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Hi-Fi WORLD

JANUARY 1995 £2.00

**SPENDOR SP7/1
FLOORSTANDING
MONITOR LOUDSPEAKERS**

**Super New KEF
REFERENCE 2
Loudspeakers**

**CHRISTMAS SUPPLEMENT
banded to this issue**

**5 PAGE BARGAIN
USED HI-FI SECTION**

**STANTON CS100
Pickup Cartridge**



Special

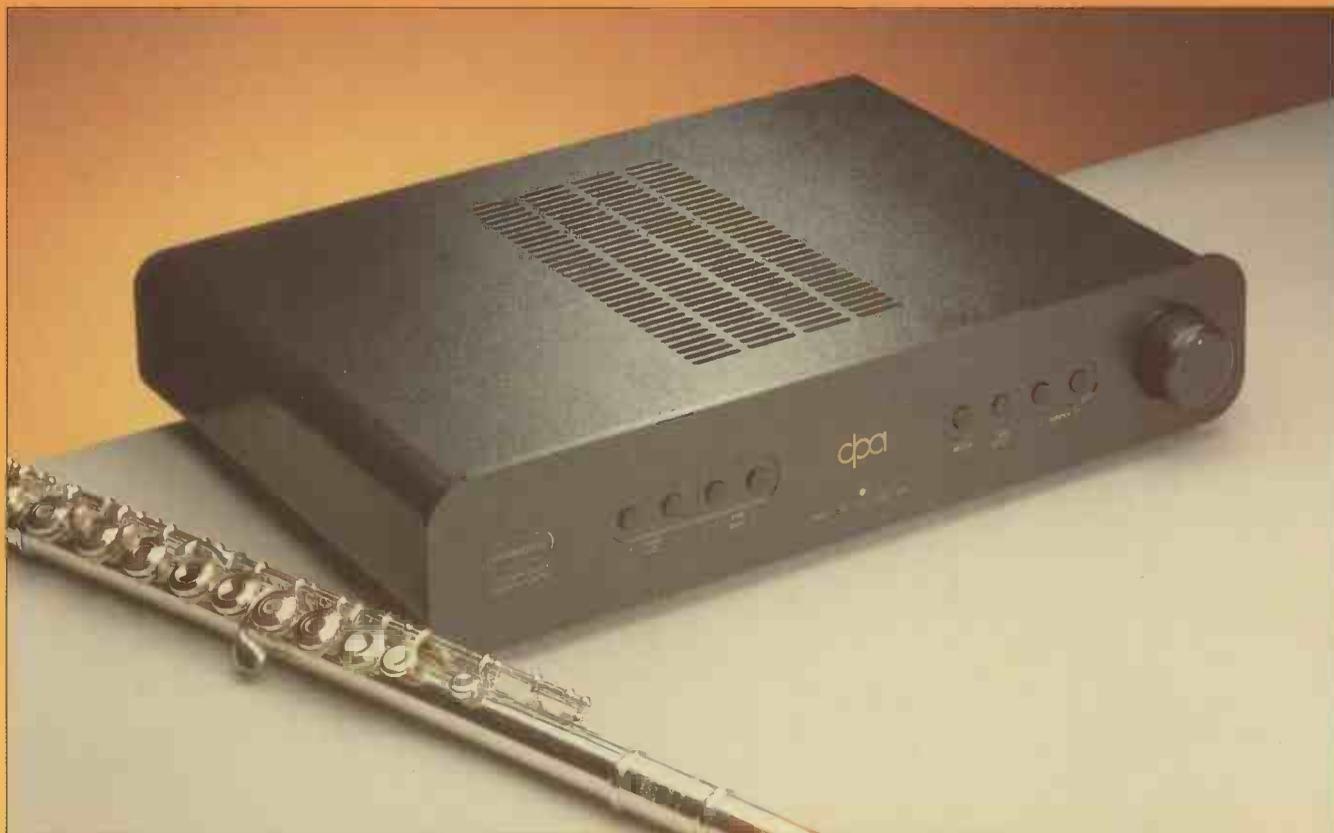


NEW NAD 310 AMPLIFIER REVIEWED

**CHRISTMAS COMPETITION -
EVERYTHING REVIEWED IN
THIS ISSUE TO BE WON !!**



To boldly go where no Hi-Fi has gone before



The Renaissance integrated amplifier - packed full of dpa innovations that redefine Integrated amplifier performance.

Imagine being able to perceive subtle nuances and delicate details; and then exhilarating dynamics and power.

Imagine high performance electronics, advanced innovative design and construction.

Imagine all of the above but at an affordable price. Impossible? Not after you have experienced the Renaissance Integrated amp, CD player or DAC. Which explains why Hi-Fi World recently said of the integrated amp "the new Renaissance is difficult to beat in its composure, clarity and openness. It has a gentleness born of refinement, with superb stereo staging and imaging. I'd rate it very, very highly for serious listeners."

Renaissance - affordable High-End reborn

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

dpa Digital Ltd., 7&8 Willowbrook Lab Units, Crickhowell Rd., St Mellons, Cardiff, Wales CF3 0EF
Tel: (01222) 795621 Fax: (01222) 794267

CHRISTMAS BIG WIN

No fewer than 12 prizes worth
£6467 in total to be won -

| | |
|---|--------------|
| Spendor SP7/1 loudspeakers | £1970 |
| NAD 310 amplifier | £130 |
| KEF Reference 2 loudspeakers | £1500 |
| Denon PMA-450SE amplifier | £270 |
| Rega Radio tuner | £229 |
| Mission DAD-7 CD player | £899 |
| Sonic Frontiers Assemblage CD convertor | \$449 (£280) |
| Ringmat 330MkII | £40 |
| Philips CD 740 CD player | £169 |
| Grundig CF-4 cassette deck | £250 |
| Stanton CS100 cartridge | \$407 (£255) |
| Triangle Comete TZXe loudspeakers | £475 |
| TOTAL | £6467 |

Turn to pages 66/67 for entry details



Cover Photograph by
Paul Hartley Studio 071- 482 3768

THIS MONTH'S REVIEWS

AMPLIFIERS

NAD 310 13
This new budget amplifier from NAD uses super-simple circuit technology for a clear sound, and has facilities that make it attractive to students.



DENON PMA-450SE 23
Denon's PMA-450 is the latest to gain SE status. With plenty of power and audiophile-grade components, this new version was worth writing about.

COMPACT DISC

MISSION DAD-7 42
One-box cousin of the Discmaster and Dacmaster, the DAD-7 attempts to bring Mission quality down to a more affordable level.

SONIC FRONTIERS ASSEMBLAGE DAC-1 44
A kit DAC from the States that just about anyone should be able to build. The Assemblage combines the pleasure of DIY with the sonic abilities of a commercial product.

PHILIPS CD 740 52
Philips' latest £170 player uses their new Continuous Calibration technology. Can Philips lead the fiercely competitive £200 CD player market?

LOUDSPEAKERS

KEF REFERENCE SERIES MODEL 2 18
KEF's new Reference Series have had their corners smoothed to give them a more elegant stance. Noel Keywood finds the sound is smoother too, and enjoys his time spent with the Model 2s.



TRIANGLE COMETE TZXe 27
Triangle have face-lifted their loudspeakers. Noel Keywood and Alester Kells assess the revised TZXe.

SPENDOR SP7/1 36
Spendor have been working hard recently, producing new models. This latest floor-stander looks set to be the best yet. Dominic Baker listens intently.

TURNTABLES

STANTON CS100 58
Stanton make great cartridges - but they're rare in the UK. Noel discovers and reviews a new top model, the CS100.

RINGMAT 330 MkII 51
This popular turntable upgrade from DNM has just been improved. Dominic Todd is first to experiment with the MkII.

CASSETTE

GRUNDIG CF4 56
A three-head cassette deck with a slick 'CD style' cassette drawer for £250. Is it the value it appears, asks Dominic Todd?

TUNER

REGA RADIO 33
Tune in to your favourite stations with the compact and easy to use Rega Radio. Eric Braithwaite finds its sound a delight.



REGULARS

NEWS 7
Where's the world of hi-fi heading as 1994 fades out? Find out from our comprehensive News pages.



**AMERICAN
and
CANADIAN
SUBSCRIPTIONS**
- see page 68

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ABC
CONSUMER PRESS

LETTERS 38

Write in with your news, views and musings on all things hi-fi; we will try to reply.

Q&A 111

Puzzled? Write in with your query on anything hi-fi and we'll do our best to solve the confusion.

COLUMNS 61, 63, 69, 71

Our regular team expound on all things hi-fi.

NEXT ISSUE 60

Welcoming in the new year, the February issue will be full of exciting new products. Reserve your copy now.

SUBSCRIPTIONS 68

Looking for the perfect gift for your hi-fi buff friend? Look no further than a subscription from Hi-Fi World.

ACCESSORIES 97

Gifts for Christmas that will keep your hi-fi in tune.

HI-FI WORLD LIBRARY 101

Whether you want to learn about valves, transistors, loudspeakers, or even just hi-fi in general, our range of books has everything. And there's several new titles for Christmas.

DIAL-A-DEALER 89

Who sells what - and how to get in touch.

WORLD AUDIO DESIGN 81

A range of high performance audiophile kits for the enthusiast, including esoteric valve amplifiers and carbon-fibre driver loudspeakers.

MEET YOUR MAKER 84

Who makes what and how to get in touch.

CLASSIFIEDS 121

Looking for a bargain system? Try our Classified Section. Masses of quality equipment at affordable prices.

SPECIALIST HI-FI DEALERS 77

Need a specialist? These dealers will be able to give you all the help you need.

ADVERTISERS' INDEX 130

FEATURES

A VISIT TO FRANKFURT 30

Haden Boardman takes a short trip to Germany, and assesses their hi-fi scene.

CHRISTMAS SUPPLEMENT

A special Christmas Supplement this month, featuring our first ever round up of hi-fi reviewed over the last year. We select our choice of the very best, so if you're looking for a new system, don't miss the Class Acts of '94. And as it's Christmas, you'll find plenty of games and puzzles, including our own hi-fi whodunnit to keep you amused over the festive period.

MUSIC

Our guide to some of the best new releases.

ROCK RECORD OF THE MONTH:

Nirvana: Unplugged in New York

CLASSICAL RECORD OF THE MONTH:

Pietro Locatelli: Sei Introducctioni Teatrali Op14/ Concerto in A Major

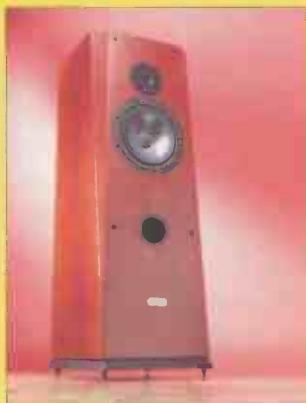
ROCK AND POP 73

CLASSICAL 85

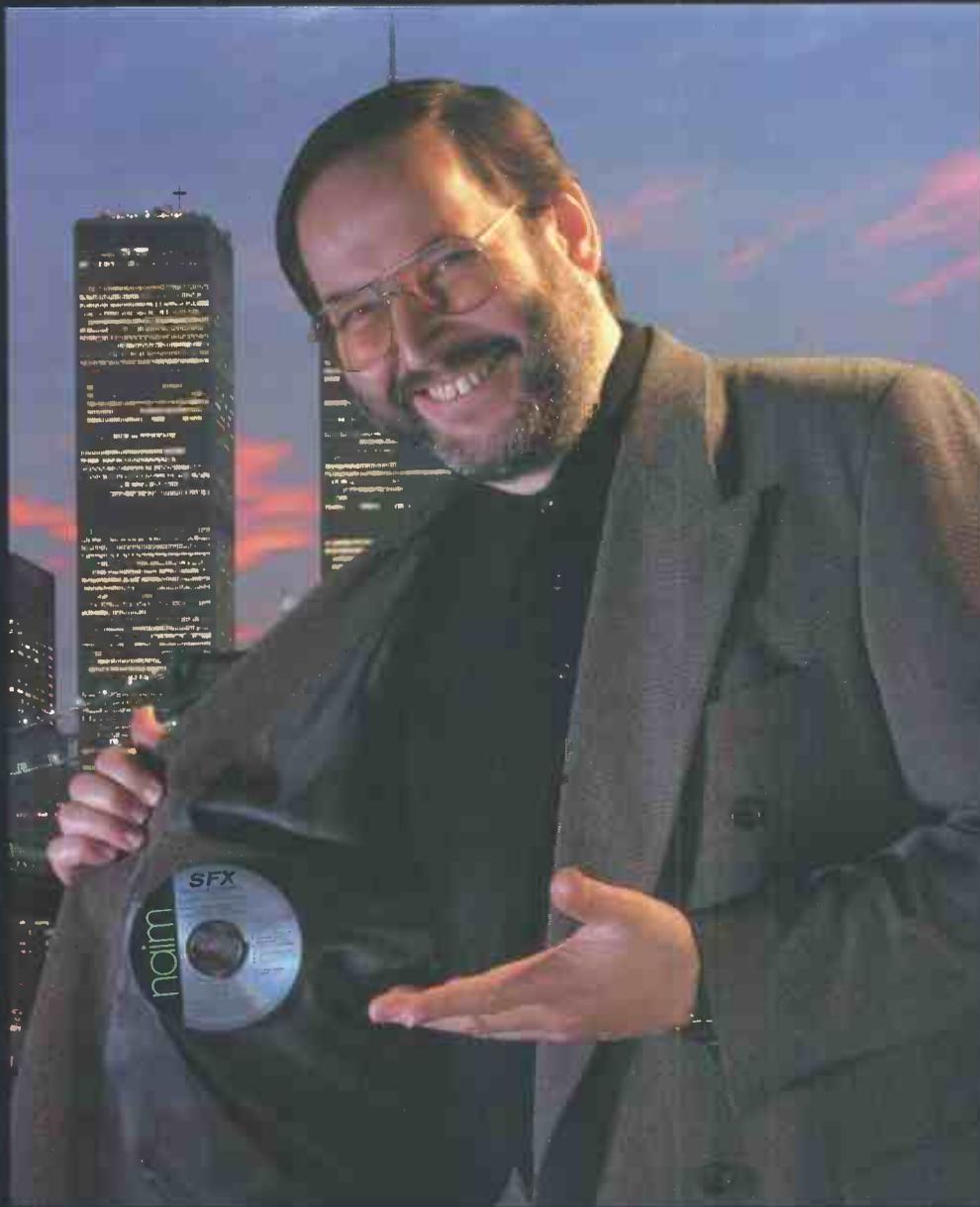
JAZZ 93

COMPETITION

Not just any competition, but - **THE COMPETITION OF THE YEAR!** This month, every product you see reviewed within these pages is up for grabs. Is it really worth entering any other competition this Christmas? 66



CONTENTS



NOT JUST ANOTHER
DESIGNER LABEL



It had to happen...with such a pedigree in the natural reproduction of music,
it was only a matter of time before Naim took control of the actual music playing on Naim systems.

Inspiring the launch of the Naim record label. With Compact discs of outstanding quality,
mastered from the original tapes using a CD recorder specially modified by Naim engineers
- preserving the very essence of the music and its performance.



