You may think this is only important for valve amplifiers, but it is possibly more important for transistor amps. Valve amplifiers, in general, tend to produce even-order harmonic distortion, which our ears find acceptable in small doses. Transistor amps on the other hand commonly produce odd order distortion, which, even in small amounts, can result in a sharp or gritty sounding midband and treble. So it is important to keep distortion as low as possible if you want a smooth sound from your transistors.

If one loudspeaker produces 84dB of sound from a watt and another 90dB, the latter is turning more of the signal it is supplied into music. Insensitive speakers tend to lose fine detail, making

them sound heavier, slower and often muggy in comparison to the highly detailed and energetic sound a sensitive 'speaker can produce.

Low level detail provides much of the subtle ambience and atmosphere that makes a recording seem natural and lifelike. This low level detail is of minute signal level. Imagine such a minuscule signal trying to push and control a heavy, inefficient cone. Much of it will be absorbed by an insensitive loudspeaker, little being heard by the listener.

A sensitive loudspeaker on the other hand, using a modern, super-light cone and highly efficient motor/magnet, will better turn his low level signal into sound. For a long time it has been appreciated that light-cone, high sensitivity loudspeakers give a brighter, more detailed and faster sound.

Light cones respond more quickly and linearly to transients. As a result, you rarely find ponderous bass with a sensitive

loudspeaker.

A light and fast cone shares sonic properties with electrostatic loudspeakers; the concept of a light and highly responsive diaphragm is very similar. Because of this, and the stiff high-technology materials used, high efficiency dynamic drive units possess more of the transparency and openness of electrostatics.

At last, larger manufacturers are beginning to consider such things. The benefits of highly efficient drivers have long been known about, even if the

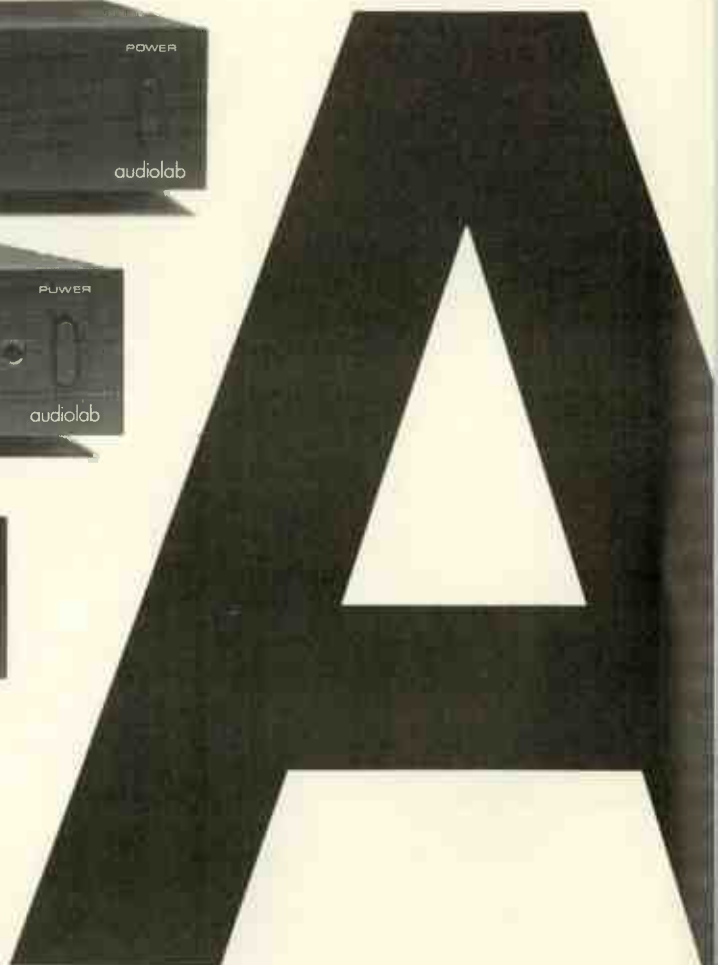
materials to build them have not been available. Mission recently launched the first commercial loudspeaker to use Audax's HDA cone material, the 752. They were so impressed by its abilities they decided to use HDA even though it cost more than any other drive unit they had ever used.

Our KLS3 loudspeaker is another example of a modern, high sensitivity design, although it is only available for DIYers. Hopefully, the industry will start to seriously consider the merits of such 'speakers and we will see sensitivities start to rise, allowing greater flexibility with amplifier design, which itself seems to have come to a bit of a standstill recently. If you only have to produce 10watts instead of 100, the money saved can be spent on better quality components which in turn will give better sonority. So a high sensitivity loudspeaker not only sounds better in itself, but makes your amplifier sound better too and this is, after all, what we are all striving for ●

*The new Audiolab 8000CDM Compact Disc Transport*



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8000PPA Phono Pre-amplifier  
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8000M Monobloc Power Amplifier  
8000DAC Digital-analogue Convertor  
8000CDM Compact Disc Transport



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World Radio History

**B**rowsing through this magazine you'll notice mountains of text on how equipment sounds and rivers of ink on how it measures. And why not? This is a hi-fi magazine after all. Yet many people don't actually buy their hi-fi for what it sounds like, but for what it looks like. It seems only right then to explore just what is stylish hi-fi and what is not. After all, once such style gurus have purchased their hi-fi they might actually enjoy listening to it, making style a lure for the hidden wonders of good sound quality. And, in any case, why shouldn't hi-fi look as good as it sounds?

Hi-fi equipment tends to fall into four distinct categories: boring black boxes; traditional hi-fi; slightly more stylish blackish boxes; wild and wacky.

The first of these includes most of the mass market hi-fi separates on sale today. Mainly Japanese in origin, they are easily spotted, flaunting oft-garish golden script, big golden (effect) feet, and enough flashing lights to rival Piccadilly Circus. It's hardly surprising that hi-fi doesn't aesthetically appeal to most folk when styled like this. Unless, that is, you drive an XR3i with a fluorescent Oakley sticker and blacked out rear lights! However, whilst the Japanese set the dominant market style, they have been slavishly followed by British specialist manufacturers, namely Linn, Mission, Naim, Arcam and Audiolab, all of whom also make, in style terms, black boxes. Once upon a time, things were different - does anyone recall the wonderfully slim, silver Cambridge P50 amplifier of the early seventies, replete with wooden end cheeks?

Traditional hi-fi, the second category, takes the form of conservatively styled turntables, valve amplifiers and loudspeakers. No matter how well finished these items may be, or how good they sound, they can't escape from being labelled "old fashioned" by hi-fi

illiterati. The number of times I must have heard the following comment, or similar, in reference to a £2000 valve amplifier: "it's just like the old valve radiograms and television sets we used to have!" Or, in reference to a Roksan Xerxes, Artemiz, Shiraz: "Look at that wonderful old wooden record player!" Little do they know that the very same "old record player and valve amplifier" would blow their brand new "hi-tech" Midi-system to the far extremities of the earth.



## Fair Views

- from Dominic Todd, our man in Scarborough

Pay a visit to the Design museum, by Tower Bridge, and you'll find that it's the third category (slightly more stylish blackish boxes) that are held up as bastions of fine hi-fi design. A selection of Quad equipment through the ages and a display of Naim equipment are on display. But are modern Quad and Naim amplifiers truly stylish? Or are they just clean looking boxes? Is a Quad 405 more stylish than the sculpted fascia of a Quad 33? These products may look reasonably slick and sophisticated, at least to European eyes, but whether they are truly stylish is open to question. To followers of brutalism and Le Corbusier, perhaps; to others, perhaps not. They may be preferable to your average Technics or Sony, who simply plaster legends on panels, but are they really imaginative or innovative?

But wait, what about sound quality I hear you cry? Isn't this so much more important as to make style in hi-fi immaterial? Whatever the sonic merits of such modern equipment may be, it rarely comes into the equation with such purchases. This is a shame, because many don't know

what they're missing in terms of sound quality and style when you take a look at just what is available on the market.

The last 'wild and wacky' category, describes often awe inspiring hi-fi equipment which is totally individual and needn't always cost an arm and a leg. It's this equipment which I hold up as being at the true cutting edge of hi-fi design, and that represents the best available today. Take, for example, the Michell range of turntables. Not everyone will warm to the swathes of acrylic used, but it can't be disputed that they're a real conversation piece. In my opinion, Michell products don't need to be hidden away in a cabinet; they stand out as good designs in their own right.

It's not just thought provoking design that marks the Michells out, either. They offer good value for money, with prices from £325 and pretty damn good sound too (see the Mycro in World Favourites), all of which just goes to show that hi-fi can occasionally be all things to all men.

Michell isn't alone in offering hi-fi that offers not just fine sound quality, but

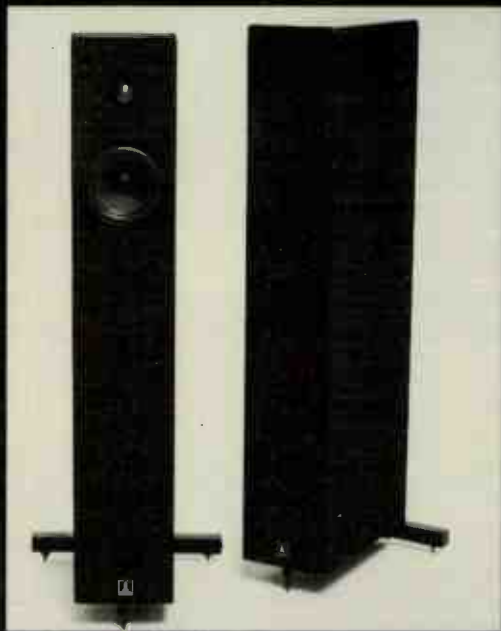
an individual and special package that heightens enjoyment of ownership and promotes aspiration. After all, for a product to be truly aspirational, it must look the part too. Just a few other such designs that I'd single out include Tube Technology products, Audio Innovations Alto, Cabasse Atlantis MC speakers, Alchemist Kraken and products from the past such as the Systemdek II and the good old Rational Audio Model 1 (remember them?).

Whatever you may think of products like these, they

are the ones whose styling attracts attention. And not just by stopping passers by in their tracks, attracted by the glinting in shop windows, but even through star appearances in big budget American films, believe it or not. Did anyone spot what looked like a VPI fitted with an equally gorgeous parallel tracking arm (an Air tangent?) in the block buster, *Indecent Proposal*?

Admittedly, it was only a glimpse, and turntable sales are unlikely to receive the level of boost Lotus cars enjoyed through their appearance in the film *Basic Instinct*, but I couldn't help taking smug satisfaction from the fact that a high-end turntable had been chosen rather than a bland Oriental CD player to represent the very best money could buy.

More importantly, it was portrayed as something to aspire to, and this is what's needed. To create new interest in hi-fi products they must be seen in the film and print media as something interesting and aspirational, and to achieve this we need fewer black boxes - with or without gold feet! Now, where did I leave the keys to my XR3i?!



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Giovanni Dadomo

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**SONIC YOUTH**  
**Experimental Jet Set, Thrash and No Star**  
 GEFFEN GED 24632-1

● That title just about says it all really. Sonic Youth have been the undisputed kings of New York's minimalist Art-rock scene for some ten years now, revelling in screeching guitars, pared down rhythms and vocals which are so dry and laconic they make Lou Reed sound like Frank Sinatra. As such they're pretty much of an acquired taste, and to be frank their particular brand of stripped-down mayhem is prone to take them down the same mean streets more often than once. But then that's surely part of the plan, as well as much of their charm.

Also there are many who, despite treading similarly rowdy paths – Jesus & Mary Chain or My Bloody Valentine, say

– are more accessible by dint of a greater propensity for melody. Indeed for my money it's still 1989's Daydream Nation that's their most regularly replayable work.

It was quite possibly the crossover success of the last mentioned double-album which led to Sonic Youth finally landing a major deal with Geffen. Yet this, even more than the preceding 'Dirty', smells of nothing remotely resembling compromise. That said, it's – for Sonic Youth anyway – a rather restrained affair. The acoustic opener 'Winner's Blues' could almost be an early Rolling Stones' demo, and there are far more lead vocal duties left to Kim Gordon than usual, she whose mainly breathy, not to say winsomely girlish tonals are hardly the stuff of which threats are made. Still, items like the apocalyptic 'Waist' are there to please Youth die-hards. Not their best work perhaps, but fans shouldn't be too disappointed, and it's nice to find – as on the odd percussions of 'Tokyo Eye' – the band still actively seeking out new sounds from their paradoxically narrow palette.



**BLUR**  
**Parklife**  
FOOD CD 8 29194 2 1

● And sometimes you just ask yourself – can a band really come up with a record this good? From the exhilaratingly chirpy opening 'Girls & Boys' right through to its closing groove, a wacky little throwaway jokelet kiss-off called 'Lot 105', Blur's *Parklife* is pure, unadulterated joy throughout. It's catchy to the nth degree, dry, witty, almost ceaselessly inventive, quintessentially British, funny and wry by turns...it's just...so...damn... good. I thought Pulp's *His 'n' Hers* was something rather special, but this has pushed even that minor masterpiece out of my listening space almost to the exclusion of everything else since I first played it. It just sparkles so constantly – the sort of record that launches a million superlatives. Last year's *Modern Life Is Rubbish* was hot stuff by anybody's standard's, but this takes Blur's unique blend of various elements of great British pop styles – a good three decades' worth – and hits dizzying new heights of dazzlement.

At the heart of Blur are the voice and songs of Damon Albarn, here proving conclusively that he can stand with any of the great Britpop masters – Ray Davies, Pete Townsend, Paul Weller –

make your own list, the picture comes over loud and clear that this is one special talent. Rounding out the quartet are bassist Alex James, Graham Coxon on guitar and drummer Dave Rowntree. Together they make a bright, riotously rousing sound, a selection of songs that take in everything from the thunderous punk of 'Jubilee', the exuberantly cynical 'Magic America', to the pensively touching 'This Is A Low' – which must be the first song ever written about weather forecasts and yet manages, at the same time, to be a moving celebration of the British

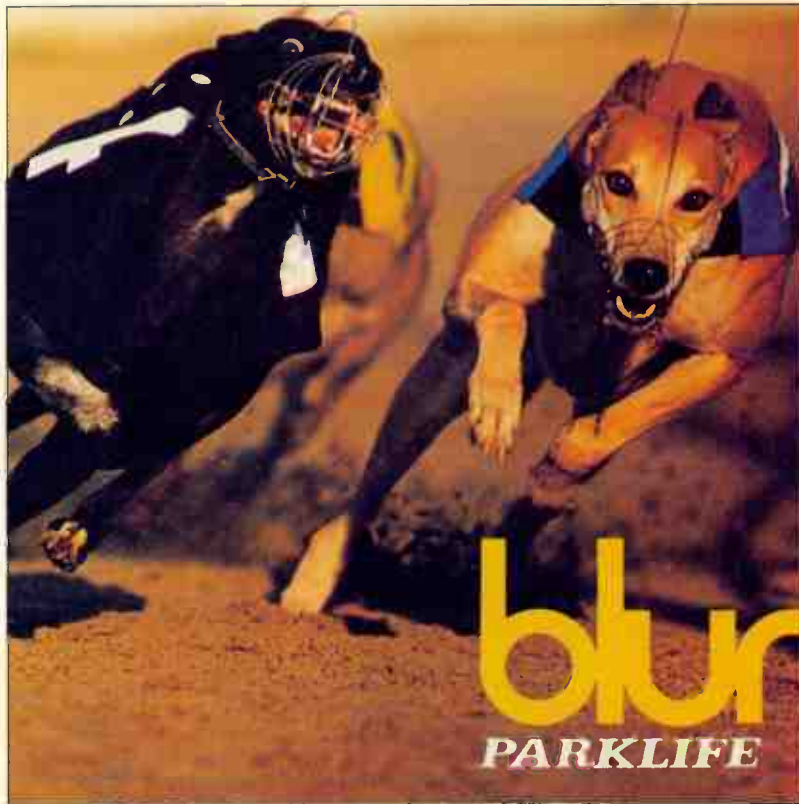
Daniels, who does a splendid bit of geezer speak on the title cut – which is (but of course!) a paen to the joys of feeding the birds in the park.

Like The Jam before them, Blur enjoy not only the three-button jackets of the mod era, but an equal fascination for and ease with three-minute vignettes. Which is to say Albarn's lyrics tell stories, little stories full of extremely vivid characters – like the sexually troubled 'Tracy Jacks', a cousin to Syd Barrett's 'Arnold Layne', the couch potato 'Jubilee', a spotty teenager who spends his life playing computer games and watching the box when he should perhaps – like the sexually voracious characters of 'Girls & Boys' (a sardonic knock at the dumb promiscuity of the Club 18-30 crowd) – be out chasing the ladies.

There's more than a hint of the aforementioned Mr Barrett too in Alex James' 'Far Out', a gently ethereal list of planets that's a mild little trip-out in homage to Syd's 'Astronomie Domine', while the broody paranoia of 'Trouble In The Message Centre' recalls Wire circa 'I Am The Fly' and 'Outdoor Miner'. And so it goes.