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Doug Brady Hi-Fi
18 Monmouth St, Covent Gdn WC2. Tel: 071 379 4010
The Corralike Shop
37 Windmill St, W1. Tel: 071 631 0472
Grahams Hi-Fi
Canonbury Yard, 190a New North Rd, N1. Tel: 071 226 5500
Son et Lumiere
67 Tottenham Court Rd, W1. Tel: 071 580 9059
The Sound Organisation London
4 Pockfords Wharf, Chink St, SE1. Tel: 071 403 2255
Studio 99
78-81 Fairfax Road, NW6. Tel: 071 624 8855
Urbridge Audio
109 Chiswick High Rd, W4. Tel: 081 742 3444

NEAR LONDON

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Tel: 081 943 3530
Radford Hi-Fi
43 King Edward Court, Windsor, Berks. Tel: 0753 856931
The Sound Gallery
65 Castle St, High Wycombe, Bucks. Tel: 0494 531682
Spaldings
352-354 Lower Addiscombe Rd, Croydon, Surrey.
Tel: 081 654 1231
Studio 82
82 High St, Harpenden, Hertfordshire. Tel: 0582 764246
Urbridge Audio
278 High St, Uxbridge, Middlesex. Tel: 0895 230404

SOUTH

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26 High St, East Grinstead, W Sussex. Tel: 0342 314569
Audio T
Four Feathers Lane, Basingstoke, Hampshire. Tel: 0256 24311
Chichester Hi-Fidelity
7 St Pancras, Chichester, Sussex. Tel: 0243 776402
Jefferies Hi-Fi
69 London Road, Brighton, E Sussex. Tel: 0273 609431
Jefferies Hi-Fi
4 Albert Parade, Green St, Eastbourne, E Sussex.
Tel: 0232 31336
Jefferies Hi-Fi
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Mike Manning Audio
128 Poole Road, Westbourne, Bournemouth, Dorset
Tel: 0202 751522
Soundcraft
40 High Street Ashford, Kent. Tel: 0233 624441
Sound FX
207 Solent Business Centre, Millbrook Road West, Southampton
Tel: 0703 511030
Worthing Audio
20 Teville Gate Precinct, Worthing, W Sussex. Tel: 0903 212133

EAST

The Audio File
27 Hochens St, Bishops Cleeve, Herts. Tel: 0279 506576
Basically Sound
The Old School, School Rd, Bracon Ash, Nr, Norwich, Norfolk.
Tel: 0508 703929
Pro-Musica
6 Vineyard St, Colchester, Essex. Tel: 0206 577519
Rayleigh Hi-Fi
216 Mousham St, Chelmsford, Essex. Tel: 0245 265245
Rayleigh Hi-Fi
132-4 London Rd, Southend-on-Sea, Essex. Tel: 0702 435255
Rayleigh Hi-Fi
44A High St, Rayleigh, Essex. Tel: 0268 779762

WEST

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Audio Excellence
65 Park St, Bristol, Avon. Tel: 0272 264975
Audio T
60 Fleet Street, Swindon, Wiltshire. Tel: 0793 538222
Mike Manning Audio
110 Middle Street, Yeovil, Somerset. Tel: 0935 79361
Radford Hi-Fi
6 Fore St, St Marychurch, Torquay, Devon. Tel: 0803 386723
Radford Hi-Fi
28 Cowick St, St Thomas, Exeter, Devon. Tel: 0392 218895
Radford Hi-Fi
12 James Street West, Bath, Avon. Tel: 0225 446 6245
Radford Hi-Fi
107 Cornwall St, Plymouth, Devon. Tel: 0752 226011
Radford Hi-Fi
52/54 Gloucester Road, Bristol, Avon. Tel: 0272 428248

MIDLANDS

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8 Dogpole, Shrewsbury, Shropshire. Tel: 0743 241924
Griffin Audio
94 Bristol St, Birmingham. Tel: 021 692 1359
Listen Inn
32 Gold St, Northampton. Tel: 0604 37871
Sound Advice
The Sound Factory, Duke St, Loughborough, Leicestershire
Tel: 0509 218254
West Midlands Audio
158 Omersley Road, Worcester. Tel: 0905 458046
Overture
3 Church Lane, Banbury, Oxfordshire. Tel: 0295 272158
Westwood & Mason (Oxford) Limited
46 George Street, Oxford. Tel: 0865 247783

NORTH

Audio Counsel
12 Shaw Road, Oldham, Lancashire. Tel: 061 633 2602
Audio Projects
43 Headingley Lane, Leeds, West Yorkshire. Tel: 0532 304565
Better Hi-Fi
16 Cook Street, Liverpool 2, Merseyside. Tel: 051 227 5007
Doug Brady Hi-Fi
The Forge Cottage, 19 Crossgate, Olley, Leeds, West Yorkshire
Tel: 0943 467689
Doug Brady Hi-Fi
401 Smeetham Rd, Liverpool 15, Merseyside. Tel: 051 733 685
Doug Brady Hi-Fi
Kingsway Studios, Kingsway North, Warrington, Cheshire.
Tel: 0925 828009
Maie Hi-Fi
2 Bold Street, Haie Road, Altrincham, Cheshire. Tel: 061 923 06
Linton Audio
8 The Arcade Metro Centre, Gateshead, Tyne & Wear.
Tel: 051 450 9999
Linton Audio
7-11 Park Lane, Gateshead 8, Tyne & Wear. Tel: 091 477 4167
Linton Audio
20-22 Monument Mall, Newcastle-upon-Tyne, Tyne & Wear.
Tel: 091 232 3998
Linton Audio
242 Park View, Whitley Bay, Tyne & Wear. Tel: 091 252 4665
Peter Martin Hi-Fi Showrooms
12A West Street, Congleton, Cheshire. Tel: 0260 2800 17
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81 Nether Hall Rd, Doncaster, S Yorkshire. Tel: 0302 321421
Sound with Style
284 Glossop Rd, Sheffield, S Yorkshire. Tel: 0742 737893
The Sound Organisation
26 Gylgate, York. Tel: 0904 627108

WALES

Audio Excellence
134 Chryns Rd, Cardiff, South Glamorgan. Tel: 0222 228565
Audio Excellence
9 High St, Swansea, West Glamorgan. Tel: 0792 474608

SCOTLAND

Russ & Andrews High Fidelity Ltd
34 Northumberland Street, Edinburgh. Tel: 031 557 1672
Stereo Stereo
276 St. Vincent Street, Glasgow. Tel: 041 248 4079
Robert Ritchie
102 Murray St, Montrose, Tayside. Tel: 0674 737865

NORTHERN IRELAND

Lyric Hi-Fi
163 Stranmillis Road, Belfast. Tel: 0232 381296

ARCAM UPRATE ALPHA 5 CD PLAYER

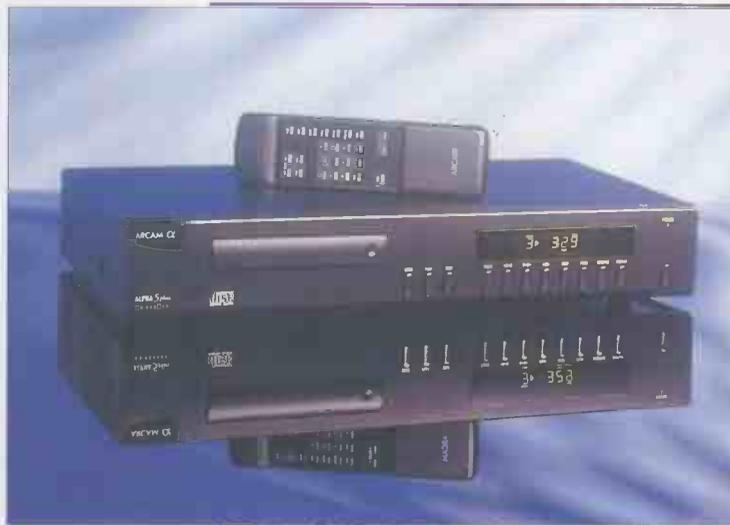
A new updated model of the successful Alpha 5 CD player has been launched by Arcam - the Arcam Alpha 5 Plus. It is available now, priced £469.90.

Owners of the 8,000 or so Alpha 5 models sold in the UK to date should not worry, though. Arcam is also launching a special output module which incorporates the benefits of the new model. This addition will cost £99.90, which includes the cost of fitting by an Arcam dealer. Carrying a features list and a Philips chip set identical to the Alpha 5, the Plus has some extra 30 components designed to improve its sonic performance.

The changes come from work carried out on higher-end Arcam models, altering the way digital signals are clocked, Arcam said. A new discrete-clock oscillator replaces the reference oscillator used previously. It has a separate stabilised power supply and the digital data output has been re-clocked before being fed to the TDA 1541A 16-bit DAC.

Together, these modifications reduce the levels of digital jitter seen by the DAC inside the player, Arcam said. The result was, "greater sonic realism with clear improvements in dynamics, sound-staging and space around the instruments".

A&R Cambridge Ltd.,
Pembroke Avenue,
Denny Industrial Centre,
Waterbeach,
Cambridge. CB5 9PB
Tel: 0223 861550



AURA UPDATE VA-100 AMPLIFIER

A new version of the successful Aura VA-100 Evolution amplifier has been launched by B&W UK - the VA-100II. Described by the company as "a total re-work of the Evolution design," it comes in two finishes: Black Mirror (£349.95) or Chrome (£399.95)

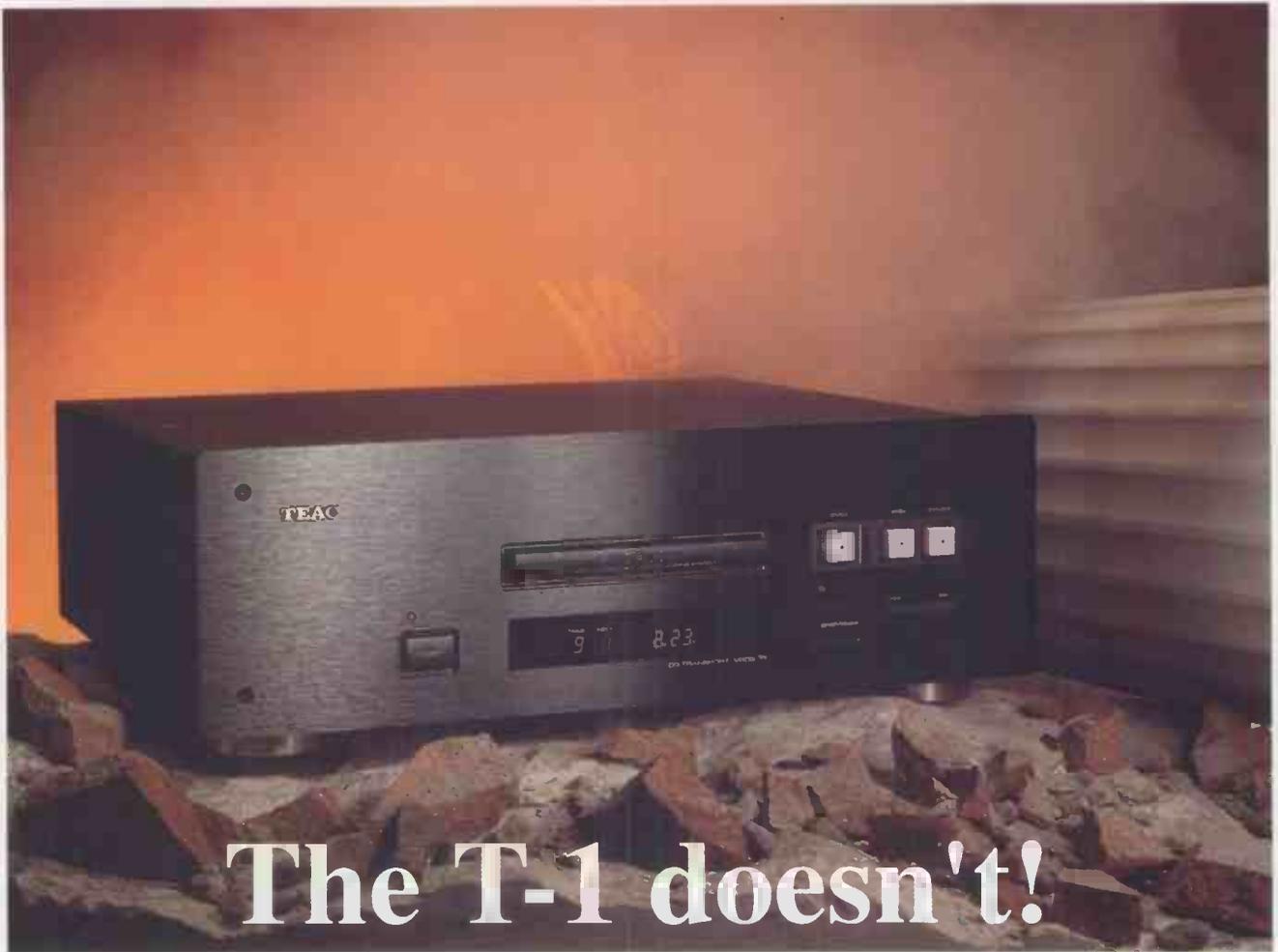
Key components have been upgraded and the airflow altered for cooler running. Measureable improvements include: reduced cross-talk, lower noise and greater power. Power output is now 66watts per channel (8Ω). Other improved aspects, B&W said, include improved fascia finishes, a new textured lid, a more dynamic sound, 'faster' bass and increased transparency.

Also, a new power supply delivers more current to drive inefficient 'speakers and a fast-acting protection circuit guards against output short-circuits, making the amp 'virtually bullet-proof', B&W added. The Aura VA-100II is available in the UK from November 1994.



B&W UK
Marlborough Road,
Lancing,
West Sussex. BN15 8TR
Tel: 01903 750750

POMPEII ROCKS



The T-1 doesn't!

Even in the shaky surroundings of old Pompeii the New TEAC T-1 CD Transport would still have delivered the goods.

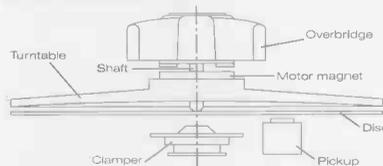
The T-1 places the acclaimed vibration-free VRDS mechanism within reach of those looking for the cost effective path to CD upgrades.

What sets the VRDS mechanism apart from standard CD players is its ability to reduce the vibration induced in the spinning disc.

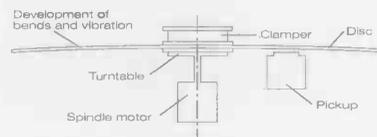
As the diagram on the right shows, a normal CD transport of the type used in budget and high end players alike, only clamps the CD at its centre.

As the disc itself is rotating at high speed it oscillates and vibrates making it difficult for the pickup lens to track the minute pits on the CD surface with the necessary accuracy.

VRDS Mechanism



Standard CD Mechanism



TEAC

VRDS

Much of the information available may be read incorrectly or in a corrupt form, contributing greatly to distortion within the signal that is fed to the DAC.

The VRDS mechanism significantly reduces this effect by clamping the whole width of the disc thus reducing the vibration that causes jitter.

This all adds up to a Transport that does the job of retrieving information better than any other comparable drive on the market, providing your DAC with the most accurate signal possible.

Because the T-1 does give you one of the best mechanisms in the world, you can buy in confidence knowing that you have the perfect source for any DAC upgrade, now or in the future.

If it was available to the ancient Romans they would probably still be using it now - in spite of earthquakes!

Please send me information on the TEAC VRDS range

Name _____
Address _____
Postcode _____

TEAC 5 Marlin House, The Croxley Centre, Watford, Herts
WD1 8YA TEL: 0923 819630 FAX: 0923 236290

NEW HL5 FROM HARBETH

Continuing the march with its HL series, Harbeth has introduced the HL5, the result of two years "painstaking development".

Suitable for studio and domestic environments, the HL5s use a 200mm TPX bass/mid driver mounted on a cast chassis, along with a 25mm aluminium dome tweeter with ferrofluid voice coil.

Echoing a classic Beeb style, the company uses 18mm birch-ply front baffles, veneered to match the cabinet, all other panels being damped with bitumen and acoustic foam.

Amplifiers of between 25w and 100w are recommended, connection being made through four heavy-duty binding posts. Standard finishes include, Walnut, Teak, Black Ash and Rosewood. Other veneers can be applied to order. Prices vary according to veneer, for example, HL5s in Black Ash cost £1495, or £1825 if finished in Harbeth's Exotic real-wood Rosewood veneer.

**Harbeth Acoustics Ltd.,
Unit 1, Bridge Road,
Haywardas Heath,
West Sussex. RH16 1UA.
Tel: 0444 44095**

REVOX SERVICE

ReVox spares, repair and service is to continue in the UK under the auspices of Brian Reeves, based in Manchester.

Catering for both trade and retail, Brian Reeves has been involved with ReVox for 20 years and was the author of the software for the computer analysis of tape deck performance at the Manchester "ReVox Clinics".

He was appointed as distributor of spares in 1989 by FWO Bauch, subsequently to become ReVox UK in 1991. The facility was continued by Studer UK on ReVox's withdrawal from the UK.

The move follows the recent acquisition of the Studer range and elements of the ReVox products by Harman International. Brian Reeves offers spares and service for the ReVox A77, B77, PR99 and C series reel-to-reel tape decks.

**Brian Reeves
Tel: 061 499 2349
Fax: 061 499 9381**

ROTEL GO FOR DEPTH

Rotel has introduced an integrated amp and CD player, both retailing below £300. Priced at £299.95, the new RA970BX is a 60 watt line amp developed in the UK. According to Rotel, this is a high performance amp built around symmetrical circuit paths,



to provide "enhanced depth and width to the soundstage". A substantial toroidal power transformer is used in the power supply and custom-designed foil capacitors improve speed and damping. The RA970BX has the 900 series look with a metal chassis, cover and fascia.

Rotel's first CD player priced under £200 has also arrived. Retailing at £199.95, the RCD930AX has a Sony mechanism and chip-set, with a 1-bit convertor. The company has sourced many of its components in Britain, including some of this model's key analogue parts.

**Gamepath Ltd,
25, Heathfield,
Stacey Bushes,
Milton Keynes,
MK12 6HR
Tel: 0908 317707**

TWIN-211 SINGLE-ENDED SPECIALS DELIVERED

We've just finished and delivered two massive twin-211 valve, single-ended, 40watt monoblock power amplifiers to a very - er - enthusiastic customer in Hong Kong. If you want to know who, just translate the following -

霍經麟董事

Designed entirely in-house, these unique amplifiers use driver transformers, the best - if most difficult - way of driving 211 triode output valves.

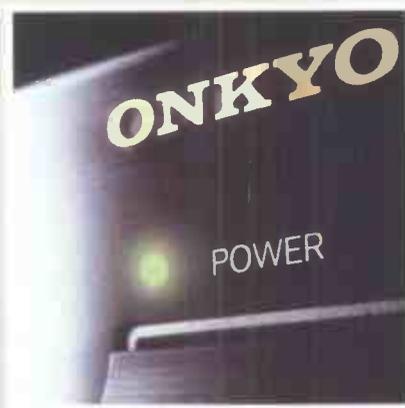
Are you going to produce a kit?, we hear you say.

No! The H.T. line operates at a sizzling 1300volts and a peak voltage of over 2,200volts is generated in the output transformer, demanding special insulation to avoid 'speaker vapourisation'. Our transformer supplier assured us that their experience with industrial supply transformers working to 12kV and more gave them the right experience to tackle this. Transmitter rectifier valves rated at 8kV were used in the power supply.

The amplifiers were specials, designed because we wanted to produce (and hear!) a state-of-the-art, single-ended valve amplifier of this sort - a very rare beast indeed.

Reduced to tears when they left, a more compact version is being created. Noel's building a hot-dog stand to earn extra pennies; Dominic's taken a night job; they will retail at £9,264, custom built and finished to order.





A RANGE OF HI-FI SEPARATES, MINI-AUDIO COMPONENTS AND HOME-THEATRE SYSTEMS
COMBINING PURE, NATURAL REPRODUCTION WITH LEADING-EDGE TECHNOLOGY AND A BUILD QUALITY OF SUCH
RELIABILITY THAT EVERY PRODUCT CARRIES A NO QUIBBLE 3 YEAR PARTS AND LABOUR GUARANTEE.

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TEAC LAUNCH QUALITY AMPLIFIER

New to the Teac family is an integrated amplifier, the A-BX10, which carries a retail price of £999.95.

Teac has chosen circuits with low overall feedback to deliver 100watts output power per channel, or 160watts per channel into 4Ω, from 20Hz to 20,000Hz, with less than 0.05% total harmonic distortion. Other features are individual calibration, short-path signal switching, a source-direct switch, input and recording facilities, heavy-duty binding-post 'speaker terminals and microphone mixing.

Teac UK Ltd.,
5 Marlin House,
The Croxley Centre,
Watford,
Hertfordshire. WDI 8YA
Tel: 0923 819630



The Scottish Hi-Fi show

The Scottish Hi-Fi and Video Exhibition '94, held at the Royal Scot Hotel on Glasgow road in Edinburgh, over the first weekend of November, drew a large number of enthusiastic visitors. Being our first time there, it was a pleasant surprise to meet so many people genuinely interested in achieving a quality sound in their homes.

The Scottish Hi-Fi and Video Exhibition is held primarily to allow visitors to audition hi-fi products from a range of manufacturers, rather than as a venue for manufacturers to launch new products. This helps give it a relaxed and friendly atmosphere, where visitors are encouraged to sit and audition equipment.

We were there to offer help and advice to anyone who asked, and to demonstrate our own World Audio Design DIY hi-fi kits. Visitors to the show were also treated to a rather special demonstration when Arthur Kouverserian of Pink Triangle flew in on Friday morning with the Pacific Microsonics HDCD (High Density Compatible Digital) system, giving Scotland the first ever demonstration outside the USA. He also brought the much awaited Cardinal CD transport, which can be fitted with their Ordinal CD convertor to form a high quality one box player. There will also be a more affordable one-box player, based around the Cardinal transport, available soon.

One of the products on display for the first time, was the beautifully finished Ruark Paladin. This is a two way floorstanding loudspeaker, priced at a penny under £1100. It has been designed to



Our room 30 mins. before official opening!



Chario loudspeakers from Italy. Even the £399 Hyper 1s (left) come with real wood veneer.

suit high quality, low power valve and transistor amplifiers, using a fabric dome tweeter and a felted-fibre bass unit to achieve an easy-to-drive 90dB sensitivity. The Ruarks were certainly making sweet sounds when I was there.

Revolver, normally associated with turntables, were demonstrating a range of three loudspeakers, all with competitive price tags. The Beretta sits at the bottom of the range at £99, and is a simple two way design. The Colt, priced at £149, is bi-wirable, and the floorstanding Purdey tops the range at an affordable £249.

Convincing sounds were coming from a room housing Alchemist, Counterpoint and Chario. Alchemist were showing their new Forseti APD20A/APD21A pre/power amplifier, attractively finished in chrome with brass control knobs. The Chario loudspeakers are made in Italy, solid walnut cabinets featuring strongly in their range. Even the £399 Hyper 1s come with real walnut veneer.

There were many other exhibitors supporting the show and demonstrating their equipment

to an eager audience, including Mission, NAD, Kenwood, Teac and many more, and all seemed to be enjoying themselves. For anyone who missed it, don't make the same mistake next year. We hope to be there to enjoy Scotland's weather (!) once again.

The show was arranged by Hi-Fi Corner, one of Scotland's largest hi-fi dealers, in association with Carl Dyson Sound & Vision and Ray Smith car hi-fi. It had a good range of exhibitors, plus support from BBC Radio Scotland.



Ruark's Paladin with its high sensitivity is suitable for low power amplifiers.



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And so it was written that the advanced "silent" cabinet design of Tannoy Profile speakers should offer a purity of sound and absence of distortion that other manufacturers could only

dream of. Allowing the powerful drive units to produce a volume of music sufficient to bring down the walls of Jericho. And the people heard this, and there was great rejoicing.

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Student Sound

review



Dominic Baker hankers after academia and ale whilst listening to NAD's new 310 integrated amplifier.

So you're a student eh? I remember it well, grant decreasing every year as the cost of living in the style you've become accustomed to at home goes up in inverse proportion. So what do you do? Well, if you're like me, you go for one of those student loan thingies, sign a few forms, and then aim to spend it all before your parents find out and use it as an excuse to reduce next term's allowance.

So what do you spend that hard-earned cash on, the stuff you've just had to sign your life away for? Well, after priorities like beer, clubs, take-aways and a week long bunk off lectures to visit a friend at the other end of the

country, you couldn't go far wrong with this, the new NAD 310 amplifier, the student's answer to flexible sounds.

It could be a more sensible choice than you imagine. Before I go into all of the features that make it ideal for the modern student, it is useful to know that NAD are well recognised for their value-for-money hi-fi, and the longevity of their equipment. The chances are, if you choose to build a system around this little super-amp., you'll still be enjoying its quality sound after graduation and on until you decide to move up-market - not that you'll ever necessarily need to. Grab yourself a pair of budget loudspeakers - you can't go far wrong with either Mission 760is,

GLL Maxims or Celestion 1s - and you'll have a system capable of deafening everyone on your corridor at halls and supplying sounds for the crowd that gate-crash your room thinking that there's a party going on.

Now on to those features I hinted at earlier. Firstly, and most importantly, the price. At £129.95 the NAD 310 is straight away in the right ball-park. Another £100 on 'speakers and you're just about there for less than £250, around the same as a reasonable ghetto-blasters. Now you're probably thinking "what am I going to plug into this new little system?" and this is where NAD have been a little bit clever. Everyone has a personal stereo of some

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same time it's subtle enough for more delicate classical and folk music. With Magnapop's Hot Boxing, the little NAD was energetic and crisp, giving good power to guitars and a clear ring to cymbals.

With Grant Lee Buffalo's country style acoustic set, much of the atmosphere was preserved, with good detail and a spacious and open sound. The dry sounding brushed snare and pedal bass drum echoed across the

stage in such a convincing manner that I could well have been listening to a amplifier costing twice the price. NAD's simple circuit design philosophy behind the 310 has almost certainly helped here, giving acoustic music and the majority of rock superb clarity.

On heavier rock/metal, the NAD could become a little confused, heavy bass lines giving it a tough job in controlling the 'speakers. But, here it is no worse really than any other sub-£200 amp, and at least it had the solidity to give good body and depth to this kind of music.

Don't expect holographic images, room defying stage depth or the spot-on tonal colour of a violin to shine through though. What you get is a good

solid sound with punchy bass, a clear mid-range and smooth treble - and that puts the 310 well clear of its competitors in my book. Then there's the added advantage of tone controls, jack sockets and overload protection that should ensure a long and trouble free life.

“NAD have cleverly tailored the response of the '310 to give rather different subjective results to the majority of budget amps.”

The 310 offers both the student and the budget audiophile just about everything they could ask for ●

description, be it cassette, CD or even DCC or Minidisc. The '310 has two useful little sockets on the front panel that will take the 3.5mm jack socket outputs from these personal stereos straight in, simple as that.

So you can plug your personal straight into the front of the amp. Even better, there's a record-out too; so you can plug your friends portable in to make a tape from your personal. But that's not all. Plug in your old portable and use its radio through better amp. and 'speakers, plug in the telly from the headphone socket and you've got a simple AV system.

That tape you got free on the front of VOX can be boosted up with bass and treble controls to get a good sound, and the '310 has a protection circuit that safeguards against overheating and 'speaker shorts, but beware, a pint of beer through the top vents will almost certainly spell disaster.

So the NAD 310 looks like a good purchase for the sensible student looking for quality sound. There are only two notable omissions worth pointing out - lack of a phono-input for a record deck and no headphone socket.

From the audiophile-on-a-budget point of view however, the sound quality will be the deciding factor. And the '310 doesn't disgrace itself in this area either. NAD have cleverly tailored the response of the '310 to give rather different subjective results to the majority of budget amps. Whereas many super-budget Japanese amplifiers can sound thin on vocals, weak on bass and shrill in the treble, the NAD is notably firmer and warmer in its sound. The slight bass lift and gentle treble roll off bring a solidity to the sound and more body, which complements budget systems extremely well.

Although offering just 25watts, the NAD 310 sounds powerful and dynamic through the majority of small British budget loudspeakers. There's enough bass drive and punch for rock, yet at the

NAD 310 £129.95
NAD Marketing Ltd.,
NAD Building,
401-405 Nether Street,
London N3 1QG
Tel: 081 343 3240

MEASURED PERFORMANCE

The new 310 produced 25watts of output power under test, rising to 36watts into four ohms. The only blemish was strongly asymmetric clipping, which produces a d.c. component if the amplifier is run heavily into overload.

It has a bandwidth tailored to cover the frequencies provided by tuners, tape and CD, but no more, ranging from 10Hz up to 23kHz, but no further.

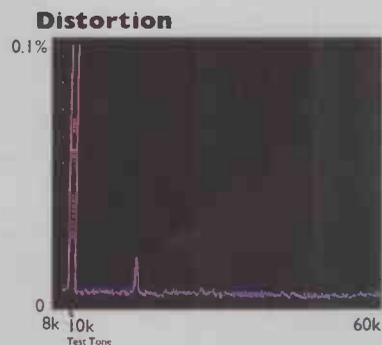
NAD have traditionally restricted output to the upper end of the audio band and no further, which helps produce a smooth sound. In the same vein, distortion has been kept to second harmonic only (see analysis), which again helps toward achieving a smooth, relaxing sound - a hallmark of NAD. At 33dB, channel separation was curiously low on our sample, yet this only serves to reinforce centre images slightly. Anything below 20dB becomes unacceptable.

The new NAD310 measured well, showing all the signs of NAD engineering for an amenable and attractive sound.