And if most of the titles all but speak for themselves – 'Bank Holiday', 'The Debt Collector', the moody noir romance of 'To The End' – the smart lyrics are only the icing on the cake that's made of gloriously spun guitars of all shades, sturdy rhythms, wildly boisterous choruses galore, the whole interlaced with crazy little snippets of fairground organs, twiddly bits of uncertain origin – in short all manner of neat little touches that only add to the pleasures of solidly made songs that have more hooks than a champion angler.

This is a great record and if you do not buy it immediately then you must either be recently deceased or very silly indeed or both. Either way you'll be missing some of the year's most magic moments.



coastline.

As if it were needed, Blur's Anglo propensities are rammed home by a guest appearance from actor Phil

Rock + Pop



**VIOLENT FEMMES**  
**New Times**  
 ELEKTRA 7559-61553-2

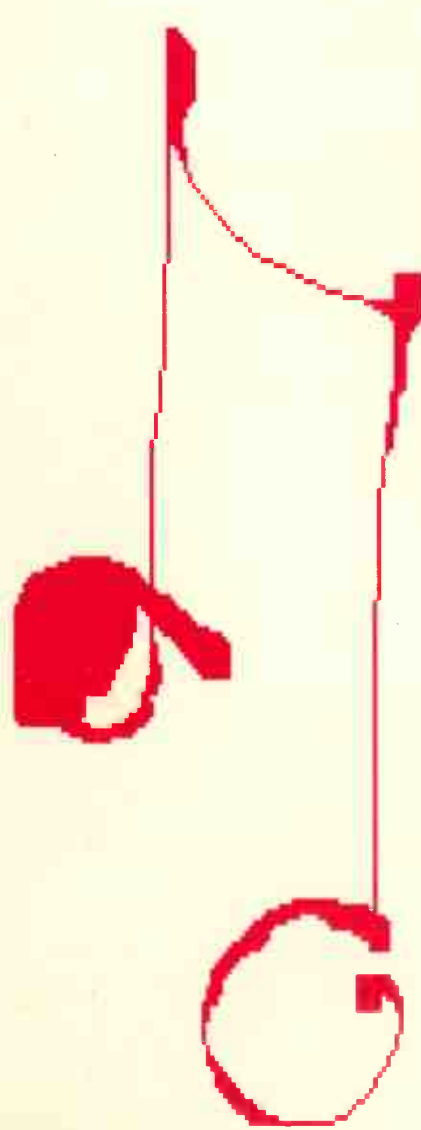
● Long player number seven from the mildly eccentric Milwaukee trio formed around the writing and singing talents of principal Gordon Gano. Aided and abetted by bassist Brian Ritchie and with the addition of a new drummer in Guy Hoffman (ex-Bo-Deans, Oil Toasters), the Femmes celebrate their thirteenth year in the studios with a fairly typical example of their specialities. Gano's always reminded me of the young

Jonathan Richman/Lou Reed in that he has a similarly wacky sense of humour as the former and vocal tone not dissimilar to the younger Reed's. At least he did on the earlier VF material, but passing time has made him very much his own man and it's nice to see such a dedicated left-field performer still hanging in there after all these years.

This may not be the greatest recording of all time but it has its moments. Gano and Ritchie's lucid, potent self-production belies the smallness of the line-up, witness the awesome power of 'Breaking Up'. The playing too is off-kilter impeccable – the opening 'Don't Start Me On The Liquor' has wonderfully sinuous bass work, whilst the drums – particularly here and on the following 'New Times' – are simply majestic. There's a timely cap to the late Frank Zappa on the latter, and a tip of the cap (tain) Beefheart in the weird answering vocal refrain of 'Machine' – about a bloke who takes over the world ("it was either that or learn French", Gano informs us, later admitting that he learnt the Gallic tongue the next weekend). This is fairly typical, as are such unexpected pastiches as the Latin/Yiddish collision 'Mirror, Mirror', which would make a great single for Topol - or a terrific Bar-Mitzvah party closer if it weren't for the closing lapse into wilful oddity. Good thing to hear these playful loonies again, and long may they drool, OK?

couple of years past with a brilliant tribute album of covers of the songs that inspired him – thus keeping alive the memory of the likes of Professor Longhair and countless other Crescent City luminaries.

This time out it's Mac's own compositions which dominate proceedings, aside from Sly Stone's 'Thank You (Fallein Me Be Mice Elf Again)' and Berry Gordy's 'Money', both of which – needless to say – are given potent transfusions of Dr. John's all-powerful gris-gris voodoo magic. The lyrics, delivered in that inimitable five-dollar-cardboard-suitcase-voice are wild and witty, the backing players and singers are among the best in the land (Hugh McCracken, guitars David 'Fathead' Newman, tenor sax, et al). But what really shines of course is Dr. John's piano playing – a rockin', rollin', sexy, sassy, chuckly, quintessentially horny thing which is, quite simply, without living peers. Yassuh and God bless, Doc. This is one prescription this patient will have no trouble adhering to. Not at all.



**WALTER TROUT BAND**  
**Tellin' Stories**  
 SILVERSTONE ORE CD530

● The Walter Troat Band are one of them hard rockin', raw-throated, sweaty-denimed (I'm guessing about the denim) rock 'n' rollers only America can really produce. Ironically, it was while touring Scandinavia as part of John Mayall's Bluesbreakers that guitarist Trout (depping for a sick Mayall) realised he had it in him as a front man. He's never looked back.

This, his first British release (but something like his half dozenth (!) long-player) displays Trout's hot 'n' sweaty, five-pints of lager blues/rock with the accent somewhere in between the blues and the rock. It's rousing stuff and comes highly recommended for anyone with memories long enough – or record collections wide enough – to encompass the likes of Lynyrd Skynyrd, The Allman Brothers, and George Thorogood and the Destroyers. Go wild.



**DR. JOHN**  
**Television**  
 MCA/GRP GRM 40252

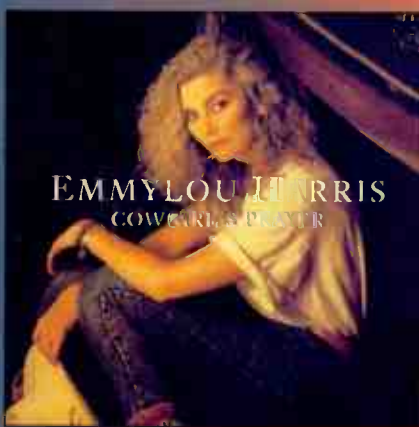
● Dr John aka Mac Rebennack must have been in the biz at least thirty years by now, a living embodiment of all that's great about the totally unmistakable sound of New Orleans piano music. And sure, he's had his ups and downs (not to mention a goodly heap of alcohol and narcotics, by all accounts) but when he puts his ten long fingers on them 88 keys, there's nobody to touch him. After some time in the doldrums he re-appeared a



**LUSH**  
Split  
4AD CAD 4011 CD

● It's getting on for two and a half years since Lush last regaled us with their aptly-named distillation of fire and honey. Those oh, so delicate voicings (I was going to say 'etne...' that word, but...) are the work of Miki Berenyi, aided and abetted by backing singer/guitarist Emma Anderson, while the hardbody rhythms are the responsibility of bassist Phil King and Chris Acland on drums.

There's plenty here to please addicted Lush-ites, but there are one or two pleasantly different changes of pace also — take the anything but ethereal (there, I've said it) 'Blackout' while 'Light From A Dark Star' lives up gloriously to such a fab title, while the closing 'When I Die' will melt the hardest, thorniest of hearts. Hopefully the only prophecy contained in the title is intended ironically, because on this showing Lush have plenty of big adventures still ahead of them.



**EMMYLOU HARRIS**  
Cowgirl's Prayer  
GRAPEVINE GRACD 101

● Ms Harris made her name by providing the angelic, silver-pure antidote to the late, great Gram Parsons' melancholy country sobbing on the classic GP and Greybus Angel discs. She's since

gone on to carve her own name proudly in the Country Rock Hall of Fame with class albums such as *Luxury Liner* and much excellent live work.

Vivaciously keeping her own fairly modest writing contributions in tact, she nevertheless has a fine ear for a strong song-winner. Tony Jo White's aptly-named 'High Powered Love', 'Ballad Of A Runaway Horse' from — surprisingly — Leonard Cohen's rarely cowboy-heeled pen, or perhaps best of all — the excellent 'Thanks To You' from the nowdays too infrequently heard but quietly still brilliant Jesse Winchester. And she's got the bottle not to reach for the dye-bottle, now here her's gone silver. A great voice in excellent company, and with songs to match.

band aren't better known over here. Hurts so good?



**SPIZZENERGI**  
Unhinged  
DAMAGED GOODS DAMGOOD 36

● The irrepressible Spizz, under a variety of Spizzy names, was one of the less high-profile heroes of immediate post-punk. Nevertheless with the likes of 'Soldier Soldier', 'Where's Captain Kirk', 'Telega City: J' and numerous others, he made scores of glorious sides.

The best (plus lots of lost and forgotten living-room gems) are on this mightily amusing, interest-filled collection. One for serious conno-sewers of a glistening, not-to-be-forgot era.



**KMFDM**  
Angst  
INDUSTRIAL CD RR 69872

● "German pioneers of industrial electronic music," it says on the Press Release. This is album numero 56 for the Deutsche crutchers, and with the likes of Trent 'Nine Inch Nails' Reznor and Die Warzu lending various throat-crushing, ornoid-biting hands, it's a wonder the



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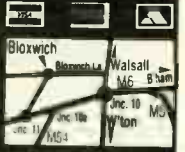
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Designed for long life, low running costs and excellent sound quality, K5881 is sensitive enough to be used with a simple passive pre-amp. or our own line-drive pre-amp, and it matches modern loudspeakers well. There is a choke-regulated power supply and the channels can be paralleled to turn it into a 40W monoblock if desired.

K5881 costs just £395 as a kit of parts and £595 fully built from our own build service. The U.K./Europe version has a 240/220V transformer but 120/110V can be supplied as an alternative - see Overseas details on Order Form.

### SPECIFICATION

Power	20watts/ch.
Frequency response	16Hz-40kHz
Distortion	0.02%
Separation	60dB
Noise (CCIR)	-103dB
Sensitivity	240mV
Dimensions (mm)	400w,300d,180h
Supply	110/120V or 220/240V, 220W
Weight	16kgs(34lbs)

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£295 ▶

Constructed from heavy gauge steel with an aluminium anodised and polished front panel. This new chassis comes with the complete kit of parts necessary to build the valve line level pre-amp.

The components are all high quality and include a special screened toroidal transformer, Military Spec. Russian valves, Alps potentiometer, metal film resistors, polypropylene signal capacitors, silver plated copper wire etc.



### HIGH DEFINITION LOUDSPEAKER

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The High Definition loudspeaker is ideal for low power, high quality amplifiers, transistor or valve. It goes very loud with just 1-5watts, having an enormous sensitivity of 94dB - that's 8dB more than most other speakers. It is also a very easy load for valve amps (8ohms) and it gives a terrifically dynamic and fast sound. This speaker is also unusually suited to low powered vintage amplifiers, such as Quad IIs, Radfords, Pye Mozarts and such like.

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£850 ▼



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The kit comprises a strong 16-gauge mild steel chassis, fully

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All parts are included in the kit, except valves since different 300B makes are available.

A fully built version from an approved build service is also available.

#### SPECIFICATION

Power	28watts
Frequency response	5-18k-nfb/50k-fb
Distortion	0.2%
Separation	54dB
Noise (hiss/hum)	-100dB/-72dB
Sensitivity	240mV
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Weight	20kgs(44lbs)

### 4W SINGLE-ENDED VALVE AMP KIT

£385 ▼



The 4W Single-Ended amplifier kit is a line level integrated amplifier. It comes with three line level inputs and a tape output. High quality components are used throughout, including polypropylene signal capacitors, Alps volume control, custom C&K gold plated selector switch etc. Valves are included.

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Power	4watts	Noise (hiss)	-100dB
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# Classical

Peter Herring

**This month, the ladies take centre stage: the cellist, Sophie Rolland; the violinist, Maria Lindal and, one of the rising stars of the operatic world, the American soprano Sylvia McNair. You could also argue that Elgar's First Symphony - our record of the month - might never have seen the light of day were it not for the encouragement Elgar received from his beloved wife. Heartbroken after her death in 1920, he said quite simply, "All I have done was owing to her. . ."**



**HEINRICH IGNAZ FRANZ BIBER**  
**Partia III/Partia V/Sonata VI/Sonata X/Sonata XVI**

Maria Lindal, violin; Ensemble Saga  
 BIS CD-608 (DDD/59.36)

● There are sounds here, I would venture, which will surprise and even startle most listeners. The latest offering from one of the lions of the avant-garde? Not quite: this music is around three hundred years old. What gives it its distinctive flavour is a technique called 'scordatura', the musical equivalent of cayenne pepper and tabasco sauce! As you might surmise, this is an Italian term, literally translating as 'out of tuning'. Quite simply, a stringed instrument is tuned abnormally in order to produce an unusual note or other effect. It was most prevalent during the Baroque era and, in skilled hands - those of Vivaldi, for example - could produce striking results. Another who exploited its potential was Heinrich Ignaz Franz Biber. Born in Wartenberg in Bohemia on August 12, 1644, his career followed the then-familiar pattern of court musician, culminating with a rise through the ranks in the service of the Archbishop of Salzburg. He was ennobled by his patron in 1690 and died in 1704.

Biber is known to have been one of the finest violinists of his age so it is no surprise that the instrument figures strongly in his compositions, or that he should revel in what this, then relatively new, instrument was capable of. Biber is best known today for a set of fifteen

sonatas called the Rosenkranz, or Mystery Sonatas, which he composed for the Rosicrucian Brotherhood in Salzburg. They are extraordinary pieces and well worth discovering.

One of the Mystery Sonatas - the Tenth - is included here, part of a recital which makes a very convincing case for Biber and his music - just the stuff for jaded ears! The outstanding contribution comes from the Swedish violinist Maria Lindal who tackles the difficult solo parts with a verve and panache which is quite exhilarating. Her playing of the solo Passacaglia which concludes the programme is pure delight.

No less committed to Biber's cause is the Ensemble Saga whose five members combine to produce an instrumental backcloth of vibrant colour and texture. Their playing of the Sonata Representativa, with its imitation bird cries and similar comic-dramatic effects, is ravishing. Yet this is not only one of the most fascinating and best-played of Baroque recordings to have come my way of late, it is also one of the best recorded. The balance between soloist and ensemble is perfectly judged, the solo violin line clear yet integrated into the whole. The liveliness and transparency of the sound suits the music perfectly. Biber couldn't have wanted for better.



**GEORGE FRIDERIC HANDEL**  
**Silete venti HWV242/Laudate pueri Dominum HWV237**  
**WOLFGANG AMADEUS MOZART**  
**Exsultate jubilate K165**

Sylvia McNair, soprano; Monteverdi Choir; English Baroque Soloists; conductor, John Eliot Gardiner  
 PHILIPS DIGITAL CLASSICS 434 920-2 (DDD/59.13)

● The rise to international prominence of the American soprano Sylvia McNair has been rapid since her memorable European debut as Ilia in Mozart's Idomeneo in the late Eighties. Her repertoire, too, is now remarkably diverse, from Handel through Gluck, Mozart, Beethoven, Mahler and Britten to ►►

"I hold that the symphony without a programme is the highest development of art... It seems to me that because the greatest genius of our days, Richard Strauss, recognises the symphonic poem as a fit vehicle for his splendid achievements, some writers are inclined to be positive that the symphony is dead... but when the looked-for genius comes, it may be absolutely revived."

The words of Edward Elgar, at a lecture at Birmingham University in December 1905. At the time, the outlook for the purely abstract symphony did look bleak. Had it reached its apotheosis in Brahms and Bruckner? True, Mahler was composing symphonies, but they were far removed from the traditional form of the genre. In England, there was no symphonic tradition to speak of. But Elgar's observation to his students was prophetic. Did he have some inkling that the "looked-for genius" of which he spoke might indeed be himself?

He had first attempted a symphony in 1898-99, a programmatic work taking the life of General Gordon ('Gordon of Khartoum') as its subject. We do not know what stage this work reached, but certainly some of the sketches for it were incorporated into the Second Symphony. It was not until the summer of 1907, on June 27 to be exact, that Elgar's wife recalled hearing him playing 'a great, beautiful tune' on the piano. It was to become the motto-theme of the

First Symphony, the organic core of the entire work.

Elgar continued to work on the symphony during a stay in Rome between December 1907 and May 1908 and his commitment to it intensified upon his return to England. He worked feverishly that summer and completed the work on September 25, dedicating it to the conductor Hans Richter, who had given the first performance of Elgar's first major international success, the Enigma Variations, in 1899.

The First Symphony received its premiere on December 3, 1908, at a Halle concert in Manchester. The audience's reaction was ecstatic, as it was four days later when Richter gave the first London performance. In the ensuing twelve months the work was played a hundred times, not just in England but in Vienna, Berlin, Russia, Australia and the United States. Elgar's prediction had been fulfilled: the symphony had been revived. Moreover, not only was it far-and-away the finest symphony up to that point written by an English composer, but its glorious elegaic slow movement prompted comparisons with no less than Beethoven. Elgar's A flat symphony set English music on a path which led to the great symphonies of Walton, Vaughan Williams, Bax, Rubbra, Alwyn and, most recently, Robert Simpson. On that basis alone, it would merit its place in musical history.

But this is also a score that combines the utmost musical accomplishment with a psychological complexity and deep emotional sincerity. Elgar put so much of himself into this work that drawing it out takes a rare insight and intuition on the part of the interpreter. I am pleased to say that the hugely underrated George Hurst has joined the elite band of conductors to have attained that status.

**EDWARD ELGAR**  
**Symphony No1 in A flat**  
**Major Op55/Imperial March**  
**Op32**

BBC Philharmonic Orchestra;  
conductor, George Hurst  
NAXOS 8.550634 (DDD/53.43)

● In the portraits he looks the epitome of the Edwardian gentleman, self-assured and perhaps even a little self-important. But in Elgar's case, appearances are deceptive: he was anything but confident of his abilities and not at all certain of his place not only in music, but in English society. He readily acknowledged how much he owed to his wife, Caroline Alice, who never lost faith in him, even when his own self-belief was at its lowest ebb. The superficial impression is of a bluff, hearty, straightforward, sociable personality who also happened to develop into the finest English composer since Purcell. Look deeper, though, and you will find a man who had

the unlikely combination of Stravinsky and Gilbert and Sullivan. It is easy to hear why the Ohio-born singer is in such demand: her voice has a beguiling lightness, warmth and purity, as well as the requisite technical attributes of accuracy, range and clarity. All are evident here in this programme of three Latin motets, two by Handel and the third by Mozart, the exquisite Exsultate jubilate.

Mozart wrote this lovely motet, which uses a text from an anonymous source, while he was in Rome in 1772. The sixteen-year-old composer was in the Italian capital, with his father, for a production of his opera *Lucio Silla*. The leading role of Cecilio was being sung by the castrato Venanzio Rauzzini and the young Mozart appears to have been pleased with Rauzzini's contribution for he eagerly composed this motet for him.

It is educational to compare the two styles here: Mozart adopting the new symphonic style; Handel following tried-and-trusted Baroque forms. Handel had been in Rome some seventy years before Mozart and, while there, composed three motets for his Catholic patrons: settings

of *Dixit Dominus*, *Nisi Dominus* and of Psalm 113 (112 in the Vulgate), *Laudate Pueri Dominum*, all three being Vespers psalms. This, his second setting of *Laudate pueri*, is a delightful work but excelled by the last of his contributions to the canon of Latin motets, *Silete venti*. Unusually for Handel, the motivation for this work is shrouded in mystery and, at best, it can be dated sometime between 1723 and 1725.

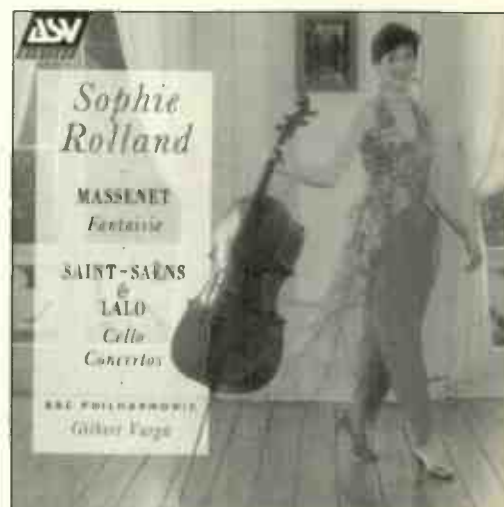
Much beautiful music, therefore, ravishingly sung. Sylvia McNair takes the limelight, but the contributions of the Monteverdi Choir (if there is a more consistently excellent choir currently recording I have yet to hear it) and the English Baroque Soloists should not be overlooked. And for John Eliot Gardiner, this is home territory. The recording, made with the Bitstream system and engineered by a Dutch team in the church of All Hallows, Gospel Oak, in North London, is smooth, clear and warm. A slight imbalance towards the soloist is understandable but otherwise the result is pleasingly natural.

**CAMILLE SAINT-SAENS**  
**Cello Concerto in A minor**  
**Op33**

**JULES MASSENET**  
**Fantaisie for Cello and**  
**Orchestra**

**EDOUARD LALO**  
**Cello Concerto in D minor**

Sophie Rolland, cello; BBC Philharmonic Orchestra; conductor, Gilbert Varga  
ASV CD DCA867 (DDD/64.47)



to struggle long and hard for his success, who felt isolated by his class and his Catholicism and who, despite having many close friends and a wide circle of acquaintances and admirers, remained essentially introverted and, at heart, lonely.

In many ways, the First Symphony mirrors the character of its creator: it is a mistake to make judgements based on its superficial grandeur. Many have, and deemed the work a paean for Edwardian England, the sunset of imperialism. Its sumptuous orchestration does perhaps reflect the perceived opulence of the era but, at heart, this symphony is as much about Elgar as the *Symphonie Fantastique* is about Berlioz.

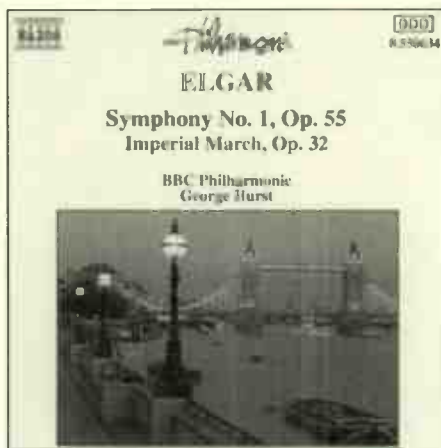
That comparison extends to the music itself. In the *Symphonie Fantastique*, Berlioz introduced the notion of the *idée fixe*, a motif that would permeate the entire work, be fundamental to every movement of the symphony and be endlessly metamorphosed to convey different moods. Elgar employs the same technique, but on an even more ambitious scale. The solemn, march-like theme heard in the woodwinds and violas above a pulsing bass line at the very outset of the symphony is crucial to every subsequent development within the work. It proves endlessly adaptable, suggesting a sublime tranquility as readily as it does mystery, foreboding, sadness and triumph.

In any successful performance of the First Symphony, this thematic unity Elgar so carefully established has to be evident. George Hurst clearly appreciates this and as a result his interpretation has an inexorable momentum and sense of knowing where it is going. It is a thoughtful

George Hurst has been largely absent from the recording studio. Perhaps as a result, his conducting here has a zest and freshness too rarely encountered today. The BBC Philharmonic responds magnificently to his inspiring direction to produce a version of the symphony worthy to stand alongside the established 'greats' in this work: Barbirolli, Boult, Handley, Haitink and Solti, whose incandescent Decca recording Hurst's most closely resembles.

Appropriately enough, the recording was made in Manchester, where the symphony was first performed eighty-six years ago. If it was the 'Edwardian swansong' some would still have us believe, it would surely have long since lost its power to move and inspire.

The sound is clear and wide-ranging and lacks nothing in impact. I missed some of the warmth of other versions and, while the acoustics of the BBC Concert Hall suggests spaciousness, the overall soundstage is rather confined. But these are minor caveats and, as a bonus - and an interesting comparison - the symphony is prefaced by an example of the 'public' Elgar, the Imperial March written for the diamond jubilee of Queen Victoria in 1897. Finally, of course, I must mention that, being on the enterprising Naxos label, this top-drawer version of Elgar's First Symphony can be yours for under a fiver!



performance, and a passionate one, and one that adheres commendably closely to the detailed instructions which Elgar included in the score.

Every so often, a conductor and orchestra come together and create something which is a bit special. This seems to have been one of those occasions. After making some fine recordings with the Boumemouth Symphony Orchestra several years ago,

● Sophie Rolland is a Canadian cellist of considerable accomplishment and even greater promise. She studied with three of the great masters of the instrument, Nathaniel Rosen, Pierre Fournier and William Pleeth and her collaborations with the Montreal Symphony Orchestra have brought the highest praise from its chief conductor, Charles Dutoit. Her Beethoven recitals in London, with the pianist Marc-Andre Hamelin prompted the *Financial Times*' music critic to comparisons with the duo of Rostropovich and Richter. Quite an accolade for a performer still in the first phase of her career.

Playing a 1674 cello by Petrus Reuta of Brescia, Sophie Rolland - as befits her French-Canadian background - makes her debut on ASV with an entirely French programme, one which shows commendable boldness and imagination. She offers what are probably the two finest cello concertos written by French composers - Saint-Saens' A minor and Lalo's D minor - and bridges these with Massenet's tuneful and technically demanding *Fantaisie*.

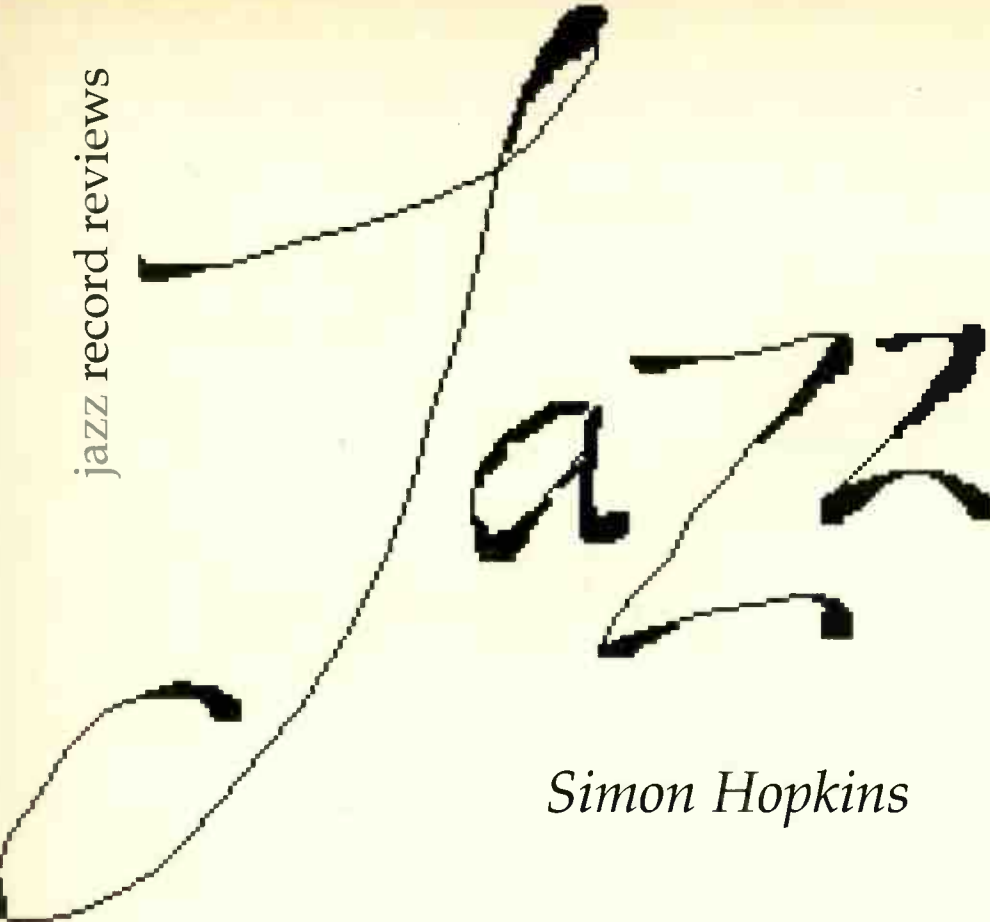
In the Saint-Saens, composed in 1872

when he was thirty-seven, Sophie Rolland plays with breathtaking fluency and assurance, thoroughly relishing its sweeping melodies and highly expressive writing for the soloist. It is a commanding performance with both soloist and conductor determined to emphasise the dramatic contrasts between the three movements, which are played without a break. The finale is gloriously exuberant.

Edouard Lalo was a violinist and violist of some note and it is therefore no surprise that in his D minor concerto he fully exploits the cello's expressive capabilities, witness the pizzicati of the *andantino*, sounding for all the world like a Spanish guitar (Lalo was of Spanish descent). The opening *allegro maestoso* has a Brahms-like grandeur, but the concluding *allegro vivace* is all high-spirited vitality, with its energetic dance rhythms and whooping hunting calls. Sophie Rolland's playing here is a delight, as it is in the Massenet, with its gavotte-like second section.

The solo instrument is finely recorded, with richness and revealing subtlety; it is also well balanced within the overall texture. The orchestral sound, however, has a slightly hard edge to it, but not enough to diminish the favourable impressions created by this recorded debut. In Sophie Rolland, ASV have a real find and I trust they will continue to encourage her to record works which are just that little bit different, and to which - temperamentally as well as technically - she appears so confidently attuned.

*Classical*



## Simon Hopkins



**PAT METHENY**  
**Zero Tolerance For Silence**  
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● Well it's guitar cacophany all the way this month (just for a change) which'll seem a tad odd for a column kicking off with a Pat Metheny CD, I grant you. What can you say about Pat Metheny? Certainly one of the jazz world's most bankable propositions, as leader of his "Group" he has developed a hugely popular blend of post-bop jazz guitar soloing, intricate, highly orchestrated and ornate compositions, pan-ethnic, complex rhythms, exotic textures and, I'm loathe to admit, some pretty hummable tunes.

It's not been contemporary jazz's most challenging of mixtures - and certainly one whose increasingly considered approach has left this hack cold - but it has been very, very widely enjoyed and fairly comprehensively plagiarised.

And then there's always been this other Metheny, the one who you

wouldn't credit with having written a single tone poem - or for that matter a single "pretty hummable tune" - in his life. The Metheny who, half way through a set of crowd-pleasers would (so to speak) turn his back on 15,000 uncritically adoring fans and turn in a half-hour guitar synthesizer freak out that owed more to Jimi's "Star Spangled Banner" than to the Jim Halls or Wes Montgomerys so frequently cited in his interviews. The Metheny of furious avant-bop dates with modern jazz elder statesmen like Dewey Redman and Paul Motian and Charlie Haden and Billy Higgins (for a study in ebullient and unfettered freeform post-bop guitar improvising check out the B-side of *Rejoicing*, his early 80s trio record with Haden and Higgins - and his swansong for ECM, for whom he'd become an asset second only to Keith Jarrett) and above all the Metheny of *Song X*, his triumphant, incessantly probing - and above all, noisy - 1985 date with long-time hero Ornette Coleman, which so polarized listeners; most fans of the Pat Metheny Group output couldn't believe he'd do this to them, while previous doubters who may have grudgingly admitted that Metheny was at least a capable player, if nothing more, were dumbfounded that he didn't make music like this all the time.

And if anything at all could prepare the listener for *Zero Tolerance for Silence* then it is surely the fact that, despite *Song X*'s huge and sometimes controversial impact, Metheny himself always claimed that there were out-takes

from the session which left the record standing in terms of sheer noise. Until those tapes see the light of day, you'll have to settle for *Zero*.

So, what do you get for your money? A pretty stark listen, actually. The set consists of five "parts" which have no apparent thematic link beyond their actual sound, kicking off with an eighteen-minute opus and winding down with four shorter, fractionally more refined - certainly a tad gentler - five minutes. It's all guitar; pretty much all multi-tracked distorted electric, a shock itself to all those Metheny acolytes who've grown to adore his characteristically "clean" jazz guitar tone or lush guitar synth. In fact, much of the time, it sounds like just two channels of electric and that's it. No guitar synth; no lush chorus; no deep echo; it's dry, dry, dry. Oh, with the tiniest bit of acoustic guitar thrown in for good measure - just the once, I reckon.

But, what does it sound like? Well... a mess, for a kick off. Scratchy, harsh, abrasive, atonal, often highly rhythmic, part I a wall of sound pretty much all the way and its shorter cousins dipping into garage band riffs (a real sloppy, stoned garage band, at that), quasi-Mahavisnu chord voicings shockingly detuned, and Velvet Underground droning.

And that mention of Lou Reed is interesting. The rumours kicking around about this album for some months now are that Metheny deliberately turned in a load of noisy old crap to get out of his Geffen contract - a tactic most famously taken up by Reed on his *Metal Machine Music* album. What bugs me about that analysis is that as soon as a truly popular musician makes a genuinely challenging musical statement, people - fans often, the worst enemies to any developing artist - have to make excuses for it: "he was strung out on drugs at that point"; "the pressure had gotten to much for him"; or, of course, "he needed to get out of his contract". Well, some of us now reckon that *Metal Machine Music* was one of the finest achievements in rock music in the last twenty years - a blazing, soaring masterpiece that prefigured - and in many cases outdistanced - most of the finest cutting edge rock music of the 80s. And *Zero Tolerance For Silence*?