NK

TEST RESULTS

| | |
|--------------------|------------|
| Power | 25watts |
| CD/tuner/aux. | |
| Frequency response | 10Hz-23kHz |
| Separation | 33dB |
| Noise | -101dB |
| Distortion | 0.02% |
| Sensitivity | 220mV |
| dc offset | 1/0.3mV |



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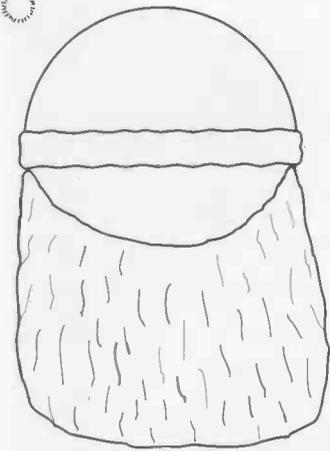
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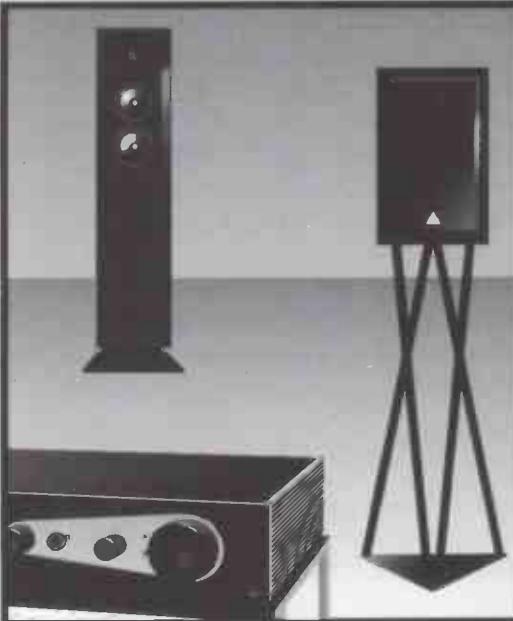
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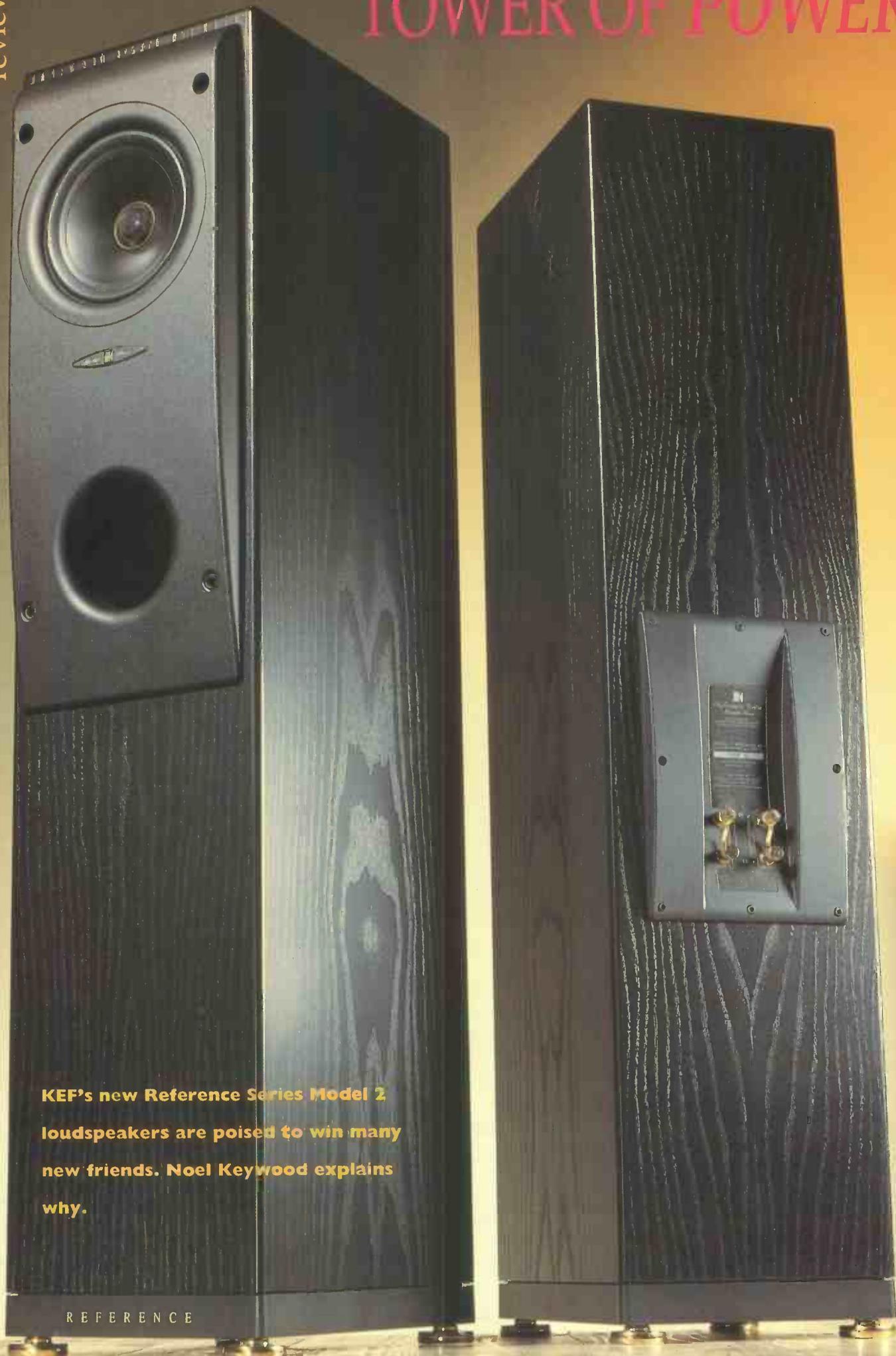
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TOWER OF POWER



KEF's new Reference Series Model 2 loudspeakers are poised to win many new friends. Noel Keywood explains why.

REFERENCE

Funny that in Britain - and perhaps elsewhere - it's precarious to buy 'speakers costing more than £600 or so. Here's a 'speaker that, thankfully, breaks this pattern. It costs a lot and it can justify its price - KEF's new Reference 2 sets standards. Here's a great 'speaker, one I could certainly live with.

A sizeable floorstander, the Reference 2 may not look good value to anyone who equates performance to drive unit count - you appear to get one for £1500! Not all is as it seems though; in truth the Reference 2 has no fewer than four drivers. Facing forward is a single Uni-Q unit, which is in fact a bass/mid-range unit with an independent tweeter mounted at its centre. This covers all of the audio range, except for deep bass. It has two great benefits: it radiates all frequencies from one point ('point source'), rather than the many points of normal, multiple drive unit 'speakers. This gives a more coherent sound. And it is also well phase aligned in the crossover region between the drive units. Good phase alignment gives more solid, strongly etched and firm images in our experience.

Drawbacks? Yes, there are a few. A small amount of 'cuppiness' is apparent, but this effect was minor and of little consequence in my view. In the past, KEF's Uni-Q drivers have also sounded a little 'hard' and steely in the treble, but the Reference 2 has a new tweeter which eliminates this blemish. The only trouble now, I noticed, is that it ruthlessly reveals amplifier performance. Now if the Reference 2 sounds hard or harsh in the upper mid-band, then it's most likely that the amplifier is the problem. The Reference 2 offers no euphonic enhancement; the partnering system must be a good one. KEF use Krell; I would recommend DPA or Sugden as a bench mark of appropriate quality.

There are two bass units, but they're hidden deep within the cabinet, in a 'coupled-cavity' arrangement that utilises no fewer than three bass chambers. KEF engineers came up with a good analogy to illustrate how they work. The upper and lower chambers (see diagram) work into a centre chamber, that itself vents forwards through a massive port. "Think of these", KEF explained, "as reflex 'speakers venting into a centre chamber that itself vents into the outside world. By doing this, we can stagger tune no fewer than three reflex chambers to give precisely the right band-pass frequency response we require." Because the internal drivers act against each other, as it were, when pressurising the centre chamber, a strong bracing rod is needed to prevent cabinet flexure and colouration.

KEF use a massive crossover, it's the sort of thing that would keep a Cray busy

for a week. Alcap bipolar electrolytics are used in the tweeter section, a practice that leaves us underwhelmed, since subjectively they can sound a little murky and take the edge off transients. These days manufacturers are increasingly turning to audio grade film capacitors, mainly polypropylenes or polyesters.

As always with KEF loudspeakers, the Reference 2s are very well finished, with styling in the current vogue. KEF speakers are also robust, reliable and, with the factory in Kent, easy to have serviced.

SOUND QUALITY

Nowadays, I've become used to very up-front, challenging loudspeakers, using hi-tech carbon fibre and Aerogel cones. The warm, easy, yet refined sound of the Reference 2s seemed like a blast of balmy air by comparison. With gorgeous mid-band clarity and superb, pin-point imaging, female vocalists were conveyed with a sense of lucid ease. On Living My Life, Grace Jones' voice had body, character and inflexion; the complex patterns of percussion were crisply arranged left to

They have the ability to find and reproduce detail with a slickness that defies many other loudspeakers. It's here I think the References are going to win real friends. I loved the way they brought reality to The Christ Missionary Baptist Church Choir behind Steve Earle on When The People Find Out. An unusual lack of muddle gave resolution to individual singers and superb image focus placed them precisely yet stably amongst their companions. This, in my experience, is one of KEF's fortes: to produce a smooth and refined sounding speaker, yet one that is impressive too. In our first session the broad conclusion was this speaker is a true hi-fi design, but one anybody could live with. It came over as civilised, yet natural.

At this stage we were running the speakers from our own 300B valve amplifier, the two appearing to complement each other superbly. Bass output was prodigious and deep, with fine pitch definition on low notes, if somewhat rounded and vague timing, plus a tendency to boom a little. High impact

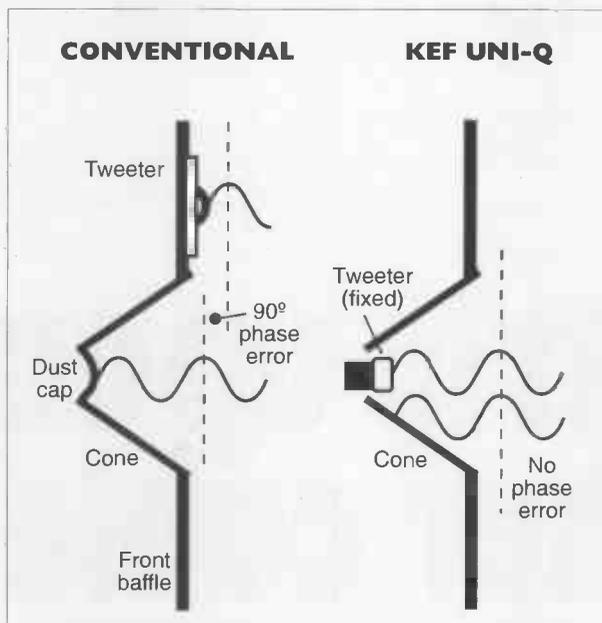
tracks, like Carol Kenyon's disco-beat Dance With Me (12in, 45rpm single), had enormous slam, showing that the KEFs are sensitive too; 28watts from our 300B had us pinned against the back wall.

It was only later on that the rosiness of the picture I've painted so far began to look a little blemished. In our own 16ft x 12ft listening room there were times, or should I say recordings, where bass output became too heavy, characterised by a pronounced boom from within the box. Eddie Reader's eponymously named CD, with its strong, fulsome bass, caused the box to "go off" so strongly that all balance was lost. This problem grew as I worked my way through a wide variety of recordings: those with strong bass (e.g. most Grace Jones, Tracey Chapman, etc) caused the KEFs to boom unacceptably.

I changed the amplifier over from 300B, with its 6Ω output impedance, to a Linn

Kaim/Klout combo, hoping tighter bass grip (less than 1Ω output impedance) might swing the balance. Instead, the KEFs - surprisingly - got worse. There was even more bass and quality had not improved; in fact it had worsened. This shows how complex and confusing 'speaker matching can be. It turned out that the Reference 2s draw even more current from a solid-state amplifier at low frequencies (see Measured Performance for an explanation), which makes them boomer.

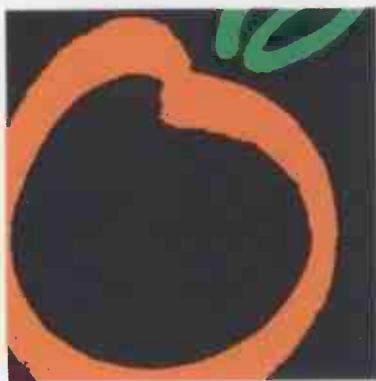
Worse, they are so lucid across the mid-band that power amplifier differences become embarrassingly obvious. Solid-



In conventional loudspeakers, the tweeter is both above and ahead of the area (dust cap and cone apex) that radiates high frequencies in the bass/midrange unit. This produces time and phase errors, as well as incoherence (same sound from different places). KEF's Uni-Q unit cleverly puts the tweeter in the cone apex, eliminating these problems.

right across the sound stage, in perfect and stable order, captivatingly well defined. The tongue in cheek lyrics of Everybody Hold Still came across with disarming clarity, the backing singers - or was it synth'd multi-tracking - placed neatly and convincingly behind Jones; these speakers have stage depth. In fact, they have very good apparent depth, if not in-your-face projection. The sound stage is finely crafted, but it is strung out between the speakers, depth impressions receding from this plane backward.

On retrieval of detail and apparent clarity, the Reference 2s only impress.



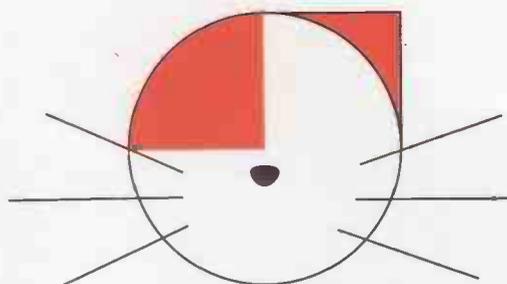
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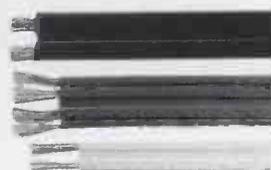


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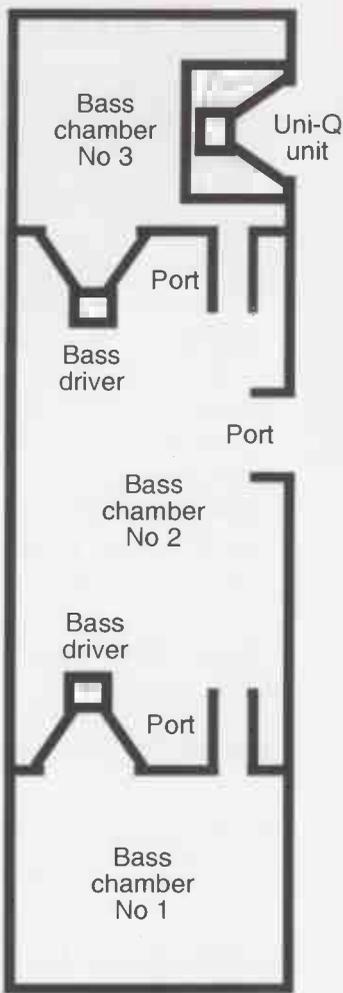
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The coupled-cavity enclosure of the Reference Model 2 has three chambers. The upper and lower chambers, both with their own reflex ports, work into the centre chamber, which vents through a front port, toward listeners.

state could make the revised Uni-Q driver sound a little hard in the lower treble - a complaint against the old model - and some amps compressed stage depth too. The Reference 2s need to be carefully matched if they are not to sound hard and flat. I found a good match in Denon's PMA-450SE though. It's free from upper mid-band harshness, which suited the Uni-Q tweeter well, and its dry, taut bass helped control boom; at times imaging and insight were breathtaking, for example on *Slave To the Rhythm*, where the pan-potted images swooped vividly left to right; only when Jean Paul Goude's deep voice introduced *The Frog And The Princess* did the KEFs add an unwanted thrum.