It's got me stumped really. This column has certainly reviewed music a lot wilder, freer, harsher, more experimental and more shocking. And very positively. But I have to say that this is one of the most perplexing records I've come across this year, a record almost uniquely unjudgeable, I believe. I can't remember vacillating between two extreme opinions about a record for a long time. On one hand, I'd concur with Sonic Youth guitarist - and Geffen labelmate - Thurston Moore whose wise words about this disc have been unsightly stickered all over its sleeve: "THE most radical recording of this decade... a new

continued on page 93...



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continued from page 88...

milestone in electric guitar music... a challenge to the challengers". He could be right, and at times I'd agree with every word; it really could be that good.

But then put it up against two decades of guitar freak-outs from Derek Bailey and Sonny Sharrock and Pete Cosey and Ray Russell and John McLaughlin, hell, even put it up against blazing records from just this year by the likes of KK Null and Haino Keiji and Caspar Brotzmann... and then Zero Tolerance maybe doesn't sound so groundbreaking after all, and if Pat Metheny weren't the guitar player behind this then how many of us - even the hungriest guitar junkie among us - would have even noticed this record. That's fame for you, I guess.

And yet, Thurston Moore is perhaps right about this record; it really is a challenge. Not a genuine challenge musically, but without doubt a challenge to pin down, to really grasp, to truly judge. The bottom line is this: for Metheny to really prove that he damn well means this, he's going to have to do a lot more of it. And soon.

He should release those Song X out-takes too.



**EINHEIT BROTZMANN**  
**Merry Christmas**  
BLAST FIRST BFFP97CD

● And stepping up on the guitar-noise front... a real corker - no equivocation over this one whatsoever - a festively-titled hour (or very nearly) in the company of percussionist FM Einheit and guitarist Caspar Brotzmann.

Einheit heralds from those trailblazing German industrialists Ensterzende Neubauten, whose records and live performances from the early 80s onwards - all piledriving, massive rhythms and huge swathes of brutal noise coaxed out of whatever machinery came to hand, be it guitar or chainsaw, drum or jackhammer - were a huge (and, sadly, all-too-rarely unmatched) influence on the generation of more overtly pop industrialists who emerged towards the latter half of the decade, from Ministry and Pigface to Nine Inch Nails to Godflesh and beyond.

Caspar Brotzmann, son of (in)famous free improvising sax monster Peter (truly one of the greatest European jazz musicians ever) has been carving out some damn fine gothic free-jazz/industrial rock sounds with his band Massaker for some years now; their Koksofen was unquestionably one of the records of last year.

On Merry Christmas the pair tum in a set of freely improvised sound-sketches apparently recorded at a single sitting. Largely avoiding the sledgehammer rhythms of Neubauten or the splatter-rock of Massaker, the pair instead paint a dense landscape which is almost ambient in its staticism but undoubtedly industrial in its brutal sound. Einheit scratches and bangs away seemingly on whatever comes to hand, oddly coming on like an un-jazz incarnation of AMM's Eddie Prevost - while still very much his own man. And Brotzmann easily upholds his position as one of Europe's leading noise-guitarists, with a huge vocabulary of wild noises strangled at will from his guitar; definitely a man to watch for guitar freaks and improv fans alike.

Highly recommended stuff then; a million miles from anything reasonably considered jazz- but then so's the Metheny disc, and where do you reckon you'll find that in your local record store's racks? - and who cares? This is blistering, urgent improvisation strangely in the finest tradition of the noisiest European free jazz first slammed out by the likes of Caspar's dad and his mates damn near three decades ago. Hugely enjoyable stuff.



**DEATH CUBE K**  
**Dreamatorium**  
STRATA 0001-2

● My oh my, Bill Laswell keeps damn busy. From his prolific Axiom label - home of the very finest jazz-thrash-world music-funk hybridizing to his ambient dub label Subharmonic, to one-off collaborations with the likes of UK Ambient House oneman-industry Pete Namlook (check out their recent Psychonavigation project for a first-rate exercise in truly blissful post-rave sounds), the man just keeps on pumping out music: his own, his friends', his heroes'. In

a moment, a whole new label, but first up, Dreamatorium, a duet project with fellow-traveller Buckethead that goes under the fine name of Death Cube K.

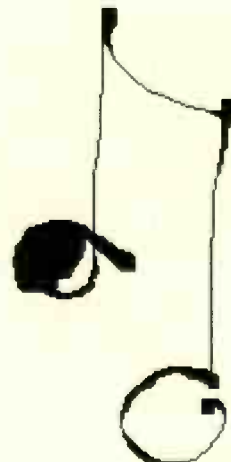
Regular readers will know the score on these two by now, but, just in case...

Bill Laswell: bass player, composer, producer extraordinaire, conceptualizer, bandleader, label-owner. From the early-80s avant-funk work of Material to the thrash'n'bum metaljazz of Last Exit; from production work with anyone from Motorhead or the Ramones to Herbie Hancock; with God-knows-how-many record labels to his name - Nation, Axiom, Subharmonic, Strata, and now (see below...) Black Arc; as the mind behind pan-stylistic urban collagists Praxis, the first - and only? - great supergroup of the 90s; with all this, Laswell has become one of the pre-eminent creative musicians of his day, a creator so oblivious - or impervious to the boundaries of genre (the creative prison so desperately craved by the corporate music machine) as to be criminally ignored by the greater record buying public, yet an essential influence on so many of their heroes.

And Buckethead: something of a Laswell protege, a blistering young heavy metal guitar player from San Francisco whose Disney-cum-Texas Chainsaw Massacre take on the world and Funkadelic-gone-Free Jazz approach to music making might - God forbid - hinder his being taken to the hearts of all those guitar-wielding, testosterone-soaked young bucks out in Metal-land.

As Death Cube K, away from the powerhouse rhythm section of Praxis - in which they both feature, of course - they take a more laid-back, albeit equally (or more?) twisted approach to sound-painting. Post-rave ambient tapestries, wiggled-out soundtracks to imaginary Science Fiction films, ecstatic balladic guitar soloing heavily reminiscent of Eddie Hazel from Maggot Brain-period Funkadelic, soundsculpting almost musique concrete in texture if not actual technique... all meld in a highly atmospheric/filmic composition of slowly-unfolding, yet nonetheless intense, drama. A rarely exquisite piece of work.

continued on page 95...



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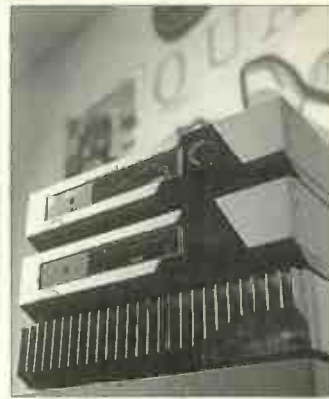
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## Simon Cooke

### CAROL KIDD Crazy For Gershwin LINN AKD 026

● Despite the title, this is not an anthology of George and Ira's finest, as only half of the fourteen tracks are Gershwin songs, the rest being a selection of favourites and standards from writers with similar appeal; 'Stormy Weather', 'Porgy' and 'Is You is my baby' will be titles familiar to many. The Gershwin component, of course, would not be complete without 'Summertime' and 'Ain't necessarily so', along with less popular work such as 'Little Jazz Bird' and 'Do it again'. All in all, a good selection.



The press release which accompanied my copy of this CD glibly stated that Carol Kidd 'has won every possible award and accolade for her singing', and her appeal is so mainstream that she even graced an episode of 'Barrymore' recently. This level of acceptance is the measure of Kidd's stature and ability, by which she leaves most other British jazz performers standing, and her professionalism alone makes this a recording worth hearing. However, this mainstream presentation made me uneasy. Kidd's

diction leaves a lot to be desired in terms of content and soul, as it is, simply, too 'plummy' for many of the tracks. That's the opinion of an out-and-out blues man, whereas older listeners brought up with a more operatic tradition will not find this nearly as irritating as I do. That's got the subjective opinion out of the way and, even bearing that in mind, this is a recording which oozes technical excellence not only from Kidd herself, but also her backing musicians (including David Newton on piano, of whom more later) and also from the recording staff. One for Carol Kidd fans everywhere, as well as a complement to any Gershwin collection worth the name.

### DAVID NEWTON Return Journey LINN AKD 025

● Unlike Carol Kidd's album above, on which Newton plays piano, this is original work and so there can be no comparison with other, possibly greater, artists with other interpretations. This is the author's unadulterated statement of the work.



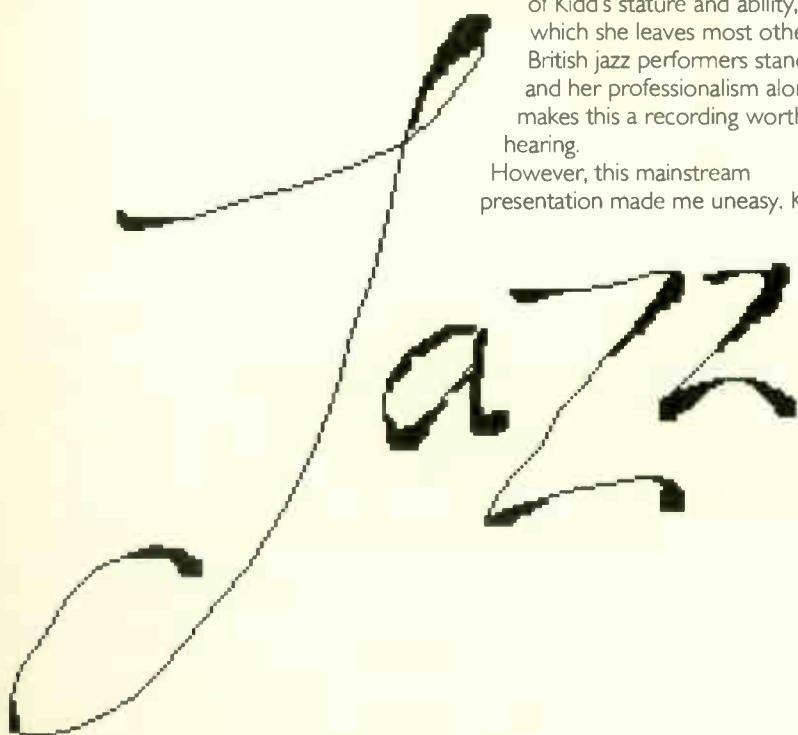
Having listened to this album, my overwhelming impression was one of an eminently capable musician with an impressive command of musical vocabulary, able to state his message without undue pyrotechnics and prestidigitation in his playing. Under normal circumstances I would have no qualms about recommending this album but, in the light of Newton's understated work on 'Crazy for Gershwin', I have to recommend Kidd's album rather than the Newton solo. Newton, it seems, plays better in the group where he acts more as a foil for the other players and Carol Kidd, rather than as a soloist. On his solo album, Newton eschews the drive and energy needed to carry an hour of solo piano. Undoubtedly this is an artistic decision for which he has his own reasons, but the result left me feeling unfulfilled as a listener; this is a recording of an exceptional player, transcribed by Linn with their usual excellence, but again, more drive and substance would have made it outstanding, rather than simply good.



### ZILLATRON Lord of the Harvest BLACK ARC RCD10301

● And an all-too-brief mention for Laswell's newly-inaugurated Black Arc label, which seeks to bring you "black rock, cyberfunk and future blues" with a quintet of releases from The Buddy Miles Express, O.G. Funk, Slavemaster, Harware and Zillatron, this last one being the standout, for my money.

Lord of the Harvest features Zillatron AKA Fuzzface AKA Bootsy Collins, still the world's greatest funk bassist, in cahoots with fellow Praxistors Bernie Worrell (keyboards), Buckethead and Laswell, not to mention a host of vocalists from Grandmaster Melle Mel to rapper and last poet Umar Bin Hassan. A righteous, voracious, genre-gobbling, sampladelic, virtuosic, deeply urban creation of huge creativity. A fine start for Black Arc, a label to which I'm sure we'll return in the future.



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## KONTAK

An effective cleaning solution that removes contaminants from electrical connections. After application, a system regains its original life, sparkle and vigour.

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## HI-FI WORLD DRY STYLUS CLEANER

Keep your stylus sharp and bright for perfect tracking without using fluid. Cut a strip about the size of a matchbox striker off this sheet of card and draw it gently under the stylus from back to front. One sheet of this card, with its aluminium-oxide micro-abrasive coating, should be enough to clean your stylus at least forty times.

**DRY STYLUS CLEANER ..£1.95**

## EQUIPMENT SUPPORTS

FrameWorks is an innovative range of versatile hi-fi supports whose high standard of strength and rigidity results from their 'triangulate' design. The shelves are supported on struts of thin cross-section and four sturdy corner columns, to reduce resonances.

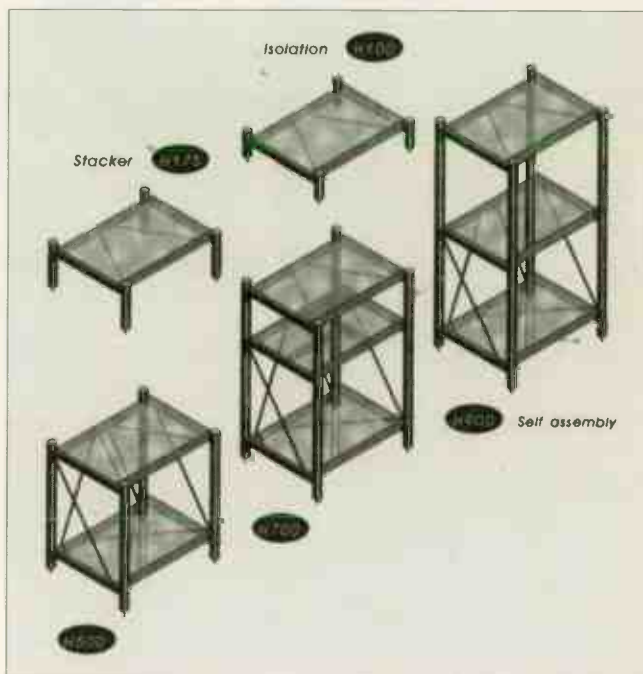
Versatility is guaranteed by two or three shelf options, an additional isolation shelf and a stacking unit to expand the system as the hi-fi grows. All you need to do is add components as and

when you feel the need.

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**H100 ISOLATION TABLE**



# Hi-Fi World WORLD LIBRARY

## **ELECTROSTATIC LOUDSPEAKER DESIGN AND CONSTRUCTION, by Ronald Wagner. £19.95**

This book takes you step by step through the design and construction of a full range electrostatic loudspeaker, including the basic operating principles behind electrostatics. Whether you intend to build your own electrostatic, repair and restore a vintage electrostatic or are just interested in the principles behind electrostatics, this book is a must.

The author takes you deep into his design decisions and offers practical advice on how to build the amplifier and set it up for best performance.

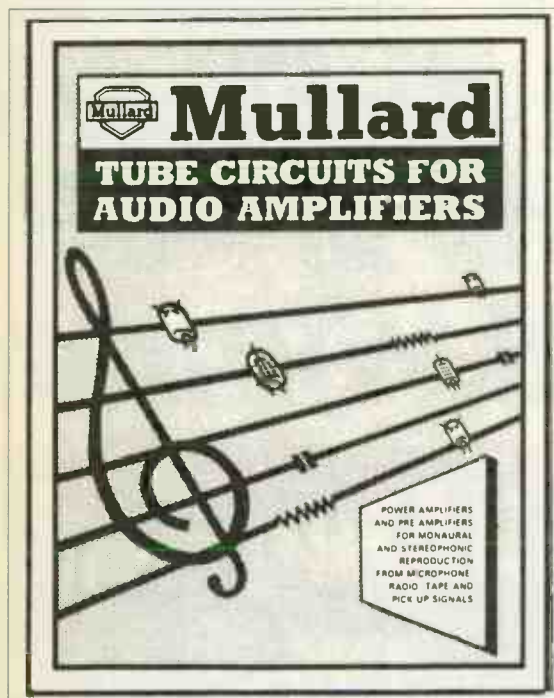
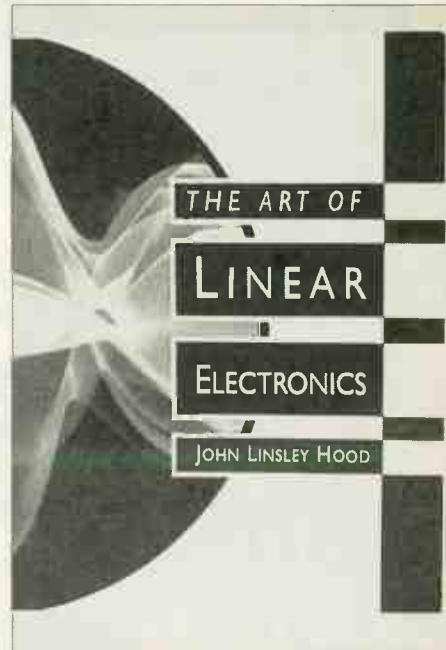
principles through to full design exercises and practical circuits.

## **LOUDSPEAKERS: THE WHY AND HOW OF GOOD REPRODUCTION, by G. A. Briggs. £10.95**

A popular and easy to understand book on building loudspeakers, using empirical techniques that pre-date computer analysis. A fine grounding, written by a manufacturer with first hand experience - recommended for beginners.

## **THE LOUDSPEAKER DESIGN COOKBOOK, by Vance Dickason. £23.75**

This best selling book in the field of loudspeakers offers good, up-to-date practical design information for the home constructor. Like today's manufacturers it uses modern Thiele Small theory and parameters.



## **MULLARD TUBE CIRCUITS FOR AUDIO AMPLIFIERS. £13.95**

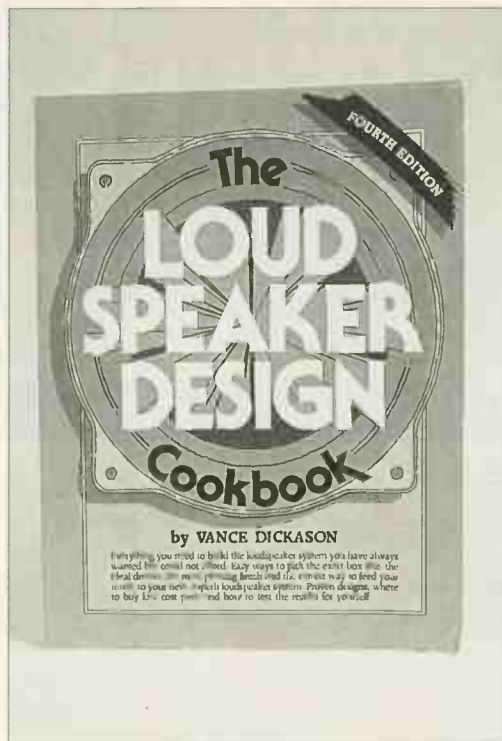
First published in 1959 by Mullard, this book includes full designs for eleven power and control amplifiers, including the 5-20, using valves. This book begins with a four-chapter tutorial on getting the best sound from valve amplifiers.

## **THE ART OF LINEAR ELECTRONICS, by J. Linsley-Hood. £16.95**

Concentrates specifically on analogue electronics for audio and goes into detail on obscure topics like the drawbacks of feedback, as well as its advantages. Covers mainly solid state but also includes valves. A must for serious enthusiasts and budding designers.

## **THE WILLIAMSON AMPLIFIER, by D. T. N. Williamson. £9.95**

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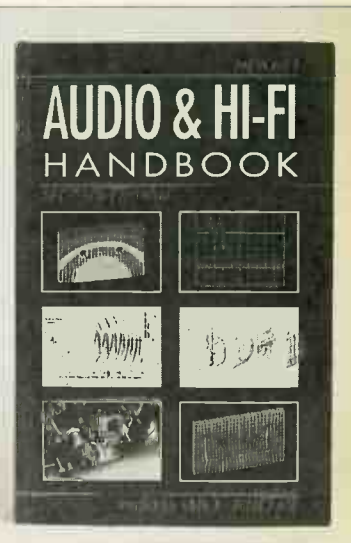


## **THE ART OF ELECTRONICS, by P. Horowitz and W. Hill. £35**

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## **AUDIO AND HI-FI HANDBOOK, edited by I. R. Sinclair. £40.00**

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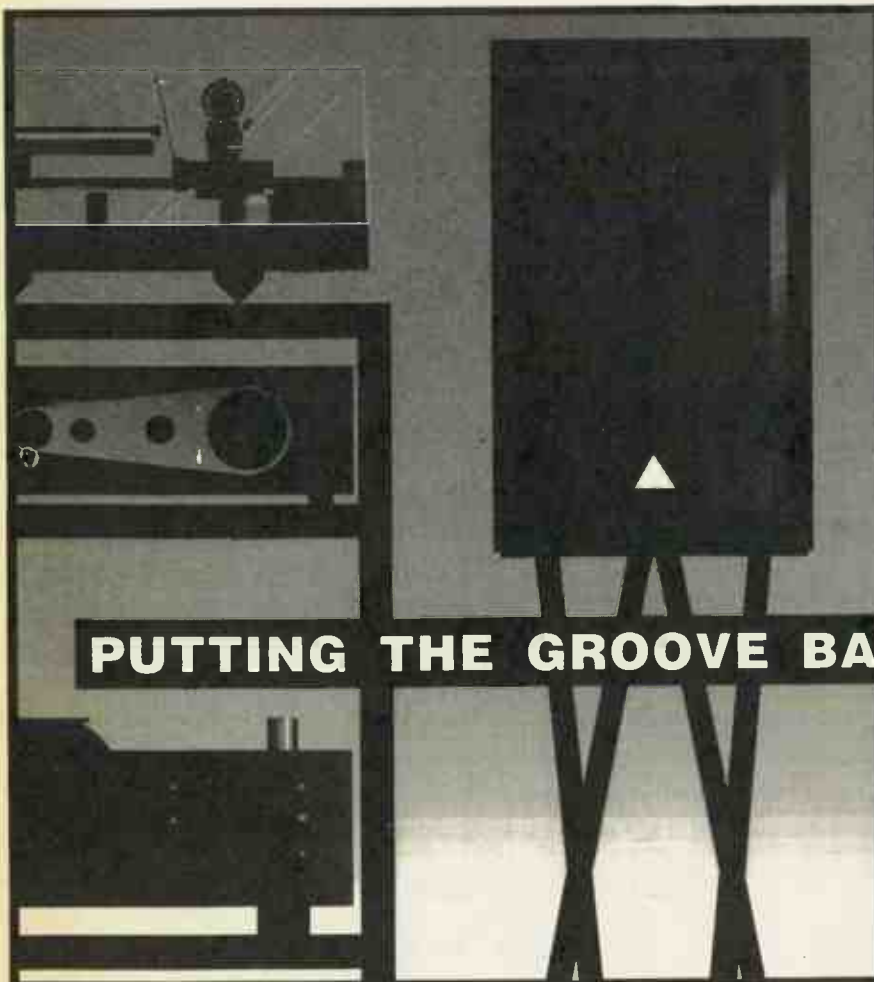
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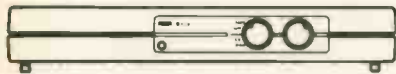


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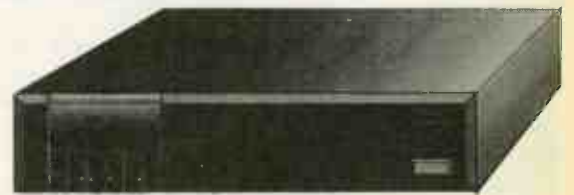
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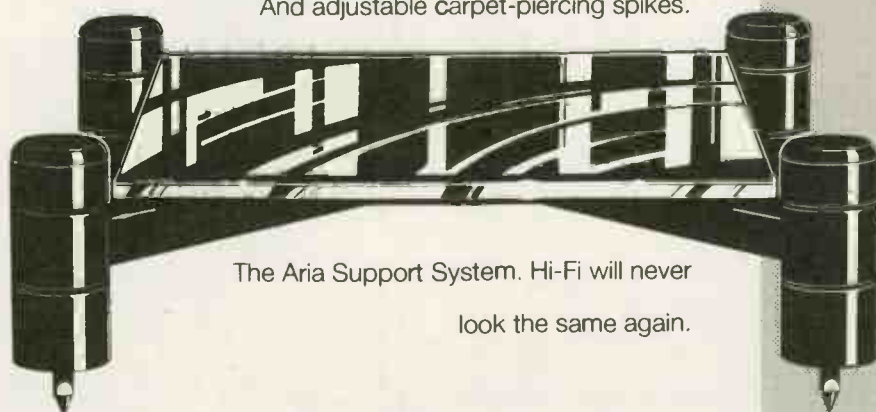
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## DIGITAL TO ANALOGUE CONVERTERS

QED DIGIT/OPTO	£139/169	Excellent value, with no rough edges. Now with optical input (Opto).	May'92
DACULA	£376	This little devil from Select Systems really gets its fangs into the music.	Dec'93
DPA DACS	£450-2K	The current masters of DAC-7, their DACs offer superb performance at a range of prices.	
ORELLE DA-180	£599	'Analogue' sounding converter, best with matching transport.	Feb'94
P. T. ORDINAL	£695	Pure sound, smooth and free from harshness. One of the best at any price.	Jul'93
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## TURNTABLES

PRO-JECT 6	£350	Great involvement and rhythm. Comes with Ortofon MC15 for £399	Dec'93
MICHELL MYCRO	£397	In between the Syncro/Gyrodec, the Mycro has superb midband clarity and poise.	Apr'92
TOWNSHEND ROCK III	£799	The MkIII has a fabulously stable, solid image and terrific bass.	Feb'94
P. T. ANNIVERSARY	£1200	Very neutral turntable. Excellent imagery and detail.	May'92
SME MODEL 20	£2495	The last great turntable, bettered only by the £11,000 Model 30.	Oct'92

## TONEARMS

REGA RB 300	£139	Simple and superb; dynamic with solid bass.	
SME 309	£568	Based on IV and V: Aluminium armtube and detachable headshell.	Jan'93
SME IV	£850	Looses little to the fabulous V, possibly the best value for money SME.	Dec'93
SME SERIES V	£1232	A masterpiece of precision engineering, with a cohesive sound.	May'92

## CARTRIDGES

GOLDRING 1012 GX	£60	Rounded bass, slightly forward midband, clean transients. A bargain.	Jul'93
GOLDRING 1022GX	£80	Extra degree of dynamic range and speed over the 1012GX	Jul'93
SUMIKO BLUE POINT	£100	The Blue Point casts a romantic charm over all types of music. Robust too.	Oct'92
ORTOFON MC15	£100	Moving coil cartridge at a moving magnet price. Has a tight grip on rhythm.	Jun'92
GOLDRING 1042	£100	A reference to all other MMs regardless of price	May'92
GOLDRING ELITE	£200	British made moving coil. Good value, smooth and detailed.	Apr'92
ORTOFON MC2000	£650	We came across this one by accident; used on a Garrard 401 with an SMEIV it gave one of the best results we've ever heard.	Dec'93

## CASSETTE RECORDERS

SONY TC-K61 IS	£330	A Dolby S bargain. All the gadgets necessary to produce great recordings.	Feb'94
NAKAMICHI DR2	£500	Worth every penny, pushes recordings to the limit and remains unflustered.	Feb'94
NAKAMICHI DR1	£780	Nakamichi sound quality, and manual head azimuth adjustment.	Jun'93
NAKAMICHI CR-7	£1500	No Dolby 'S', but auto tape tuning and motorised head. The Best!	Aug'92

## TUNERS

NAD 402	£160	Stunning budget tuner, with a warm and open sound. Can compete with the best.	Jan'94
AURA TU-50	£230	Superb FM-only tuner. Produces a delightful, three-dimensional sound. A cracker.	May'92
YAMAHA TX-950	£260	Fine all-rounder, with good AM section.	Jul'92
MISSION CYRUS FM7	£299	Clear and lucid sound. One of the best, regardless of price.	Apr'94

# World favourites

H/K TU9400	£300	Fairly basic facilities, but sound which beats most at the price.	Jul'93
QUAD 66FM	£490	Among the very best in terms of tonal colour and imagery. Remote controllable.	Nov'92
NAIM NAT 03	£500	Warm and easy sound with a good sense of atmosphere. Good value.	Sep'93
NAIM NAT 01	£1377	The best solid state tuner currently available. For better radio, live in the studio!	Mar'92

## INTEGRATED AMPLIFIERS

H/K HK6150	£159	Good sounding starter amplifier. Great dynamic range, excellent bass.	Jun 92
NAD 302	£160	Lots of insight and detail, but could sound a little rough in the wrong system.	Jan 93
PIONEER A-300X	£200	Exceptionally sweet mid and treble, plus the superb dynamic range of the A400.	Dec'92
DENON PMA-350II	£220	Powerful and with deep rhythmic bass drive.	Sep'93
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A. SYNTH. PASSION	£475	Or £275 for the kit version. Unrivalled transparency from a passive pre-amp.	Aug 93
ROSE RV23-S	£495	Valve/Transistor hybrid. Smooth and clean, rich and spacious.	Nov'93
DPA DSP 200S	£495	Not quite the 50S, but there's still nothing to match it at the price.	Jun'93
MICHELL ISO HR	£850	Impossible not to recommend. What more does your vinyl want?	May'93
NAIM NAC82	£2000	Remote control preamp. The NAC82 thrusts detail forwards in true Naim fashion.	Apr'94

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QUAD 606	£675	140W powerhouse. Smooth and civilized, with the legendary Quad back-up.	Aug'93
DPA DPA 200S	£750	Not as cold as the 50S. Better than anything else at the price.	July'93
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MICHELL ALECTOS	£1800	The Alectos have a lucidity and three dimensional realism that is rarely attained.	Dec'92
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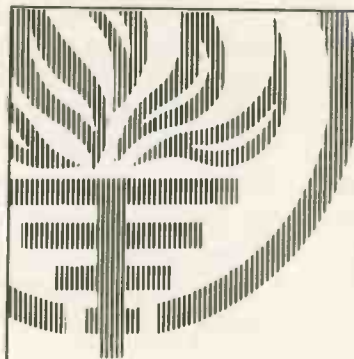
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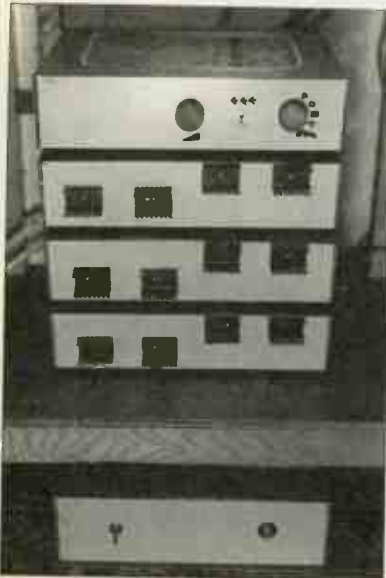
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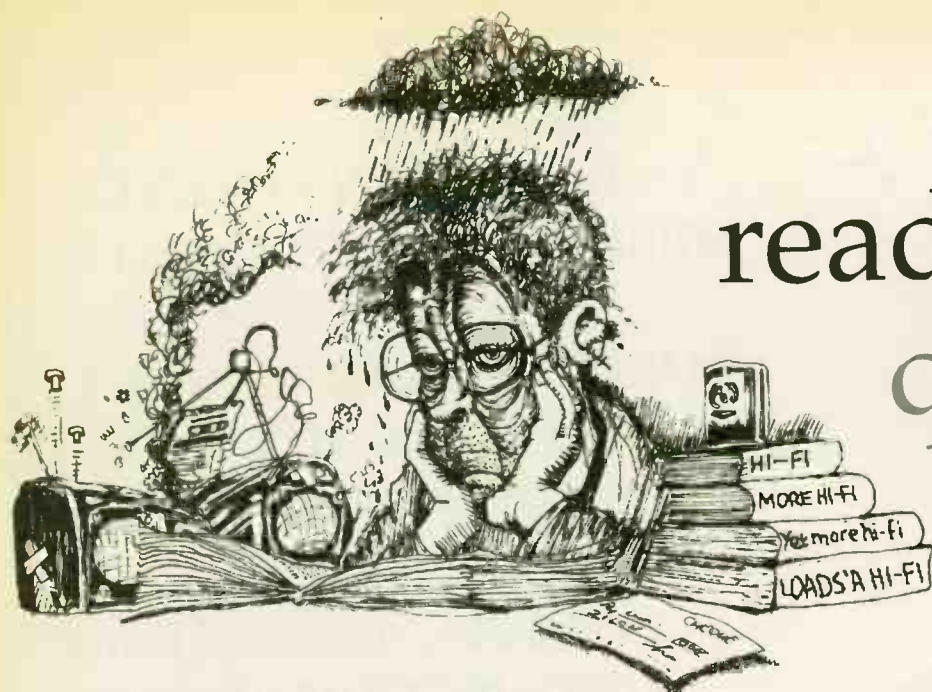
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# readers' queries



## STACKING 'STATICS

Recently I have been totally seduced by a pair of Quad Electrostatics. The benefits of these speakers far outweighed the weaknesses - I'm smitten! This is why I'm writing to you.

I listened to a pair of ESL-63s. However, I would like to stack them with another pair, which I'm told can't be done with the ESL-63s. In order to stack Quad electrostatics I have to buy the old type. This is where my questions begin!

How do the old electrostatics differ in sound compared to the ESL-63s? What different variations are there for stacking these speakers?