I moved the Reference 2s to my own lounge, an 18ft long room with a deep window bay and high ceiling. It lets big speakers develop deep bass and often lessens the boominess they can induce in smaller rooms. The outcome wasn't as expected: bass'n'boom grew to window rattling proportions. To lessen this I moved the speakers right out into the room, 4ft from the rear wall, since moving

a speaker away from room boundaries (i.e. off the floor and away from walls) drives the room less effectively, reducing bass level but improving definition. This just got matters into balance (I also sit away from the rear wall, which helps).

Again, solid state was tried, but with no great joy; the KEFs are so revealing that the richer timbre given to vocalists by valves was too great a benefit to be missed, as far as I was concerned. Monoblocked K5881s (our kit amps)

came in. Yet the crisp bite and rich tonal colour to horns in Wagner's *Lohengrin* was so startling that I felt I could ignore the grumbles - there are so many other things the References do supremely well.

Carefully positioned and partnered, I found KEF's new Reference 2s sounded superb. Perhaps most unique is the fact that they're deeply revealing, whilst also managing to sound smooth and natural; there's no accentuated treble or 'hi-fi' shriek with these speakers. As a bonus,

“High impact tracks, like Carol Kenyon's disco-beat Dance With Me, had enormous slam.”

drove the Reference 2s beautifully and this is how the system stayed.

The Reference 2s are culturally even handed, handling rock and classical with equal aplomb, although I fancy that their smoothness (not a euphemism for blandness in this case) with strings in particular (when using valve amps) greatly ups their appeal to the classical audience.

Apart from smoothness and analysis, the Reference 2s also bring enormous scale to classical works, crescendos rising serenely to shattering levels - these speakers don't compress. All the same, plucked double basses grumbled behind Ashkenazy in Rachmaninoff's Piano Concerto No 2 and massed strings set the box off with a whoomph as they

the Uni-Q drive units now offer quite exceptional levels of cohesiveness and sound staging. They're emphatically good value at £1500 - an area where 'speakers start to become idiosyncratic. The KEFs are far from that in their sound, but they do need to be viewed with consideration if their strong bass is to be kept in hand. A home demo is a must - if your room suits then you're in luck ●

KEF Reference Series Model 2 £1,499
KEF Audio Ltd.,
Tovil, Maidstone,
Kent. ME15 6QP
Tel: 0622 672261

MEASURED PERFORMANCE

The Reference 2 measured flat from 800Hz up to 16kHz, a good result, fully reflected subjectively in its even sounding balance. Below 800Hz output starts to rise, peaking up by +4dB at 250Hz, with plenty of low output right down to 50Hz. Loudspeakers do need to have rising bass output in order to sound balanced in the home, unless they are used hard against a wall. However, the Reference 2s take this too far, too soon - the peak should be 2-3dB and at a lower frequency in my opinion.

The impedance curve is not a good one. It drops low, hitting just 3Ω at 80Hz. Over much of the audio band it is 4Ω, the peak at 2kHz bringing the overall figure up to 6Ω. An input blocking capacitor forms part of the crossover, extending bass and adding d.c. offset protection. It is responsible for the steep rise in impedance to infinity below 20Hz. The weirdness of the curve - and especially the drop below 5Ω from 50Hz up to 600Hz, explains why this 'speaker develops more bass'n'boom with solid state amplifiers than valve amplifiers. Impedance needs to be raised and output lowered across this region if the Reference 2 is to interface more readily with a wide range of amplifiers. With valve amps, the 4Ω tap will

give best results.

Sensitivity was very high at 90dB, making the 'speaker a good match for high quality, low power amplifiers, like the DPA Renaissance or vintage valve designs - notably from Leak and Rogers. This 'speaker will run from a 20watt amplifier or less, but at the same time is rugged enough to handle high power amplifiers as well. **NK**

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POISE & POWER

Denon's new PMA-450SE is not just another powerful integrated. Inside, a sprinkling of audiophile components catch Noel Keyword's attention. Dominic Baker applies the listening test.

It works and, to date, nobody's tried to hi-jack the idea. Using special audio-grade components in a fundamentally well designed amplifier improves sound quality significantly. We're still waiting for manufacturers to start using better chips, but in the meantime, here's the next best thing, a good amplifier made better with special components -the new Denon PMA-450SE.

Denon have been successfully tweaking amps for the UK for some time and having a lot of success. So much so, that - together with Pioneer - they've persuaded other Japanese companies to follow and, apparently, the Japanese have started to take an interest in these special 'foreign' versions.

This is Hi-Fi World territory of course: we have our own, all-discrete solid-state Class A amplifier and have experimented with a wide variety of special components, including those used by Denon in the 450SE. As a result, we can confirm, for example, that the Ansar Super-Sound polypropylene capacitors used (made in Wales) are amongst the best polyprops going. They're a wise and appropriate choice.

Under the Denon's top cover - whipped off in unseemly haste! - we also found plenty of polystyrene capacitors, Cerafine quality electrolytics, a

completely shielded mains transformer (very neat), an Alps dual-concentric volume & balance control (not the best Alps, but good all the same), large heat sinks for the output transistors, lovely remote switches and encapsulated, gas filled relays with silver contacts. The gas is necessary to prevent the silver from tarnishing, an effect that otherwise can severely limit switch life.

The only thing to bear in mind with all this is that component sound quality is very much a black science (we believe it is likely due to colouration) and that a balance usually has to be achieved. Filling an amplifier exclusively with, say, cheap metal film resistors or polypropylene capacitors can actually make it sound worse - usually far too bright. Audio grade components must be used, in variety and sometimes sparingly. There are no hard-and-fast rules, tweaking must be guided subjectively and, in this, there are many pitfalls, the greatest being failure to use either balanced and representative loudspeakers or, alternatively, a variety of speakers. It's possible to end up with a strange sounding amplifier, we've found, although perhaps anything's better than the boring, flat, harsh, gritty sound of the worst of the mass produced breed (and they come from UK manufacturers as well!).

The only surprise - a big one in fact - was the complete absence of protective boots around all mains connections, exposing live mains in many places, and apparent lack of double-insulation on an amplifier not fitted with an earth. Doubtless it isn't earthed to avoid hum loops and the complaints that arise from them, but an earth lift resistor could be used (our preferred solution), or at least better insulation.

This amp's big'n'black, like most from Japan. Yet it looks neat enough, as Denon's usually do, due mainly to the neat typeface used in the legends and the lack of spurious graphics. Denon fit a phono stage (MM only) CD/tuner/aux inputs and two sets of tape sockets. Two sets of 'speakers can be run, with switching between them, or the 'speakers can be switched off for headphone listening. There's a record-out selector too, with tape-to-tape dubbing. **NK**

SOUND QUALITY

The PMA-450SE has a powerful bottom end, characterised by the earth shattering kick drum on the intro to The Cranberries' Pretty. The cones in the KEF Reference 2s I was using didn't know what had hit them, the box trembling on its spikes. The PMA-450SE has plenty of power and will drive the majority of loudspeakers to high levels with ease.

It's smooth too, in a polite and well groomed manner; nothing really shouts. The sound stage was a little two dimensional, Dolores O' Riordan barely making it past the line of the 'speakers and out into the room, to give

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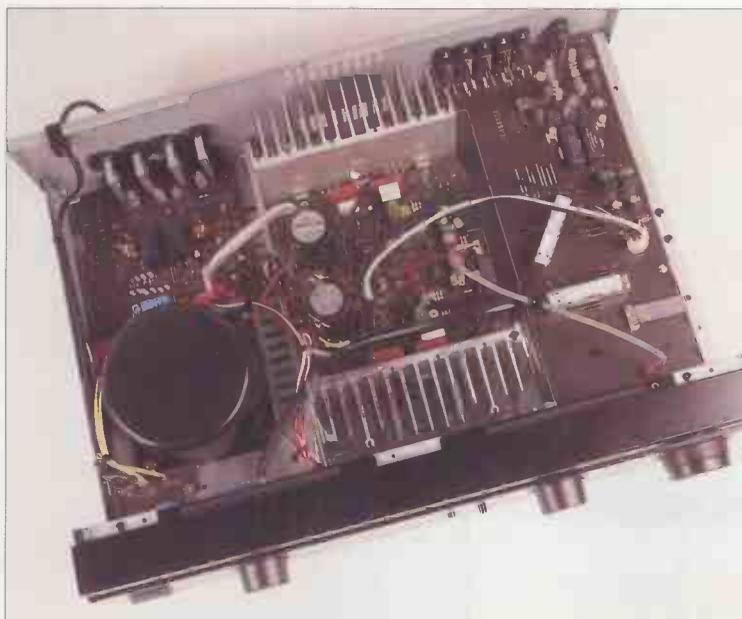


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a believable impression of depth. The cymbals echoing out above her airy, floating voice had a good metallic ring and decay to them, adding a useful sense of space to the track, even if there was a touch of sharpness at the very top.

Inspirational Carpets suited the Denon well, especially the rich, 'dark' atmosphere on The Way The Light Falls. Hammond organ was so laid back that Mr Lazy Fingers could have been the keyboard player. This makes the PMA-450SE extremely easy to sit in front of, although I suspect those with inclinations towards Naim systems with their fantastic pace and attack will find it lacking by comparison.

The poppy beat of Aimee Mann, where a good solid sound and plenty of power take precedence over sound stage and image definition, was certainly delivered well by the Denon. It is here that the '450SE scores best, producing a firm, meaty sound with plenty of body that stays comfortable even at high



Inside, component quality is high. Note the screened mains transformer in bottom left, and Ansar Super sound capacitors at top right.

levels. As I hinted earlier, the treble has a slight graininess to it at the very top, but not to such an extent that it can't be tamed by a smooth sounding 'speaker.

Where a guitar string was firmly plucked on Counting Crows' Perfect Blue Buildings, the twang and decay were clear and focused, with no hint of compression or phaseyness. The Denon is very clear in this respect, playing every note with good definition and free from euphonic enhancement or colouration. It

gave music a sharply etched quality, but can also sound a little damped on more atmospheric pieces.

Compared to top end systems, the '450SE could be criticised for a slightly compressed sound stage and an accompanying lack of atmosphere and openness, but I can't think of another amplifier at this price that does any better, and offers the same smooth, full bodied sound. It has plenty of power too, so will drive just about any loudspeaker you care to sling on the end of it. It grows on you too, its undemanding presentation encouraging lengthy listening sessions.

From memory, it sounds like the upgraded components of the SE have added an extra degree of detail to the PMA-450, which along with its other qualities make it an extremely competent all rounder ● **DB**

Denon PMA-450SE £269.99
Hayden Laboratories Ltd.,
Hayden House, Chiltern Hill,
Chalfont St. Peter,
Bucks. SL9 9UG
Tel.: 0753 888447

MEASURED PERFORMANCE

The PMA450-SE is a power house, generating 90watts into 8ohms and no less than 144watts into 4ohms. With a sensitivity of just 170mV via all inputs, it has plenty of gain. Denon have kept the bandwidth to a sensible 13Hz-41kHz, just wide enough to cover the audio band, but not so wide as to let through unwanted supersonic or subsonic signals. Amplifiers like this usually have plenty of feedback and low distortion, giving them a tight, dry sound. The 450-SE produced very little distortion at all levels and frequencies, as expected.

The disc stage accepts moving magnet cartridges only, having normal sensitivity, wide channel separation and a high overload ceiling of 150mV. Equalisation was accurate and a warp filter usefully reduces gain below 33Hz. Its presence is indicative of engineering to European standards, since this is specified by the IEC, a European Standards body, but commonly omitted from Japanese amplifiers. Like the other inputs, this one had limited upper extension, reaching just 55kHz. Noise (hiss) was low at -76dB, a level at which it will be inaudible.

The PMA450-SE measured well in all areas and has been sensibly engineered. It has no weaknesses and conforms to

standards well. Its internal circuits rely heavily on the ubiquitous NE5534 silicon chip, like so many amplifiers these days - budget and expensive. Plenty of good quality capacitors have been used, including polystyrenes for low values, Ansar supersound polyprops for higher values, copper earth bars, quality electrolytics, etc. The 5534s are great levellers though and they will determine the how far the amplifier can rise sonically. The idea of using better ICs is beginning to gain ground these days. There are plenty around and they're not outrageously expensive, but designers do like to stick with what they know and trust, it appears.

Only one point concerned us and that was safety. There's no mains earth, probably to avoid earth loops, but a double insulation sign has been applied to the back panel. However, not only could we not see any double insulation, but all the internal mains connections were bare, which is unusual for a Japanese amplifier, and some were quite close to bare casework. Insulating boots over mains connections are commonplace these days, all shapes and sizes being commonly available. That Denon should fail to fit them or an earth surprises us and in our view it is an unwise practice.

NK

TEST RESULTS

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|--------------------|------------|
| Power | 90watts |
| CD/tuner/aux. | |
| Frequency response | 13Hz-41kHz |
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| Distortion | 0.004% |
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Distortion





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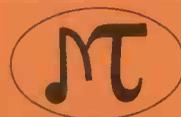
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SHOOTING STARS

warmth also took the edge and vitality from the complex Latin American percussion on Songhai 2. The performance was pleasantly atmospheric, but again it drifted past a little too smoothly and politely for the rhythms to make much impression.

Overall, the Cometes are warm, a bit short of detail and insight, and incohesive. There's the bass - boom, boom; the middle - soft, smooth and a little recessed; the most-unusual treble, somewhat one-note but clean. This may be due to the soft, moulded horn around the tweeter. It is important to sit on-axis, in front of the speakers, because off-axis upper treble disappears due to this horn (which raises treble sensitivity).

I found the Cometes pleasant enough, quite entertaining in the sense they they don't overtly offend, image quite well and strike a reasonable overall balance. However, the simple if brutal truth is that there are loudspeakers costing less that offer more. **NK**

The Cometes were run from my reference system of NA CDS / NAC72 / HICAP / NAP250; I spent a great deal of time just running them in. But, I was disappointed by the Triangles. Why? Most obviously, they did not gel. Their sound was very dispersed, with no coherent structure. But worse still, they had a hole in the middle that removed a lot of the detail and projection from all types of music. This placed emphasis on the bass and treble, which became overblown and splashy respectively.

Changing equipment didn't give much of an improvement; I tried a Rega amplifier, two different turntable sources, a Micromega Stage One CD player and I even moved everything into a different room! Whatever I tried, me and the Triangles just didn't get on. **AK**

Triangle Comete TZXe £475
Kronos,
35, Farlough Road,
Newmills, N. Ireland.
Tel: 0868 748632

Noel Keywood and Alester Kells listen to the updated Comete TZXe loudspeakers.

Triangle make sensitive loudspeakers, ones able to work from high quality, low power amplifiers. This is one potential advantage of the Cometes. I used them with Audiolab monoblocks, our own Class As and 300B valve amplifier. The results didn't differ radically; the Cometes are fairly even-handed, suiting solid-state and valves, favouring neither.

The Cometes I would describe as unremarkable. They possess rather boomy, plodding bass, with little upper-bass to cleanly mark out the rhythm of percussion. The slap of hand against toms was suppressed, for example, and, generally, the apparent shyness of upper bass harmonics cut deep bass lines adrift, divorcing them from the rest of a performance.

I found vocals came over with a very pleasant sense of smoothness and purity and, in this respect, the Cometes did well, I felt. There was some softening going on, which could push a naturally recessed vocal even further back. Veruca Salt turned to honey, smooth and with little bite, the feedback guitars were anodyne, Nina Gordon recessed and distant. With more explicit vocals, Eddie Reader for example, the imagery was pleasant enough, a good sense of atmosphere being conveyed, if little sense of real detailing.

I heard some occasional emphasis in lower treble regions, around 6kHz, that imparted some character to treble, adding some zing. The challengingly close-miked violin work of Hideko Udagawa, however, suffered no screech. But softness and

The Cometes are a medium sized stand-mounting loudspeaker, finished in slate grey vinyl wrap, with a removable grille of black cloth. This gives them a somewhat sombre, undistinguished appearance. With grilles off, the unusual tweeter caught our attention and gold stud holders break the continuity a little.



MEASURED PERFORMANCE

Triangle have recently updated their entire range of loudspeakers. A new tweeter of their own specification replaces the Audax polymer dome unit, partially horn-loaded to match the sensitivity of the original. Triangle, in response to their distributors' requests, have given the new Comete TZXes a little more bass, something that can be seen in the response plot below. Above this improved bass performance though, is a wide loss of level through the midband, which will remove vocal projection somewhat and may lead to a box-bound colouration. Treble is impressively smooth though, and certainly an improvement over previous guises of Comete.

Triangle have always aimed for high

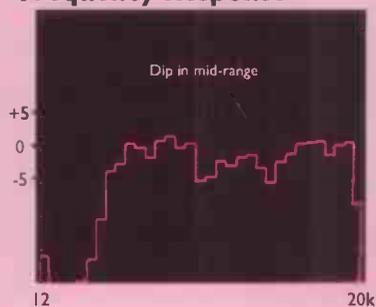
sensitivity with their loudspeakers and the Comete TZXes are no exception. I measured a very healthy 90dB at 1m using a nominal (2.8V) pink noise signal. However, the impedance curve tells a story that explains the better bass. Below 200Hz impedance falls to 4Ω, which will draw more power from a transistor amplifier to yield

Impedance

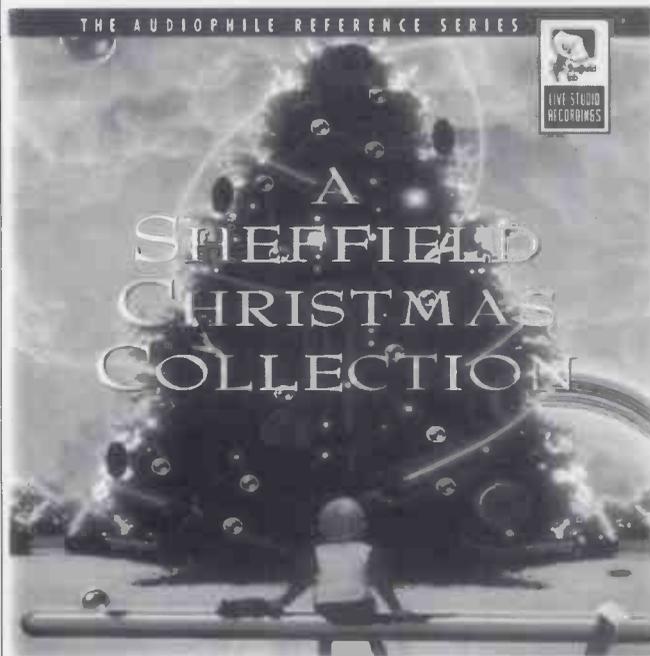


more powerful bass. However, if you are using a valve amplifier it will load match best when the 4Ω output tap is selected. **DB**

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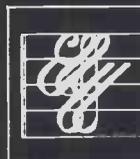
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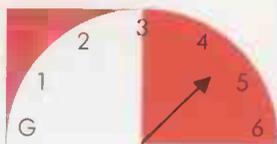
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Sprechen Sie Deutsche? Er, hardly a word captain! It's very shameful, but true. Despite the fact that I visit Frankfurt more times a year than I do Liverpool, 15 miles down the road.

The Germans have a very serious commitment to hi-fi (or hi-fe as they would pronounce it). Frankfurt has more than its fair share of fascinating hi-fi shops.

First stop was a little town called Friederich/Somborn about 35 kilometres east of the city centre. Ahrens Audio specialise in American and German vintage sound equipment. Lothar Ahrens is so mad on this stuff he has a 12 foot-tall straight tractrix horn built by Siemens "Klangfilm" (literally 'Sound Film') at the bottom of his garden. When I visited, very impressive noises were being made on American 'Radio Craftsmen' 10watt 6V6 monoblock power amps, driving Altec 604 15" dual concentric loudspeakers fitted in a pair of 'Cadac' monitor cabinets that

once resided at London's Abbey Road studios.

Lothar had a large selection of McIntosh, Western Electric and Marantz equipment due in. I must admit that I'm tempted to fly back across and have a look. What interested me most was some of the German vintage equipment. Lorenz, Telefunken cinema and studio equipment used very unusual circuits, nothing like the unusual three-stage amplifiers we see over here.

The next shop I decided to visit was 'Auditorium 23' run by Keith Ascenbrenner, not far from Frankfurt city centre. Keith was one of the first to turn completely over to tube products, about 10 years ago. He started selling products inspired by Jean Hiraga (check out the French magazine *Revue De Son*). Current products are very much valve and vinyl high-end. A typical front-end would be a 'platter Verdier', possibly the most monster turntable this side of a Goldmund reference. The heavy

cast platter of this beast 'floats' on a magnetic field. Motor and power supply are located well away from the turntable assembly which sits on a carefully made base. This looked a bit like a concrete paving stone to me, but I was assured it was not.

Tonearm was a 'Shindo' modification of an original Ortofon 16" arm, mounted on to the turntable via huge chunks of bronze and wood. The cartridge was another Shindo modified Ortofon item, my favourite



Ahrens Audio have a 12 foot-tall straight tractrix horn.

THE GERMAN HI-FI SCENE

Haden Boardman, a regular visitor to Germany's hi-fi shops, checks out the current trends in Frankfurt's audio scene.



and Noel's nightmare. . . the SPU. Shindo chooses to mount the modified SPU into an early mono Ortofon type 'C' head-shell.

Amplification in Auditorium 23 was mainly Shindo also. Mr Ascenbrenner is firmly committed to the ideas and reasoning of Mr Shindo. I heard the platter Verdier driving through a 'Claret' preamplifier and a new single-ended design made with pentodes and tetrodes! Loudspeakers were a custom design based around some Italian 'Cine Mechanica' units combined with horn pressure units.

Over the top of the very big 'Hartie' department store was WOM (World of Music). All CD and cassette, but what a choice. Usually, large racks filled with CDs means the same record six deep. Not here. A Loving Spoonful disc I had searched high and low for in Blighty turned up, as did a missing Leonard Cohen recording (no rude comments about my taste of music please!).

Next to WOM was a very comprehensive Hi-Fi Department Store. Very much of the pile-it-high variety, but again a vast array of modern equipment from all the major Japanese, plus B&O, Grundig, Revox etc. They had a loudspeaker dem. room with around 100 different pairs of loudspeakers in it. They were mostly KEFs, Celestions, Tannoy, MB Quarts and Heco. This kind of stuff ain't exactly my cup of tea, but this was one of the biggest displays I've seen on my travels.

Frankfurt had the usual selection of the 'Tottenham Court Road' variety. One was called Radio Dehli. Another I saw had a Michell Gyrodec revolving on the top of an A.E.G. washing machine. I think a word in the German distributor's ear is in order from Michell!

One of the most fascinating shops is run by Michael Schiesser. He opened 'Absolute Sound' last summer, specialising in a mix of old and new. The front of the shop is incredible. High end 'speakers such as big Martin Logans all over the place. Never have I seen so much expensive equipment in one shop. At the other extreme, second-hand equipment went pretty lowly. A few '70s Japanese cassette decks were about, but not much evidence of vinyl. At least a few good tube amplifiers were lurking about the place though. I spotted a Leak Stereo 20 and some very expensive McIntosh items.

The interior was fantastic. An aluminium clad ceiling and heavy chrome racks to hold the equipment give it a rather unique style. It looked really good. It wouldn't surprise me to find a picture of the interior in the next 'Conran Design' book.

One thing that struck me was the vast array of equipment available on the German market. If you pick up copies of the hi-fi press over there you see a much more diverse selection of equipment. I spotted a loudspeaker fitted with an 'Ionic Discharge' tweeter (horn-loaded of course) and there's a much wider variety of tube amps and turntables. Even the book shops stock a wide variety of books on DIY hi-fi, including valves and horn 'speakers.

Do I think our German counterparts have a lead on us? Well, yes and no. On one hand they have items like Shindo which we don't ever see, but then again this is Japanese not



Shindo single-ended - spotted in Auditorium 23.

German. On the other, some of the loudspeaker designs are so bad and painfully bright, the designer must have conceived them in a nightmare. One monster I spotted at 'Absolute Sound' has a piezo horn firing in a different direction to a metal dome tweeter with the bass units and midrange pointing elsewhere. The mind boggles.

With a return flight to Germany costing under £150 and getting cheaper yearly, for hi-fi nuts out there fancying a 'busmans holiday' why not spend a weekend in Frankfurt. You're guaranteed a welcome reception.

Ahrens Audio
Freidrich StraBe 5,
63570 Freigericht.
Tel: 06055 83136
Fax: 06055 83159

Auditorium 23
Gabelberger Str. 23
60389 Frankfurt.
Tel: 069 465202

Absolute Sound
Alte Gasse 4
60313 Frankfurt
Tel: 069 2979381
Fax: 069 2979370

The Hartie department store is right on the main shopping street (or should that be Strasse?)



The aluminium ceiling, chrome racks and a range of equipment from Martin Logans to second hand Japanese cassette decks, gives Absolute Sound a distinctive style.



Ahrens Audio had this EMT 927 turntable - highly sought after in Japan.



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...and she thought she was getting a new washing machine

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Somebody's got to be a radio star? Rega says no. You don't think so, launching a tuner that's a better amplifier. The Rega Radio is called, simply, the Rega Radio. In a tradition, it is simplicity that has won it a dozen programmable presets, 12 for AM and twelve for FM, tuning buttons and buttons to mono. It's not a radio, it's a tuner. One of those tiny push-buttons with spade shaped ends will find them tricky. From AM to FM the processor might rather too up, but it's made it and up, and down through the program, it's easy enough.

Yet again, though, rivals at this price point often allow direct entry of frequency or programme number for speed. The major problem, however, is that the Rega Radio needs a good deal of push down the aerial. Even with my six-element aerial sixty feet up on the London skyline with little but fresh air

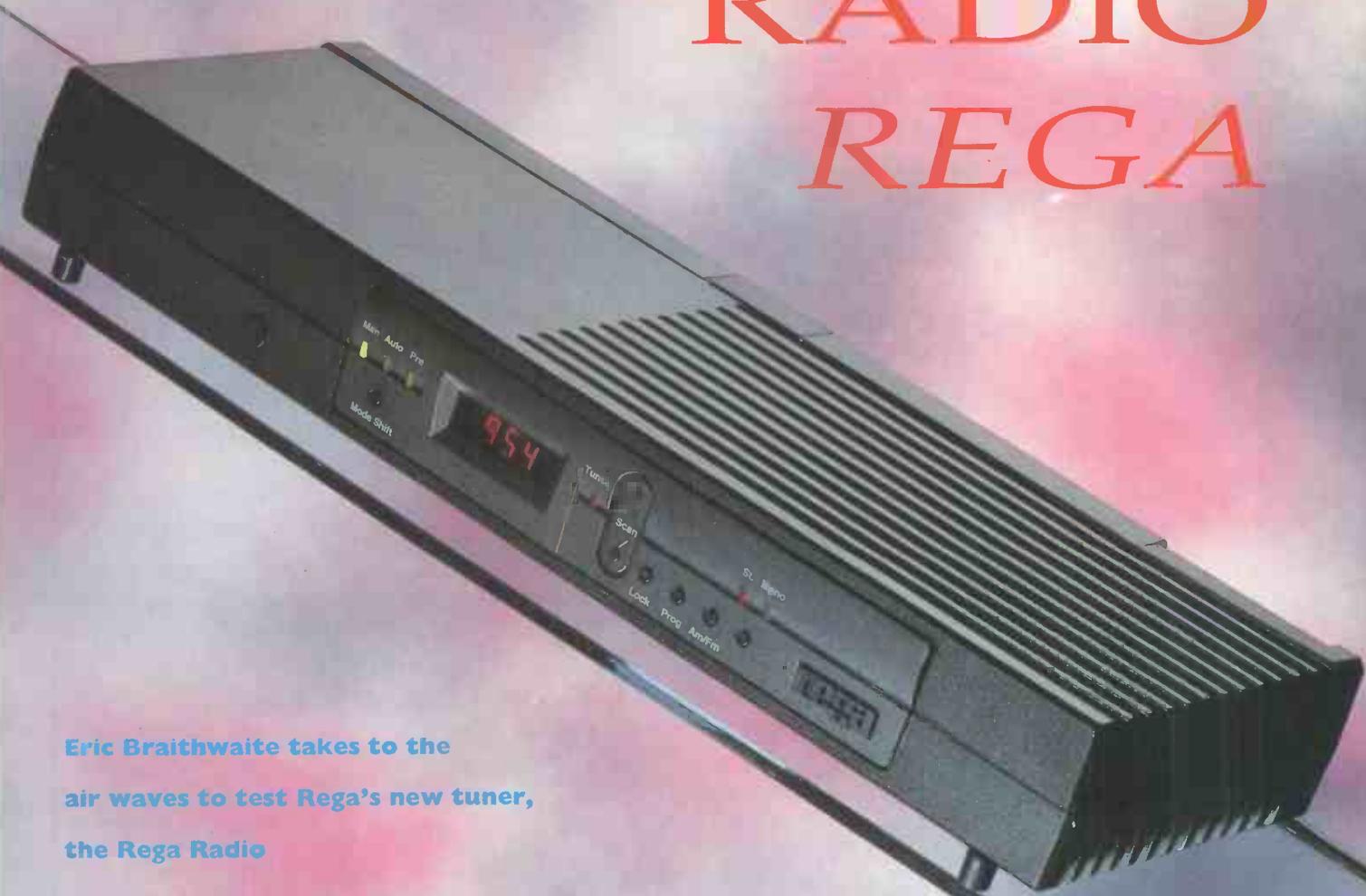
This said, discounting the hiss, a solo cello recital had a very pleasant warm tone on R3, with a reasonable semblance of studio space. No complaints here, with a firm and central image. A little more for than through the Quad FM4 which I normally use, but not obtrusively so. On pop music, this added a pleasant air of immediacy and crispness listening to GLR, although the left-right spread was compressed compared to the airy openness of the FM4. Studio conversations - although vocal quality was clearly on a par with the FM4 - had the participants closer to centre-stage than was really true. This said, Louis Armstrong on Jazz FM had that sandpaper tone to a T, along with perfectly defined instruments both left and right

“The Rega Radio really does score on musical fidelity. Too many tuners tumble over complex scores like Wagner, but the Rega combined smoothness with a remarkable degree of fine definition.”

of him. It and the BBC's Wrotham transmitter, hiss was quite marked on Radio 3 reception.