I wrote off to Quad and they suggested stacking one on the top of the other, although details of materials to be used

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are a little scant! Should I use a high mass & rigid metal or low mass stand?

Are there any other ways of stacking these speakers? How, for example, has Alastair Robertson-Aikman stacked his

pair and increased the mass of the speakers?

I know I ask a lot, but I would really like to get my own Quads up and running as soon as possible. A lot of people have suggested using an L-shaped stack with the speakers at 90° to each other, including Quad, although I know not what to do.

**Tristan Gallagher Tupsley, Hereford.**

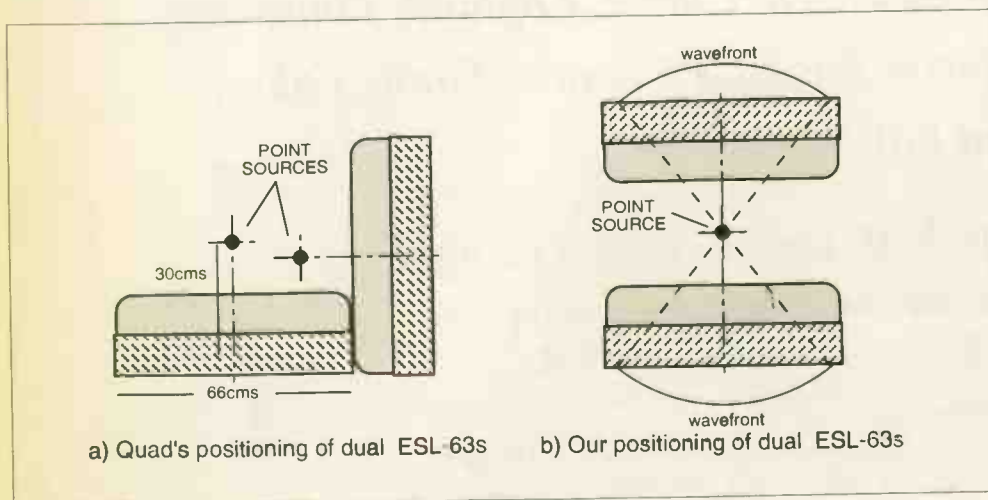
The old (original) electrostatic does not go as loud as the '63, although you get more volume with stacked pairs of course. Quad will renovate the old model and fit it with the latest protection circuits used in the '63.

The original model has a

brighter, clearer sound that many prefer to that of the '63, but removing the grilles of the '63 gets rid of most of its dullness, even though this isn't the basic source of their differences (there are high frequency losses down the delay line of the '63 that contribute to its softer sound).

As you note, Alastair Robertson-Aikman's set-up (founder of SME) has them in an L formation, driven by massive Krell amplifiers. This is Quad's recommendation for paired 63s. They sit behind a curtain (electrically powered, no less) that stretches across one end of a massive listening room. I think it's true to say that Alastair's system is the toast of the industry. He's very proud of it and listeners leave in awe. I should say, however, that this system isn't about massive bass and searing highs, etc, etc ('domestic disco'). It is about a completely natural and believable sound stage behind the curtain, with full scale singers on it. The illusion is fabulous.

So back to the practicalities. The old models are most conveniently stacked. They become intrusive, but do not take up much floor area; increased



Two ways to position dual Quad ESL-63 electrostatics.

Continued on page 117...

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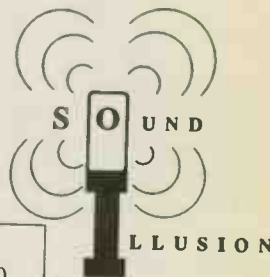
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Oracle Delphi + Linn Ittok £600, Sonus Faber Electa £1300

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.... Continued from page 115

baffle area improves bass as well. Don't worry about materials unduly. Use strong, non-resonant wooden or welded angle iron frames; you'll have to remove the wooden end cheeks. Get a service manual from Quad first to acquaint yourself with the unusual construction of these speakers and install the lower one upside down. You must connect them up in parallel to a powerful solid state amplifier capable of handling low loads (e.g. Naim), or bi-amp (i.e. one amp per loudspeaker). Quad's technical information sheet No. 021 gives enough information on stacking. If you find this inadequate, then let discretion be the better part of valour: get someone else to do it. Try Lockwood Audio for a start at Imperial Studios, Maxwell Road, Borehamwood, Herts WD6 1WE, tel: 081-207-4472. They told us they hadn't experience with this, but could tackle the task. Quad told us they were not aware of commercially available frames, and neither are we.

If you go for ESL-63s, experiment with pairs on the floor or on stands, with one pair facing toward you as normal, whilst the other is swung around so that the radiating centres (30cms behind the centre of the speaker) remain nearly coincident with the forward facing units (see diagram a).

Discussing this problem in the office we realised that the theoretically ideal way of arranging dual-63s is in anti-phase push-pull (see diag b), one facing forwards, one backwards and connected in-phase so that rear radiation cancels out and you end up with a single spherical expanding wavefront emanating from a single notional point source. Quad agreed this is correct, but as yet we haven't tried it. It remains a good idea to hang one or two layers of heavy carpet underfelt between the

speakers, to act as sound absorbing 'curtains'. Keep them a minimum of 4in away from the speaker.

Alastair has re-mounted his 63s onto stout wooden frames, sans grilles and dust covers. However, since this is potentially dangerous, we do not recommend it except to those who know what they are doing. All electrostatic loudspeakers carry lethal voltages (2500V) and can kill. Bear this in mind before you get too bold. **NK**

### NEW ROOM BLUES

About six months ago I sold all my vinyl and purchased a CD player and speakers to add to my existing amplification.

System: Teac VRDS-10 connected to Cyrus II/PSX with Audioquest Emerald interconnects. Speakers are Mission 75 1s bi-wired with Linn K400 speaker cable. The speakers are blue-tacked to sand-filled Target HS24 speaker stands. The CD player and amplification sit on top of two Target TT2 tables.

I purchased my system at another house. The old listening room had a concrete floor and an unobstructed wall for the speakers to sit in front of. The sound was gorgeous. All my reservations about CD were put to rest for good. I have now moved to a new house and things have changed.

My new house has a wooden sub floor, large windows, and the only place the speakers can be sited are either side, but in front of the fireplace. (The room is sort of L-shaped open plan style).

It doesn't sound awful or anything, it just doesn't sound anywhere near as good as it did before. The bass isn't as deep or rich as it was and the treble can sometimes have a really nasty sting. It's just not as friendly as it used to be. What can I do? I've thought that a change of amplification could be the answer. What do you think?

Oh! By the way, I've just received the CDs I ordered

some time ago. It was worth the wait. Thanks! I'd just like to take this opportunity, (yes, you've guessed it!) to congratulate you on a brilliant magazine. I've been buying for a good few years now and have never been disappointed to date. Congrats!

I hope you can help with my problem.

**Simon Blake  
Sketty,  
Swansea.**

Obviously, you have a room problem, but unfortunately you do not give us room dimensions or speaker position relative to the walls. Consequently, we can only generalise on what might be wrong, and what the solutions could be.

Let me get the most intractable problem out of the way first - that your room is L shaped. Once, just once, I had to try and make a system work in a large T shaped room and it never really sounded right. I have been told that L shaped rooms can be a pig too. What to do? Try sitting fairly close to the speakers, say 6-10ft away, to get their 'near-field' sound with less contribution from the room. I'd suggest you do what I did when moving into a new room recently and carry out a whole series of tests, moving the speakers to various sensible and useable positions and checking out the basic balance.

Although pushing the Missions back against the rear wall will potentially deepen bass and add body, do try pulling them forward progressively too, since rear reflecting surfaces always put in an anti-phase suck-out in the forward response (at a quarter wavelength distance in front of the wall) that becomes more obvious with decreasing distance. This may be giving you a loss of lower midrange frequencies that makes the system sound worse than before.

The bright sound is almost certainly due to

reflection of treble off hard surfaces. This means the walls, floor and ceiling. The further away you sit from the speakers, the worse it will get. Let's start with the floor - it must have carpet on it, and preferably heavy felt underlay beneath that.

Then there's the oft-forgotten ceiling. If this is low (8ft) it too will be reflecting treble down with little loss, but there's little you can do about it, although a large fabric covered lamp shade may well help by breaking up/absorbing treble energy.

Keep the speakers away from side walls too, since treble will bounce off these. Wall hangings, books in bookcases, curtains, even pictures on or against the walls can help break up treble and absorb it.

Finally, try building up a foam wall around the tweeter with draught excluding strip to prevent it from beaming upward and sideways. Stand at the side of the speaker and use your ears - it's as easy as that.

What you can see from all this is that heavy furnishings work wonders in breaking up and absorbing sound, producing a 'natural' sounding environment. I always remember that putting two settees and an arm chair into a lounge magically cleaned up its bass (by absorption). A canny Scots neighbour of mine has lots of wonga, but she buys all her furniture second hand, finding all sorts of amazing bargains because, it seems, nobody values second hand furniture. She bought a fabulous fabric covered Chesterfield suite that cost thousands at Harrods for just a few hundred pounds (the owner was an American Admiral who had suddenly been posted back to the States). Why not try this route? It might take a bit of legwork, but it's a great way of furnishing your home and getting a good sound too. **NK**

Continued on page 119...



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.... Continued from page 117

## VINTAGE SINGLE-ENDED

My listening room is small, meaning 11' x 14'. My system is as follows: Alphason Sonata/Xenon MCS/Golding Eroica turntable, arm and cartridge combination, Rotel 955AX compact disc player, a pair of Heybrook HBI speakers on open Target stands, Leak Stereo 20 (modified by Croft) and Audio Innovations 800c amplification. The speakers are bi-wired using Linn cable and 1mm solid core lighting cable. Generally I'm quite pleased with the sound, but I would like smaller speakers that imaged better. Any suggestions please?

Subsequently I learned that these are in fact very common. One certainly lives and learns.

Finally, would a phono stage be advisable? Currently I use the Audio Innovation's own phono stage with two Ortofon transformers for the moving coil cartridge.

**M.J. Dennis  
Worthing,  
Sussex.**

For good imaging try the Castle Durham 900 loudspeakers (£279), which come in handed pairs (tweeter on inside edge of front panel) for optimum stereo imaging. The new Celestion 5s are good too and sensitive as well at 88dB. Remember, you need good

started to design and build our own SEs.

The cheapest vintage single-ended amplifier is a **Pye Mozart**, but even when restored this amplifier isn't a **paragon of accuracy**. Our own **4W single-ended kit** is **inexpensive**, but you do need to know about electronics to build it and a sensitive speaker is required.

Good phono stages are expensive. The **Michell Iso** is one of the best, or for a bigger, warmer, presentation the valve **EAR834P** is recommended. However, it may well be worth waiting for the new **DPA phono stage**, since this should be a cracker. Listen first though, since your set-up is quite good and I'm not certain you'll necessarily feel that the improvement in sound quality is worth the considerable expense. You might be better off aiming for a good, modern single-ended amplifier. **NK**

## LEAVING THE GHETTO

I need help! Not the mental variety, but more on the hi-fi front. I am a young guy who is about to embark on the road to acoustic enlightenment.

For years I have listened to music from my portable ghetto blaster, highly questionable in itself. Now I am looking to buy a set of separates.

I have £800-£1000 to spend and am looking for an amplifier, a CD player and a set of speakers. Most of the shops in my area are only too happy to bounce names and packages off me; however, each one seems to contradict the other.

I am a student and the money I will spend represents a hell of a lot to me, so I don't want to buy rubbish. I've been shown Marantz, NAD, Arcams, Bose, Solid, Tannoy Sixes etc.

My needs are simple. I want a system that can chum out loud music with heavy bass lines for the next few

years and yet in 5-10 years' time will deal with the intricacies of classical and jazz without being, for want of a better word, knackered.

Is this possible? I am new to this game and think retailers see me coming.

Please, please can you help.

Your suggestions would be warmly received. **HELP!**

**Mathew Croxford  
Glasgow,  
Scotland.**

Loud, with heavy bass and long life huh? That places emphasis on the loudspeakers and Tannoy immediately spring to mind. Their speakers are sufficiently well designed and developed to give as much low bass as possible from domestically acceptable cabinets, of healthy, but not overpowering level. They're also tough and go loud and, of course, because Tannoy are in Glasgow, should they suffer at your hands you can pop around the corner to get them fixed. Try auditioning 603s or, for more bass, 605s. These speakers are right up your street (almost literally).

For Tannoys I'd suggest an amplifier that runs deep, but stays tight, which cuts out choices like the Pioneer A-400X because of its slightly 'enhanced' bass, but welcomes the Denon PMA-350II. This unit is a real power house too and should be ideal for you, as well as a good match for the Tannoys.

Now to the all-important source, as another Glasgow based manufacturer might say. At your budget level and for your requirements a **Rotel RCD-965 Discrete CD player** will slot in nicely, giving you a fast, clean-sounding system with plenty of bass. **NK**

## NATTY TUNER

I've been putting together a hi-fi system over the last few

Continued on page 121....



Castle's Durham 900s come in handed pairs for better stereo imaging

Also, I recently read a lengthy letter by Haden Boardman who basically suggests that the simpler the amplifier the better it will sound. Therefore forget push-pull, transistors and any modified vintage amp and aim for a simple single-ended design. As I do not wish to pay thousands for a new one are there any vintage ones to be had? I don't wish to be ripped off, particularly in view of the fact that a 'well respected' Hertfordshire dealer sold me the Leak at a premium price on the pretext that it was a 'gold' one, therefore somehow better and rarer than the anthracite.

sensitivity for the Stereo 20, because it doesn't have much power. Try and get a demo first of course.

Single-ended amplifiers do have a magic about them that, technically, is a bit baffling. I hardly believed **Ongaku** when I heard it; if it was right, everything else was wrong. And, irrespective of such questions about the nature and meaning of the universe (and all that) even if it wasn't right, it was damn impressive! **Yoshino** I actually got to live with for too short a time before someone in New York decided to raid a bank and buy it. That's why we have



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.... Continued from page 119

months and now I'm looking to acquire a tuner. I heard and liked the Naim NAT 01, however it costs £1500 so I decided that I'd never heard of it as a sort of self-induced psychological ploy (unless of course I come across it second-hand at a vastly reduced price).

Now I'm looking at other, older and valve tuners (thanks to you) and I'm particularly interested to find out about Revox and Leak tuners, specifically the Troughline.

Thing is, as far as I know, they don't make Troughlines any more so I'd have to get one second hand and I'd be taking a chance that everything's OK 'under the hood', not to mention not being able to make direct A/B comparisons.



The Leak Troughline is superb, but needs careful restoration and alignment for best results.

Because of this I have a few questions I'd like to ask you. Firstly, like in the case of the various Naim models (I don't expect the Troughline to be as good as the NAT 01 by the way), is the Troughline MK I a 'better' or not-quite-so-good model as the MKII and III? Or is it, as in the case of the recently re-vamped Audiolab 8000 DAC the first model that was supplanted by the second and whether one was better than the other was left up to personal taste to decide?

Secondly, I understand that it would be good to get it checked out, but don't know where. Thirdly I've heard talk of getting new decoders and power supplies for it (I don't

pretend to actually know what a decoder is). If so, which ones should I try? And fourth is there anything else that I should keep an eye out for that would improve its performance still further?

**Hassaan Ali  
Ilford,  
Essex.**

The Leak Troughline can be heard at Radlett Hi-Fi, Radlett, Herts. They'll tell you all about the various difficulties with regard to stereo decoders ('phone David Wren at 0923-856497). I prefer it to all solid state tuners, but there are a number of practical difficulties to be considered before buying one. Old tuners like this need to be renovated and re-aligned. It's a complex task requiring expensive test equipment

and considerable skill in VHF radio. Even when a Troughline is up and running properly, it is very insensitive, needing at least 5mV or so from the aerial for

best results. That means using a large aerial and, in Ilford, Essex, you may well find that signal strength from Wrotham is barely adequate.

Regular readers will know that, these days, we recommend the new NAD402 tuner as a more amenable alternative. It might not be quite as breathtaking in its sound as a Troughline, but it comes at a fraction of the price and it even has push-button tuning. **NK**

#### HARSH TREBLE

I have recently purchased a Marantz CD-72SE CD player and Naim 72 pre-amp with HICAP and NAP250 power amp. This new equipment has given me a problem in that

my old Chartwell/Rogers have become very bright and harsh in the treble. Not surprising really as they're 12 years old. So with £800 to spend I started to read up on new speakers. Wow, what a minefield! Where do I start? Do I listen to: Mission 753s, TDL O.75/Studio 1s, KEF Q50-60-70s, Systemdek 939s, Spondor SP2/3s and so on.

Where will I find all these speakers? Does any one stockist have them all? Will they let me try them at home etc? I am looking for an exciting, punchy and passionate sound. My music taste is from Bruce Hornsby, Eric Clapton, Dire Straits, etc. to Dina Carroll, Oleta Adams, Luther Vandross to Kenny G., Grover Washington Jnr. etc. No heavy metal or classical. My room is about 16 by 14ft.