Once more, however, some background hiss was noticeable and with

RADIO REGA



Eric Braithwaite takes to the air waves to test Rega's new tuner, the Rega Radio

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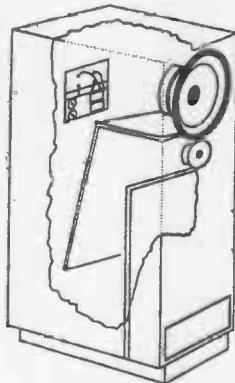
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a less competent aerial it is doubtful as to whether reception would have been strong.

Allowing for that, the Rega Radio really does score on musical fidelity. Too many tuners tumble over complex scores like Wagner, but the Rega combined smoothness with a remarkable degree of fine definition. Singers had very accurate tonal quality, with a real sensation of breath control, while the orchestra came across with a lifelike dynamic range.

String quality was excellent for the price, with not a trace of the thinness or screechiness that afflicts so many. Nor was there any of the bloom that sometimes over-enhances the brass: horns, trombones and trumpets were clearly distinguishable instead of being the amorphous 'brass section' that issues out of many tuners. A very equitable tuner, in this respect, one that opera and orchestral music lovers would find extremely rewarding. Unless, of course, said opera or music lover habitually listens to Classic FM at home, when the Rega displayed all that station's dreadful compressed sound quality in all its dismal glory.

Tuned - if you'll pardon the word - to the reproduction of acoustic instruments and vocals, where it is excellent, the Rega

nonetheless has a fair amount of power in reserve for the funkier stuff that issues from the FM stations. The bass is clear and sprightly, if not quite as deep as that which issues from some others. On the other hand, it is clearly not over-enhanced, either: a clear case of hearing what the broadcasters transmit, rather than what it would be good to hear. A Dr

tucked into the spring terminals on the rear, although positioning is fairly critical. Though it's doubtful as to whether many would bother, an additional earth gives, if not Perrier-sparkling clarity, a more than acceptable AM reception.

Stark simplicity, with the exception of the Rega name moulded into the front of the casing, extends to the box itself. This plastic moulding with its tiny control buttons is light and bears a strong resemblance in build quality to a clock radio. For £230 there are a number of tuners from Denon, Pioneer, Kenwood et al which offer much more perceived value. The Japanese manufacturers, too have taken RDS on board wholeheartedly, something that the British, Rega included, appear determined to ignore. It's fortunate that this tuner sounds on the whole worth more than it costs,

because, frankly, in most other respects it isn't especially competitive ●

“String quality was excellent for the price, with not a trace of the thinness or screechiness that afflicts so many. Nor was there any of the bloom that sometimes over-enhances the brass: horns, trombones and trumpets were clearly distinguishable instead of being the amorphous 'brass section' that issues out of many tuners.”

John track on Jazz FM had a very clear-cut bass guitar and startlingly crisp and taut percussion. Not to say a very firm grip on the rumba beat. Sheer delight, and the mark of a very good tuner.

For once, the AM section merits attention. The less said about Virgin's compression the better - it's not worth listening to at home - but Radio 5 did sound very successfully live, clear and remarkably unmuddy. Medium Wave stations can even be successfully received as Rega suggests, with a length of wire

Rega Radio
Rega Research Ltd.,
119 Park Street,
Westcliffe on Sea,
Essex S50 7PD
Tel: 0702 333071

£229

MEASURED PERFORMANCE

Although two users of the Rega - Eric and Dominic - thought it was insensitive compared to other tuners, subsequent tests showed it possesses normal sensitivity figures. Rega claim 30µV for stereo; I measured 20µV for our sample - better and adequate confirmation of their claim. Both are normal enough values. Just as importantly, full quieting occurred at 1mV of aerial signal, again a normal enough result. The Radio is quite quiet too, offering -74dB hiss level on stereo, a little better than most rivals. Only selectivity was a bit awry, measuring a low-ish 60dB one side of the passband and it just could be that this resulted in a little apparent noise being heard - a crackle from other stations - London's crowded wavebands being a fairly tough test. In its 'radio' performance the Rega worked well though, fully matching rivals except in selectivity (our 68dB figure is an average), and even here it wasn't so bad. Our Troughlines are about as selective and certainly less sensitive and they manage well enough.

Frequency response has a slight lift, as

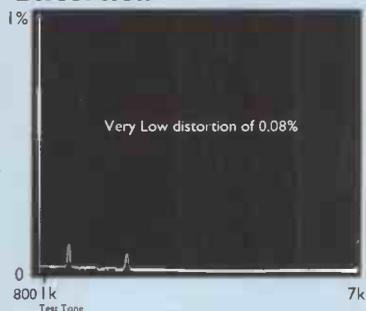
our analysis shows. It amounted to +0.6dB, peaking at 6kHz, enough to add a little sparkle and apparent precision - at least, if all else is OK. Otherwise, bandwidth was as wide as that of most tuners, stretching from 10Hz to 16kHz (-1dB). Channel separation measured a wide 48dB and distortion was low too, at 0.1%. Filtering of pilot tone and sub-carrier was good and output healthy at 500mV.

In all respects the Rega measured well, meeting high standards all round. **NK**

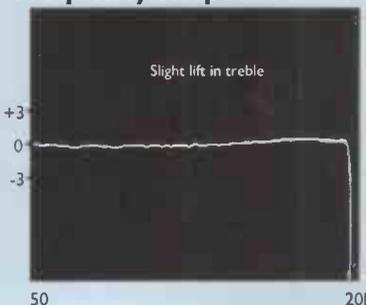
TEST RESULTS

| | |
|-------------------------|------------|
| Frequency response | 10Hz-16kHz |
| Stereo separation | 48dB |
| Distortion (50% mod.) | 0.08% |
| Hiss (CCIR) | -74dB |
| Signal for minimum hiss | 1mV |
| Selectivity (at 0.4MHz) | 68dB |
| Sensitivity | |
| mono | 2µV |
| stereo | 20µV |
| signal strength meter | none |

Distortion



Frequency Response



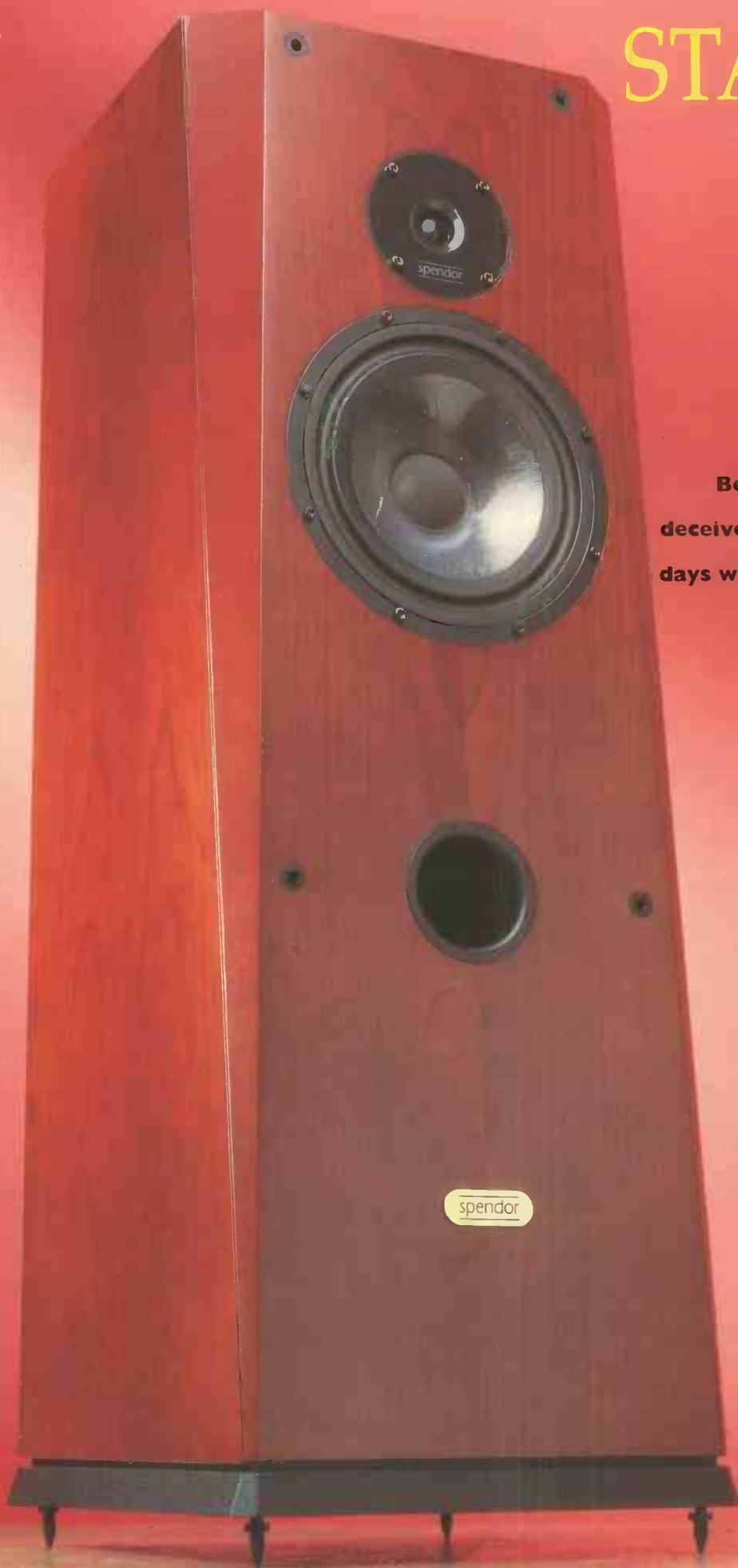
STANDING PROUD

Be warned, first impressions can deceive. Dominic Baker spent several days with these SP7/1s from Spendor, finding their sound subtle and seductive.

The tightly stretched skins of the toms, slapped firmly by a well timed hand, produced a characterful echo across the stage. A delicately plucked acoustic guitar took on lifelike form, its reverberent strings, with their intricate upper harmonics, and the resonant bloom of the wooden body bringing life to a simple melody. But most impressive was the seemingly unlimited stage width, depth and height that framed this performance - an elusive property even in high-end systems.

I was playing James' Laid album, mournful and slow in character, yet the performance had come to life, keeping me alert and intrigued by what was happening throughout that fantastic sound stage. Castanets echoed from behind unexpectedly, tricking me and creating a truly live panoramic atmosphere.

The sides of my room are deliberately cluttered with lines of CD and LP racks, bookshelves and plants to help break up early reflections and encourage this kind of wide open and devastatingly atmospheric sound. But Spendor's SP7/1s aren't the first 'speakers I've listened to with my set up: amongst others there's my usual stripped down Quad electrostatics. Even these though, sounded narrow in comparison to the stage the Spendors managed to produce. But if you wandered into your local



dealer for a demonstration, you may walk out puzzled, asking "are they really worth £1970?" - as I did initially. The Spondors look gorgeous, with their gently slanting baffle and rich, real-wood veneer. Even with the stylishly curved grilles removed the SP7/1s ooze class. But on a short audition they appear to be nothing special. The bass doesn't hit you in the stomach as you'd expect from a cabinet of these proportions. And they sound a little soft, laid back; nothing really stands out as being really spectacular, something you normally expect in a loudspeaker at this price.

If this sounds like a change of tune on my part, it's not. The SP7/1s aren't superficially impressive, showy or outspoken in any way. Get them home for a longer listen however, and they start to reel you in, captivating with their oh-so-modest charm. And if at first you're questioning their ability to resolve detail, after a few days you'll be wondering why every loudspeaker can't play music in such an insightful manner.

The SP7/1s aren't a challenging

loudspeaker to listen to. They don't push detail into your face, but let you sit back and discover it at leisure. Listen for something and it's there - clear as crystal. Listening becomes an enjoyable experience, full of surprises from subtleties overlooked by most loudspeakers.

"They don't play imaginary notes - if there's bass there, they'll let you know."

Switching from CD to vinyl, and from James to Frank Black, brought about a quite dramatic change. The scale of the sound stage was still there, but the whole effect gained a richer, more natural ambience, with less emphasis on transient leading edges, and more on tonal definition and colour. The centre-stage image pulled into focus, with the kind of solidity that allows information to extend out towards you and grow in depth. That

is not to say that the Spondor SP7/1s are not suited to CD, but you're going to need a top-flight convertor of Da Capo standard to appreciate their finer qualities.

But the ability to produce a wholly believable and precise sound stage and place images within it isn't where the SP7/1's talent ends. As I mentioned above, the bass of these 'speakers doesn't really hit you in the way you'd expect. Although to start with, bass was subdued even after the extensive run-in period of several days continuous playing, there was plenty there to do justice to all but the deepest organ notes. I

found it dry and taut in character, but extremely clean and tuneful too. Some listeners may find the 'speakers too dry, and compared to a TDL for example, they are positively restrained. They don't play imaginary notes though - if there's bass there, they'll let you know. The introduction of Pretty from The Cranberries has a deep bass drum strike that sends many loudspeakers into a frenzy. The Spondors gave it their best: a clean kick, complete with echo, airy decay - and nothing else. Others would be wallowing away seconds afterwards.

From a quick tap on the thick homopolymer cone you'd expect these 'speakers to have a plasticky colouration through the midrange, but Dolores O'Riordan put paid to this with her cool, powerful vocals. If anything, the colouration lies lower down, but it is only just noticeable as a slight warming on strings, which is certainly not worth fussing about. In fact, it gave a cello concerto on BBC Radio 3 a full, woody and rounded quality, which although not strictly tonally accurate, gave extremely pleasing subjective results.