I would be grateful for your assistance in this matter. I appreciate that speakers are a matter of personal taste, but some indication as to what would suit my amp and taste would be very much appreciated. (I do prefer floor standers).

**Ian Seabrook  
Borough Green,  
Sevenoaks,  
Kent.**

I'd say it was surprising that your system should develop the harshness you describe, indicating the speakers are revealing a property of the new components not to your liking. New speakers are unlikely to do much to alleviate this problem, although they may well - if you are lucky - make the best of a bad effect and place more attention on other strengths.

Ideally, in my view, you should first try to sort out the source of your current dissatisfaction; hastily changing speakers might be wasting money. The best way to do this is by substitution. Both your amplifier and your CD player are not known for being especially laid back; they're

the choice of those who want a really vivid, dynamically challenging sound with pace and control in order to best play the sort of bass lines that are important to funk and soul. You may have to balance this attribute against some upper midrange and treble hardness; there are always trade-offs - the perfect system hasn't been invented.

Ideally, you should try listening to a Pink Triangle Ordinal CD convertor, swapping between 18-bit and 20-bit filters. The Ordinal is super clean and relaxing, whilst at the same time avoiding treble dullness. Alternatively, if this is beyond your budget, then an Arcam Alpha 5 CD player may well suit. Your Naim amp suits your musical tastes so any change, whilst making the system less challenging, may also seem retrograde to you. **NK**

I'd agree with Noel, the CD player should be investigated. The Marantz CD-72SE, good though it is, isn't really in the same league as the £2500 Naim amplifier set-up you have which will ruthlessly reveal its faults. I'd use it as a transport alone and use an external DAC, like the Ordinal.

For speakers I'd listen to three, ideally in your own home and system, as the room can have a strong effect on the final performance of a speaker. Try Castle Chesters for their powerful bass and good midrange detail, ProAc Studio 100s for their energy and excitement, though they may be a little too bright for you, and Spondor SP2/3s, which have a fantastic mid and treble and good bass punch, but limited depth. The Spondors work well against a wall, the ProAc's well out into the room, and the Chesters somewhere in between. **DB**

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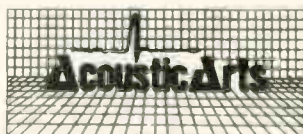
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Living Voice, Horning, Dali, Audio Innovations, Miro, Impulse, Lowther, Voyd, Vitavox, E.M.T., SME Townshend, Goldring, XLO, Wadia, Pioneer, Revox

Audio Innovations	price	rrp	Voyd .5 Reference (oak)	*2400	3600	
S.200 Pre.	*220	350	Voyd Valdi - Ash + Mahog	*680	950	
S.200 Power	*250	500	Meridian Argent II	400	875	
First Audio (7.5 watt)	*900	1555	Audionote I.O Cartridge	900	1500	
Second Audio (15 watt)			(10 hrs)			
x 2	1400	*1850	3000	Snell K (12 mths)	*260	550
S.1000 Mono (new)	*1400	1500	Tannoy 603i (2 mths)	190	280	
S.1000 M.C.T.	*130	300	Linn Kaber (curr. spec.)	690	1300	
Horning Agathon (silver)	*2500	5000	Sugden STD 1	*600	960	
Horning Agathon (Bronze)			Linn LP12/SME 3009	450		
(Mahog)	*2000	3400	NVA Phono	200		
Audionote AN J SP (oak)	*550	1000				
Audionote AN E B (oak)	*850	1400				
+ Huygens E4 Support	*190	300				

\* Indicates full warranty

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## SLATE AUDIO

HI-FI Design & Cable Services



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### SLATE AUDIO GARRARD 401

The Garrard is very musical and involving, and entices you to sit back and listen for hours. Bass lines roll along with poise; vocals float around your listening room with a haunting elegance. The 401 never draws undue attention to tiny detail. Instead it pulls the music together, producing a very tightly weaved musical fabric. Forward and assertive, it never sounds out of breath or muddled, it just continues to offer music as a total entity. The open qualities that it offers also bring out the best in your ancillaries, nothing sounds under strain or under pressure. Quiet operation is the final surprising feature. The rumble that once afflicted the 401 has been silenced once and for all. The build and performance of the Garrard 401 are really an audio equivalent of the E-type Jaguar, they're both fine examples of sixties British engineering.

AUDIOPHILE

The Slate deck defines what real instrument solidity should be. Bottom end delivery is also in a class of its own. The word controlled kept appearing on my notepad, the turntable giving a Rock-like performance, with stacks of detail.

HI-FI CHOICE

I have never used a turntable system like this one. It seems to get everything right. It relies on massive, yet clever and precise engineering to get the best from LP. With an Ortofon MC2000 cartridge fitted to the arm (SME IV), sound quality was unquestionably superior to CD. The Garrard seems free of what, in comparison, seems like sloppy timing on belt drives. . . . it keeps a rigid control on tempo, making for a fast controlled delivery. . . . music blossoms out of the speakers and fills the room. . . . the Garrard/SME/Ortofon/Slate combination teased so much out of the Vinyl groove, presenting it clearly, that CD was forced to take a back seat. Images on the stereo stage were strongly embodied, they had real substance and life.

HI-FI WORLD

47 GEMINI CLOSE, LEIGHTON BUZZARD, BE05, LU7 8UD. TEL: 0525 384174

WANTED: NAIM Hi Cap. Phone particulars and price to (0745) 826283 (North Wales).

MERIDIAN M60 Active Speakers. Brand new in unopened boxes with full 2 year warranty £1,200 ono. Tel: 021 783 8214.

CELESTION 5 MK2 Speakers. New, boxed £99. Mentmore 200 watt mono block valve amps. (Similar to new Papworth). Excellent condition. Boxed. £1,495. Tel: (0242) 523677 (Cheltenham).

ROGERS LS4a/2 Speakers, 6 months old, £150.00. Alexander LS1 Speakers (small, metal cabinets) £50.00. Nakamichi IA3 amp, 4 months old, £145.00. Tel: (0948) 667521 (Shropshire).

AUDIO INNOVATIONS 2nd Audio Triodes (mono blocks) latest spec 2A3/ECC82 L2 Pre-amplifier £2,000 Kenwood DP-X9010, CD, £275, Digilog, £175 Stax SRMT1, SR, Signatures £800. Will demo, all mint. Hampshire (0730) 821 240.

SUGDEN A25B £150 boxed. Tuner model SAE 3200 (USA) high specs £100 no offers, ring for details. ENTREI. M/C cartridge, plus Lentic H/Amp. Light use, swap for Decca. John (0268) 745416.

ROYD TOPAZ SPEAKERS one year old £85. Rotel RA 920AX amp 6 months best buy £85. Stax Lambda SR Earspeakers £199. All boxed. Instructions. Will Dem. Steve evenings (0865) 59737.

**FOR SALE. CHORD SPI 200** Power Amp excellent condition, superb sound & boxed. £1,500. Ring (0333) 424642 after 6pm.

IMPULSE H2 HORN Loudspeaker, superb sound oak finish mint condition £1,650. Audio Research SPI0 Mark 2 mint, boxed £1,500. Audio Innovations Second Audio Amplifiers 2A3 valves latest finish, boxed, mint £1,550. Tel: 081-450 7384 anytime.

WANTED: TANNOY AUTOGRAPH, Decca Decola, Vitavox Drivers, Garrard 301 (V.G.D.), Westrex Drivers, Lowther PM-2, PM-3, PM-4, Single TP-1, valves PX4/PP3-250, STC4300, DA30/60, STC4274, Ed/Ad-1, EMT 927/R-80. Tel: (0044) 881184 before 8.00pm.

MERIDIAN 203 Bitstream DAC 7 plus Digilink cable 18 months old, boxed £230 ono (0438) 743807 (Stevenage) after 4.30pm.

REVOX B77 3 1/4 and 7 1/2 IPS 4 track, little used, boxed with manual. Working cover and remote control. 20 10 1/2 and 57 1/2 tapes, boxed and unused, £750. (0643) 821137.

VOYD TURNTABLE, latest spec, split-phase P.S.U., Helius Orion arm (Audio Note Silver-wired), Audio Note 10 cartridge, Audio Innovations 1000 M.C. transformer, superb! Must sell, £1,500 or less. Tel: 0364 72153 (anytime).

PAIR BRONZE Quad ELS, serviced, excellent. £350. Pair original Decca Corner Horn Speakers £120. Superb black Radford TT100 100 W.P.C. valve amp (G.E.C. KT88s) £450. WANTED - Leak (or other) valve amps. Tel: 0364 72153.

MAGNEPLANAR MG1c, grey cloth panels, light oak wood, mint condition, boxed, can demonstrate - £550 ono. WANTED: Audiolab 8000T Tuner. Tel: (0734) 843740 (Reading).

NAIM NAPI 40 Power Amplifier, new style, mint condition, boxed £395. REGA ELA floorstanding loudspeakers, black finish, excellent condition, boxed £280. Tel: Southampton (0703) 260737.

AUDIO ALCHEMY D.D.E. guaranteed until Jan 1997, excellent up-grade for elderly C.D. player £200. Revolver Turntable (original red) with Linn Basik LVX and Linn K9 £120. Tel: (0324) 638642 (Scotland).

I PAIR OF MERIDIAN 205 mono blocks. I Audio Innovations Passive Pre-amp £625. Phone: (0992) 763812.

THORENS TD150/Basik/K9, attractive, light oak plinth, superb, £135; Rogers Cadet III valve amp, good condition, £55; Leak Delta 30 amp, nice sound, £15; all ono. Tel: (0565) 634740 (Cheshire).

MUSICAL FIDELITY Tempest amplifier £100, NAD 502 CD Player £100. Both only 14 months old and very rarely used. Move forces sale. Telephone Chesterfield (0246) 569741.

MULLARD 510 valve monoblocks (homebuilt) £100. Elektor valve pre-amp £120. Beard, 506A, pre-amp £495. Musical Fidelity Synthesis £150. Tel: (0742) 459698.

TANNOY DUAL Concentric Loudspeakers required. 1974 to present day considered. 12 inch or 15 inch drive unit models only please. Cash awaits. Tel: (0886) 888 772.

ROKSAN XERXES, natural Ash finish Tabriz-zi arm £595. Ion Obelisk 300 pre and power amps £395. Naim IBL speakers £395. All in Excellent condition 0829-733756 or 0606-79671.

MERIDIAN 205 Mono Block amplifiers and Audio Innovations Passive pre amp G395 boxed, incredible value and Deltac PDMI MKII DAC £150. Phone after 6pm (0992) 763812.

DPA 50s PRE/POWER amps plus line-stage and power supply. The Power mains filter with cable. Slink Interconnect plus IS19. All boxed, superb condition. £1,600, open to offers. Telephone 0602 - 817078 evenings or 0602 - 424770 day.

SWAP my LINN KEILIDH Speakers with ceramic base for your Epos ES14 with dedicated stands. Must be less than 18 months old and perfect. Other free space designs considered 0226 764749.

RCA 6L6G VALVE cinema amplifiers, huge transformers with original pre-amps 6' 19" rack, with door! Swop 753s, 105s, CD10 or equivalent. Possibly cash. Can deliver. View S. Devon 0483 428906, more available, ask.

AVI MONOBLOCK amps £650. Oracle Delphi Mark 3 Turntable £500. Both in immaculate condition with packaging. 2.25m Audio Synthesis SilverBlue interconnect. Short lengths Siltech 56 and ribbon. (0787) 247897 evenings.

LEAK TROUGHLINE 3 Tuners for sale. Stereo model £150, mono £115, both excellent condition. Thorens TD125 transcription deck in SME plinth, with SME 3009 arm exc. £120 ono. Telephone: 0702 294452.

GARRARD 401/SME 3009 S2 mounted on custom plinth with lid. Manuals and spare idler wheel. Offers write C. Coakes 82A Southampton Road, Parkgate, Southampton SO31 6AH.

MERIDIAN TRANSPORT £495 AVI DAC £295. Townsend Siesmic Sink £95 Epos ESII Speakers including stands £295. All boxed and in good condition. Telephone (0703) 738230.

QUAD ESL 63s £1,100, KEF 104/II black ash £625, Celestion SL600. £280, Thorens TD150 SME arm and plinth, Shure V15 £150, Quad 33/303 £150 FM3 Tuner £80. Telephone (0977) 643629.

AUDIOLAB 8000A £150, Musical Fidelity MA100 Monoblocks £650, Musical Fidelity Digilog DAC £100, Meridian MCD CD Player £100, all boxed with original receipts. Tel Simon on 081-743 4654 (eve) 071 - 334 0088 (day).

ARCAM ALPHA 5 CD; Delta 290 Amplifier; Kef Q50 Speakers, 7 months old, boxed. NAD 6340 Tape Deck (no box); I set Audioquest Ruby Interconnects; I set CD feet; tripod table. £1,000 o.n.o. Telephone 0386 - 554872 (works).

DELTEC (DPA) DSP50S Pre/Power amp. Matched phono stage. Black Slink speaker cable, Power mains filters, power Slink cables etc. £1,800. 0732-883360 (Kent).

B.B.C. MODIFIED 301 (no turntable spindle). Leever-Rich prof. Floorstanding recorder valve-mono (needs overhaul). Troughline Stereo, Thorens 150 (no arm). Radford SC22 pre. Quad II control-mono. Leak 75 receiver. Offers. Wanted: Nakamichi, FM4. Liverpool 734 0965.

QUAD ELS bronze grilled Loudspeakers in excellent condition, having been refurbished 18 months ago, £325. Quad 34/306 pre and power amplifiers in good condition, £350. Telephone George (0428) 712973.

ART VPI PREAMP, with high spec. valves. Inputs for phono, CD, Tuner/Aux only. Tape switching facilities omitted for improved sound quality. As new £300. ART transformer £50. Telephone 081-203 2120.

TANNOY BERKELEY'S superb condition, much loved speakers reluctantly being sold (moved house and will have to settle for something smaller). Outstanding speakers for the hi-fi enthusiast. Price £350. Telephone (0264) 860530.

NAIM NAP 180 £600. Naim NAC 42.5 £120. Hi-Cap (old style) £280. Ruark Templars (Burn) £300. Telephone (0432) 268484.

FANTASTIC, RARE OPPORTUNITY to acquire some of the best Hi-Fi ever! Leak 20-75 speakers completely re-built, drive units, crossovers, and cabinets fully restored £750 o.n.o. Also Leak, Quad, Tripletone, Rogers valve amps. Garrard 301 - 401 and Thorens 124, 125, 160, 147, turntables. All excellent. Phone for details: (0548) 560913.

AUDIOPHILES can now build the "Musician", a high quality class A valve amplifier. For set of blueprints send large S.A.E. enclosing £2.50 cheque P.O. to S. Perry (Audio Engineering Ltd) 57A Lyndhurst Drive, Leyton, London, E.10.

WANTED: circuit/service info for Pye Mozart Tuners HFT 108/111. Valves, 211 prefer GE/RCA types. ECC81/82/83 prefer British origin. Telephone 031-447 9979.

PAIR LOWTHER Acoustas, pair Dual Position Acoustas. Latest P.M.6-A High Ferric Drivers, all round (original cobalt magnets). Superb, original examples. Bargain at £400.00 pair, cash. No dealers/time wasters, genuine sale. Telephone (0446) 735768.

NAIM NAT 02 TUNER. New style, perfect condition £575. 0964 622725 (Hull).

WANTED: Musical Fidelity P150 power amplifier. Must be in good condition and boxed. Telephone Stuart on Oxford (0865) 511133 with details.

# hi Best prices for new, xdem & s/h equipment fi

Infinity IRS Beta	mint s/h	£4995	Audion 300b (silver knights)	mint s/h	£1595
Sonus Faber Electa p/blok	mint s/h	£995	Albary 408 monoblocks	mint s/h	£495
Apogee Diva + Dax	mint s/h	£3900	Manley 350 monoblocks	mint s/h	£2995
Martin Logan Quest	mint s/h	£2800	Musical Fidelity F15/F22	mint s/h	£1995
Sonus Faber Minima Amators			Audio Research D115	mint s/h	£995
+ s/woods	mint s/h	£1200	Roksan L2/S1 pre/pwr	mint s/h	£1495
Wilson Watt 3 Puppie 2	as new	£7995	Conrad Johnson Prem 10/11	as new	£5500
Magneplanar 1.4	as new	£795	Naim 92/90.3	as new	£595
Quad ESL 63 + Gradient			Krell KSA 80	mint s/h	£1695
S/woofer	mint s/h	£2850	Audio Research LS5	as new	£3500
Kef 107.2 + Kube rosewood	as new	£1795	Audio Research		
Apogee Duetta	mint s/h	£895	SP15 mk11 (blk)	mint s/h	£3500
Monitor Audio Studio			Plnk Triangle PIP II +		
10 + stds	mint s/h	£750	battery psu	mint s/h	£1495
M.T.D. TUG + stds			Copeland 301	as new	£850
(review June HiFi News)	x-dem	£1800	Audio Innovations L2 pre	mint s/h	£495
Ensemble PAI Reference			Audio Innovations P2 phono	mint s/h	£495
p/blok	mint s/h	£1995	NRG PA1 pre-amp	mint s/h	£3500
B&W 802	as new	£1995	Sony TA-E 88 pre-amp	vgc	£300
Snell Type E's + Pirate stds	mint s/h	£850	Tesseract Tala pre-amp	x-dem	£995
Wadia 7+9 tran/dac	mint s/h	£14995	Tesseract Taada phono mm/mc x-dem		£995
Wadia 2000 tran/dac	mint s/h	£4995	Trilogy 902 pre-amp	as new	£895
Micromega Trio	mint s/h	£2500	Audio Research SP9	mint s/h	£1895
EAD T7000 mk11 tran/dac	mint s/h	£3000	Linn Kairn	mint s/h	£895
Mark Levinson No 30/31	mint s/h	£14995	Mark Levinson No 26s	mint s/h	£4500
Micromega CD3 + duo BS	mint s/h	£995	Gryphon Limited Edition	mint s/h	£3500
Marantz CD12	mint s/h	£1200	Jadis Defy 30	mint s/h	£1895
Krell MDI, SPB 64 X tran/dac	mint s/h	£5995	Mission Cyrus II + PSX	mint s/h	£350
Roksan Rok DP1	mint s/h	£695	Counterpoint SA9/SA11	mint s/h	£6250
Micromega Solo	mint s/h	£895	Roksan TMs/Artemis/DS4	as new	£2750
Wadia x 64 dac	mint s/h	£2250	Voyd Valdi/LV11	mint s/h	£550
Quad 67 c.d.	mint	£595	SME series IV	mint s/h	£495
Roksan Atessa	as new	£795	Rega RB300	as new	£80
Roksan M1 monoblocks	mint s/h	£1995	Koetsu Black		
Aragon 2004 power amp	mint s/h	£695	(Van den Hul re-tip)	as new	£350
Audio Innovations 2nd			Van Den Hul MC1	mint s/h	£550
audio (2A3 82)	mint s/h	£1595	Ortofon MC3000/T3000	mint s/h	£795
Audio Research D240	mint s/h	£1795	Pioneer HZ1 head-amp	mint s/h	£995

**MINT S/H** - Second hand as good an example as we've seen anywhere

**AS NEW** - Typically less than 4 months old in new condition

**X-DEM** - Typically 'as new' but may be older

**G.C./V.G.C** - In perfect working condition but may be marked

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# DYNAMICS

## HIGH END AUDIO BOUGHT/SOLD EXCHANGED

	SALE	LIST
MARK LEVINSON ML7A PREAMP. MINT	2995	S/HAND £6800
MARK LEVINSON NO26 PHONO BAL. MINT	495	E/DEMO £6500
SOTA COSMOS VACUUM PLATTER SME V. MINT	£3,750	S/HAND £5,300
WELL TEMPERED WTAT TURNTABLE & ARM. MINT	£1,095	EX/DEMO £1,995
GRAHAM MODEL 1 ARM SPARE ARM/TUBE. MINT	£995	S/HAND £2,350
MERIDIAN 602 TRANSPORT 606 DAC 7 LATEST. MINT	£2250	EX/DEMO £3,100
CAMBRIDGE CD1 CD PLAYER HEAVILY MODIFIED WITH MASSIVE POWER SUPPLY SUPERB	£1,295	S/HAND PHONE
METAXIUS ICARUS INTEGRATED AMPLIFIER CHROME. MINT	£595	EX/DEMO £895
AUDIO RESEARCH SP15 REVISION A PREAMP BLACK	£3,495	S/HAND £7,000
AUDIOTONE M7 SILVER PREAMP V.G.C.	£3,350	S/HAND £8,000
PINK TRIANGLE PIP 2 MK2 VIS-HAY MODIFIED PREAMP. MINT	£1,795	S/HAND £4,500
CONRAD JOHNSON MOTIF MCB PREAMP V.G.C.	£995	S/HAND £2,485
CARY CAD 5500S PREAMP PHONO & PROCESSOR. MINT	£995	EX/DEMO £2,250
COUNTERPOINT SAIL LINESTAGE & SA9 PHONO STAGE GO BLOW YOUR MIND & WALLETT MEGA V.G.C.	£6,995	S/HAND £12,600
BURMESTER 808 MK3 PREAMP BALANCED. MINT	£3,995	S/HAND £8,000
AUDIO RESEARCH D70 MK2 POWER AMP. MINT	£895	S/HAND £1,929
COUNTERPOINT SMT11 ANDRO AMP V.G.C.	£2,995	S/HAND £8,000
MARK LEVINSON ML2 REFERENCE MONO POWER AMPS, BALANCED SUPERB V.G.C.	£3,995	S/HAND £15,000
MARK LEVINSON ML3 POWER AMP. MINT	£3,995	S/HAND £8,250
NRG A201S POWER AMP BALANCED LATEST SPEC. MINT	£3,495	S/HAND £6,600
NRG A 401 400 WATT CLASS A MONO POWER HOUSES BALANCED HIGH POWER WITH SEDUCTION V.G.C.	£5,500	S/HAND £13,000
CONRAD JOHNSON MV75 VALUE POWER AMP. MINT	£1,295	S/HAND £2,500
OCTAVE RESEARCH ORI POWER AMP. V.G.C.	£1,795	S/HAND £4,500
MERIDIAN D6000 DIGITAL ACTIVE SPEAKERS STUNNING LOOKS AND SOUND TO MATCH. MINT	£5,750	EX/DEMO £7,630
ACOUSTIC ENERGY AE3 SPEAKERS & STANDS. MINT	£995	EX/DEMO £2,000
BATH TUB & SPONGES SIMILAR WATTS & PUPPIES WALNUT VERY INTERESTING 900 V.G.C.	£2,995	EX/DEMO PHONE
CELLO AMATI SPEAKERS TWIN MOUNTED PAIR IN OAK ON GRANITE STANDS SUPERB V.G.C.	£5,500	S/HAND £20,000
CANON ESO SPEAKERS & STANDS BLACK MINT	£250	S/HAND £400
DYNAUDIO FACETTE SPEAKERS BLACK OR CHERRYWOOD MINT	£1,595	EX/DEMO £2,619
DYNAUDIO CONSEQUENCE SPEAKERS FLAGSHIP MODEL IN CHERRYWOOD DYNAMIC DRAMA. STUNNING MINT	£10,250	EX/DEMO £15,275
GALE 401 SPEAKERS & CHROME STANDS. BLACK GOOD	£395	S/HAND £1,000
GENESIS 8300 SPEAKERS & STANDS PIANO BLACK. MINT	£1,895	EX/DEMO £1,895
MERIDIAN ARGENT 1 SPEAKERS PAINO BLACK MINT	£695	NEW £995
MERIDIAN ARGENT 2 SPEAKERS ROSEWOOD MINT	£575	NEW £875
MERIDIAN ARGENT 3 SPEAKERS ROSEWOOD MINT	£995	NEW £1,495
PROAC PROSTATIC ELECTROSTATIC SPEAKERS RARE V.G.C.	£1,995	S/HAND PHONE
SNELL R3 SPEAKERS WALNUT V.G.C.	£4,495	S/HAND £6,999
KRELL KSA 250 POWER AMP BALANCED MINT	£3,995	S/HAND £6,899
APOGEE DIVA & DAX TALUPE SPEAKERS MINT	£6,995	S/HAND £15,000
MARTIN LOGAN MONO/INCH SPEAKERS OAK MINT	£3,995	S/HAND £8,123
CAL TEMPEST CD PLAYER VALVE MINT	£995	S/HAND £2,750
METAXIUS IRAXILS MK2 POWER AMP CHROME MINT	£895	EX/DEMO £1,500
AUDIO RESEARCH D125 KT90 VALVE AMP. MINT	£2,250	S/HAND £4,650
MUSICAL FIDELITY P270 MK2 POWER AMP. MINT	£895	S/HAND £1,500
APOGEE CALIFER SIGNATURE SPEAKERS GREY MINT	£1,995	S/HAND £3,998
SYNTHESIS REFERENCE SPEAKER SYSTEM ASH MINT	£3,995	S/HAND £8,000
AUDIOPLAN KOWTRAST 2 SPEAKERS ROSEWOOD MINT	£1,595	S/HAND £2,800
AUDIO RESEARCH SP8 PREAMP SILVER V.G.C.	£995	S/HAND £1,850
METAXIUS CHARISMA PREAMP CHROME MINT	£995	EX/DEMO £1,500
MARK LEVINSON ML7 PREAMP MINT	£2,495	S/HAND £5,800
P1 HW19 TURNTABLE TRI PLANAR MK3 ARM SME IV & V ARMS MINT FROM SONOGRAPHE ATMI AMPLIFIER MINT	£495 TO £800	S/HAND £2,400
DUNTECH CROWN PRINCE SPEAKERS PIANO BLACK MINT	£3,995	S/HAND £8,500
EQUATION ZERO SPEAKERS PIANO BLACK MINT	£695	S/HAND £1,300
MERIDIAN 208 CD PLAYER PRE AMP 209 MINT	£1,395	S/HAND £1,550
MERIDIAN 200 TRANSPORT 263 DELTA SIGMA MINT	£995	EX/DEMO £1,290
CRYSTAL REFERENCE MK2 WITH ARTANGENT MINT	£3,495	S/HAND £6,500
MARANTZ LEIZ CD PLAYER LTD EDITION BALANCED	£1,5495	S/HAND £3,000
APOGEE DAX CROSSOVER MINT	£195	S/HAND £4,500
SETA STAR SAPPHIRE 3 ETZ ARM MINT	£1,795	EX/DEMO £4,000
QUICKSILVER PRE AMP	£1,250	S/HAND £1,750
MERIDIAN 601 DSP PRE AMP BALANCED MINT	£1,995	EX/DEMO £2,750
NESTROVIC NAI VALVE MONO POWER AMPS BALANCED	£2,995	S/HAND £6,600
CARY 2A3 VALVE POWER AMP 15 WATT TRIODE MINT	£895	EX/DEMO £1,400
CARY 300B VALVE MONO POWER AMPS 40 WATT TRIODE	£2,995	EX/DEMO £4,800
APOGEE SCINTILLA SPEAKERS GREY 10TH V.G.C.	£895	S/HAND £1,345
SUMO ARIAS SPEAKERS OAK V.G.C.	£1,495	S/HAND £2,995
SNELL A2 SPEAKERS WALNUT V.G.C.	£2,495	S/HAND £4,995

### NEW IN THIS MONTH

OXFORD CRYSTAL REFERENCE TURNTABLE BLACK	£1,495	S/HAND £2,495
AUDIO RESEARCH SP14 PREAMP BLACK MINT	£1,995	S/HAND £3,300
MUSICAL FIDELITY 3A PREAMP MINT	£799	EX/DEMO £400
RESTEK CHALLENGER INTEGRATED AMP. MINT NEW	£7,495	EX/DEMO £12,000
RESTEK EXPONENT REFERENCE MONO BALANCED MINT	£995	S/HAND £2,250
DIAMOND ACOUSTIC REF 2 SPEAKERS & STANDS OAK MINT	£895	S/HAND £1,900
MAGNAPLANAR 2.5 SPEAKERS OAK & BLACK MINT	£695	S/HAND £1,400
B&W ACTIVE 11 SPEAKERS OAK & STANDS VGC	£795	S/HAND £1,650
BURMESTER 846 LINE PREAMP CHROME BALANCED MINT	£395	S/HAND £1,797
AUDIO RESEARCH LS1 PREAMP SILVER MINT	£2,495	S/HAND £4,500
TEAC P1 TRANSPORT DI DAC BALANCED MINT	£185	S/HAND £330
DENON DRM 30 HX 3 HEAD CASSETTE DECK MINT	£795	S/HAND £2,600
AUDIO RESEARCH CLASSIC 30 POWER AMP MINT	£1,595	S/HAND £1,495
KEF 104.2 SPEAKERS WALNUT MINT	£2,995	S/HAND £5,000
MIRAGE MI SPEAKERS PIANO BLACK BWIRE MINT	£1,995	S/HAND £4,000
SOUNDLAB DYNASTAT HYBRID SPEAKERS WALNUT MINT	£999	S/HAND £700
KENWOOD KAV 8500 AV AMP. MINT	£1395	S/HAND £2600
MICHAEL GYRODEC SME V BLACK & GOLD WITH GYROPOWER AND STAND	£795	S/HAND £1195
ROKSAN DPI CD TRANSPORT MINT	£895	S/HAND £1350
PINK TRIANGLE DECAPO DAC MINT	£595	S/HAND £1000
ENLIGHTEND AUDIO DSP1000 DAC MINT	£595	S/HAND £1200
LFD PHONO/STAGE MC2 & SUPPLY MINT	£595	S/HAND £1000
CONCORDANT EXHILARANT VALVE PREAMP MINT	£1595	S/HAND £2795
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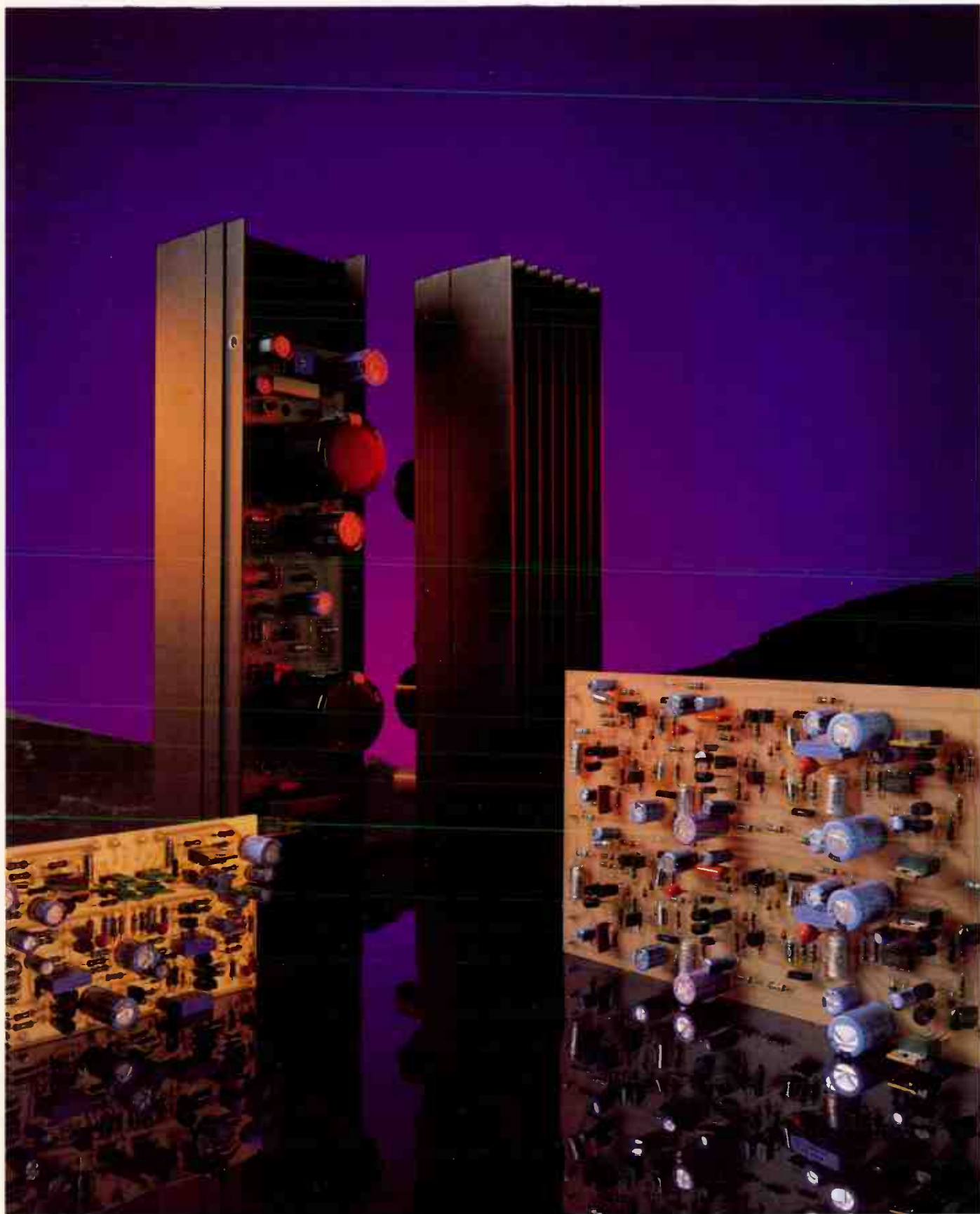
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