I could carry on all-day describing the musical sounds that come from Spondor's SP7/1s, but at the end of the day a purchase like this is only made after a long and considered audition. I used both solid-state amplification and our own 300B kit. The Spondor's performed well with both, but I would urge potential owners to listen to a valve design, where the benefits of stage depth, ambience and tonal richness are exploited by the Spondor's easy drive characteristics (see Measured Performance) and their cohesive and accessible sound. I could happily live with these 'speakers - a rare sentiment ●

MEASURED PERFORMANCE

Spondor's new SP7/1s share the same driver complement as the standmounting SP2/3s, reviewed back in our February issue. However, for the SP7/1s a large floorstanding cabinet has been chosen which yields better bass drive and depth, as can be seen from the frequency response plot below.

They are smooth through the mid-range and show good integration between the 200mm homopolymer bass/mid unit and soft dome ScanSpeak tweeter, helping to give them a cohesive and focused sound. There is a gentle lift through the midrange too, which will help to get the sound out of the box and push vocal detail forwards. I would expect the SP7/1 to sound smooth and well balanced as a result of this well engineered acoustic response.

Despite using a thick homopolymer drive unit, the Spondors are surprisingly sensitive. I measured 87dB at 1m using a nominal watt (2.8V) pink noise signal, which means they will go quite loud even with modest power amplifiers. The impedance curve holds good news too for partnering amplifiers: it is smooth and high overall at 10Ω, so these 'speakers will not demand high current. Even better news for lovers of zero feedback designs is the flatness of the impedance curve. Even in the bass, impedance stays above 8Ω, and through the mid and treble it only rises as far as 20Ω. The SP7/1s will sound balanced and smooth with zero feedback amplifiers such as our own 300B kit design.

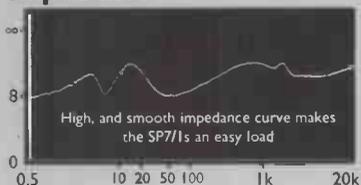
Although Derek Hughes, Spondor's

designer, prefers the technical qualities of solid-state amplification, he has successfully designed a loudspeaker that will work well with even esoteric single-ended, zero-feedback valve amplifiers, which makes the SP7/1 a fine all-rounder. There are advantages for owners of solid state electronics too. Less power will be needed for the same volume level, resulting in lower distortion. **DB**

Frequency Response



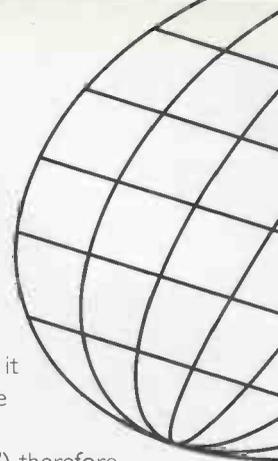
Impedance



Spondor SP7/1 **£1,970**
Spondor Audio Systems,
Station Road Ind. Est.,
Hailsham,
E. Sussex. BN27 2ER
Tel: 0323 843474



World



MARKET FATIGUE

I understand the need for an ever expanding market and the advance of technology, but why do some manufacturers always unleash a supposedly brilliant MkI, followed immediately by a 'new improved' version.

Some time back I bought an original Marantz CD 52, with no word from the dealer that a MkII was to follow in just a matter of weeks. Next in line for a model upgrade were the Missions, but not to such a severe extent, finally adding the icing with an Alpha 5 Plus. Oh I wonder, will an Alpha 5 Plus MK2 Special Edition Discrete follow?

All this does annoy me somewhat. Surely if enough TLC is taken beforehand, each product will create its own niche in the market place and be successful for a long time to come e.g. the NAD 3020, with no need for replacement for a long time.

I don't think companies like Arcam have realised the potential of the Alpha 5, or any other successful product had it been given more time to assert itself and confirm its own status. After all, do you see Wadia introducing multiple models of the same product in a short expanse of time?

**James Brown
Addiscombe,
Croydon,
Surrey.**

All design is a process of learning. With the Arcam 5 CD player, work carried out on the master clock of the Black Box 500 was applied in simplified form to the new Alpha 5 Plus. Had we known how to engineer a better clock 15 months

earlier, then we would have used it. We have to update our products to maintain our competitive edge.

Which NAD3020 is Mr Brown referring to: the 3020, 3020A, 3020e, the 3020i or the 302?

**John Dawson,
Founder & M.D.,
Arcam.**

PENTACHORD

I notice you have not designed to publish our letter about Dominic Baker's incompetent review of Pentachord 'speakers or, for that matter, any of the various other letters that I know have been sent to you by customers and other supporters of Pentachord. Your magazine (I won't

honour it with the title of 'journal') therefore can have no claim to be considered fair, or objective. I can only hope that our advert in the November issue gives you passing cause for embarrassment since it quotes many accolades (including your own) given to

GLOBAL GROOVE

I agree with Dominic Baker's (September '94) column on buying himself a turntable and searching for LPs. When I started buying CDs I also had the idea, regretfully now, of selling many of my LPs, then I stopped some three years ago and the direction has been opposite: I now buy twice as many LPs as CDs. I also bought myself a new Rega Planar 3.

The reason is, why don't we say it: money. We can discuss sound forever, and I think some music sounds better on CD (I listen to Classical almost solely on CD), while other music is better on LP (Van Morrison has lost so much on digital format, for example), but a huge market for new and used LP has risen and for someone, like myself, buying ten or more recordings a month and

wanting to explore more music, it makes sense.

I have ordered by mail from Rounder Records (1 Camp Street, Cambridge, MA02140-1194) some 50 LPs in the last year. Their catalogue is, as many readers will know, nothing short of amazing for anyone interested in Roots music. They sell LPs for \$4 each and if you order by surface mail it will cost less than \$6 (£4) for each record. Their service is close to perfect. Try it.

Another good place to order from, in the U.S. is RDM Sales, PO Box 41348, Somerville, MA 02144 U.S. They sell records, priced generally between \$3-\$6 and theirs really is the best service I have ever met in my life. If you tell Mr Jeff there, that one of his products is faulty, you take the risk that he'll come personally to your house (in London that is) and

apologise, bringing a replacement with him. Well, almost. He has a lot of jazz too.

Of course, there are also all the second-hand stores where you can make great discoveries, LPs not issued on CD which will take you to the moon and for incredible prices. You all should see what you can find there.

I would like to correspond with anyone interested in American Roots music (like T. Van Zandt, Steve Young, Guy Clark) and Irish musicians (P. Tumer and Van Morrison)

**Moshe Benarroch
PO Box 7806
91076 Jerusalem,
Israel.**

I now regularly use CD alongside LP, when reviewing and relaxing, and I agree that you can find some LPs that are better

Letter of

Send your letters to Hi-Fi World Letter Page,

writes

our 'speakers in earlier issues which are totally at variance with the opinions of Mr. Baker. However, I shall certainly not provide you with any further advertising revenue in the future.

Oliver Brooke
49, Rusholme Road,
London.

The sudden flurry of letters we received fulsomely praising your speakers were obviously part of an orchestrated campaign. It doesn't surprise me that you knew of and appear to have participated in their contrivance. What does surprise me is your brazen conceit in writing a letter crowing about it.

Readers may be interested to know that manufacturers do occasionally attempt this to gain apparently independent endorsement in a magazine. I'm aware of the ruse, which I consider a most cynical deception.

Your advertisement carried reviews from 1991 about a different model. Did you hope that readers might be deceived again?

I can only thank you for your final action. **NK**

cassettes at 3.75 inches per second.

Using good quality tape - TDK SA, Sony Metal XR - the results can be outstanding and hiss-free even without Dolby noise reduction. When you can take your recording levels right up to +10dB on a metal tape, hiss is no longer an issue.

Playing time is not really a problem either, for two reasons - 1) a CD you may wish to copy (for in-car purposes of course!) will usually fit onto both sides of a C90 at high speed (22.5 minutes per side) and if it doesn't there are usually a couple of dud tracks that you do not wish to include. 2) 90 minutes of high quality non-data compressed, high speed cassette tape usually costs £3-£5 compared to £5, minimum, for DCC

I have borrowed a Marantz DCC machine from my local dealer and returned it very quickly as I was highly

continued on page 41...

the Month

than CD and vice versa. Pre 80s albums, before the introduction of CD, seem to offer superb tonal richness and body I find, and these make LP an extremely valuable source. When CD was introduced many of the early recordings were thin and bright, and this carried through to vinyl, which was made from the same digital master, or worse, digitally re-mastered, which seems to rob all of the character from the music. Nowadays I am finding that new releases I buy on both CD and LP are very close in terms of recording quality. Some recordings that are a little too bright on CD sound better balanced on LP, and some LPs which sound a little soft, can be fantastically dynamic on CD.

I think there is more to vinyl though than just price. I buy a lot of new releases

which are £9-11 on vinyl and £11-15 on CD, so not a great deal of difference. But I enjoy the ritual of carefully removing the fresh shiny black vinyl from the sleeve and lowering the arm gently into position. Vinyl has a warmth to its sound, and fantastic solidity in terms of image detail. But if you're in a more lively mood, CD has fantastic dynamics with bass depth and power, something which I also appreciate.

I am enjoying having both, and it is actually encouraging me to listen to more music because I can listen to two different presentations each with their own set of merits. I don't think either are quite right, a combination of the best parts of both would be closer to the truth, but now that I regularly use both, I don't think I could do without either. **DB**

TAPE TALK

Being the proud owner of a Teac C-3X cassette deck which has a selectable double-tape speed option as well as a bias and sensitivity adjustments, I can confirm, fully, the advantages of using cassettes at higher than standard speed (your Kaleidoscope column, April 94). In fact, I have converted all cassette playing equipment in my home and car to play

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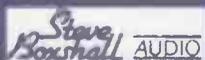
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.... continued from page 39

unimpressed by it, so you cannot accuse me of being un-educated.

Unfortunately, the evolution of hi-fi has forced us all to accept some change, which has usually been change for the worse. Valves gave way to transistors, vinyl is yielding to CD and open-reel tape has been superseded by cassette, and now DCC is here. I use all formats except digital recording media (DAT, DCC and MD) because I feel that a well designed analogue tape deck makes them unnecessary. If DAT fails, a lower quality format is never going to take-off, especially at current prices!

On a different note, a good second-hand record store that you may wish to know about is: Bridge Records, Bridge Street, Walsall, West Midlands. They specialise in rock, but there is always a supply of other tapes as well.

**Joseph Clark
Warley,
West Midlands.**

Because DCC prerecordeds reach a consistently good standard, the medium has its advantages; I know of many people who swear by it. However, it does need to offer perceivably more before people take to it more widely I suspect. Sadly, dual-speed cassette decks were a short term innovation of the early eighties. They contravened Philips standard, which stipulates one speed, for guaranteed compatibility, so were 'discouraged'. They are not now available. Teac finished their line in 1984, for example. **NK**

POWERING DOWN

On reading Brian Darling's letter about the Mullard 3watt I just had to give it a go (see photo) and does it sound good! If you want to

hear it, I can post it to you. The other amp you see in the pic. is one I built a little time ago which uses a 6SL7 and EL38. It sounds very good indeed, but still only manages about 3, or maybe 4 watts.

Perhaps you could suggest a way of using a third channel using a powerful

in a two-way speaker - the valve amp. will work from 3kHz upward only, missing the vital midrange where vocals are handled (200Hz-800Hz). A three-way speaker can be bi-amped though, mid and treble going to the valve amp, the bass unit to a solid state bass amp.



Julian Turnbull's home built valve amplifiers.

amp to drive a bass unit, leaving the single-ended to drive the tweeters and mid-range, which of course is what they are best at.

Looking at the pictures you may think I have been into audio for years, but all this is the result of three years worth of frenzied enthusiasm, mostly inspired by you magazine.

**Julian Turnbull
Testwood,
Totton Hants.**

Ah yes, the Mullard 3watt - the first amplifier I ever built. Simple and very effective, mine saw me through much of my teens and, just like you say, it was incredibly sweet and easy to listen to. Our own Single-Ended 4W offers much the same performance.

Although any speaker that can be bi-wired can be bi-amp'd, it's impossible to get the right frequency split

Another interesting possibility here is to use a large dome tweeter, such as the Audax TW034X0, which is super sensitive (93dB/watt) and works from 600Hz up to 20kHz. This could be used in conjunction with an Audax PR300M0 12in bass unit (97dB/watt sensitivity) to give a super-sensitive loudspeaker with enormous bass ability. This concept is one we've been toying with for some time and hope to be able to put into a project. **NK**

END OF THE VI 5?

Where can I obtain a Shure V15-V cartridge. I have an awful feeling they are now extinct and I can't seem to find any.

HW International did not respond to my pleas. Are there any Stateside?

How long do cartridges

last? I think my 17 year-old V15-III could be past it, don't you think?

**A. Iredale
Rotherham,
South Yorks.**

Yes, cartridges don't usually last more than a few years, with continual use.

Cartridges - American ones especially - can be bought by mail order from Jerry Raskin's Needle Doctor of the USA. 'Phone them after 3pm UK time on 0101-612-378-0543 or fax on 0101-612-378-9024, for prices, payment details, etc. The easiest way of paying is by credit card, Visa or American Express, but money orders in dollars can be used. Unfortunately, production of the Shure V15-V has just ceased, Jerry Raskins told us, so don't hold your breath. 'Phone them though and they may be able to find you one. **NK**

FOOD FOR THOUGHT

Here's some food for thought: why aren't loudspeaker crossovers outside 'speakers; why are no other electrostatics reviewed; why is there no serious discussion on 'speaker cabinet materials; why are other valve amps tested so infrequently these days; why have Quad ESLs gone up so much in price compared to other products that were around three or four years ago.

Why have the number of recommended products fallen from 160 to 80 in two years; how about occasional complete summaries of your past tests; do any of you listen to live music (unamplified) any more; how about a World Audio Design system test on K5881/KLS2 and 300B/KLS3?

How about some research into full range drive

continued on page 47

Once upon a time digital life was simple. Players were multi-bit or bitstream. Current wisdom divided into two camps, like Orwell's pigs: multibit good; bitstream bad. Or vice versa, of course, depending on the listener's or reviewer's stance.

In the last couple of years, life has become more complicated as DAC flavours have become not only different, but more multifarious. For its new £900 Cyrus DAD-

7 CD player, Mission has opted for one of the current fave raves: Analog Devices' AD 1861, in its selected version, and the now ubiquitous Philips CDM12 transport used in top-loading form as it is in the same company's DiscMaster transport. Like cheese-and-onion crisps, this is one of my favourite flavours.

Before we bite the meat in the

review sandwich, however, a moment of trivia. Like the DiscMaster, the DAD-7's lid pops up like a frog opening its eyes; on pressing Close, it plops down again with a gentle thunk. It may not mean much, but to have a lid which works as silkily as a Teac drawer seems to be such a rarity among top-loaders it proved to be almost as cheering as the solidity of the Cyrus' new-style casting. This kind of attention to design detail at least says hi-fi doesn't have to be big,



BORN OF EVOLUTION

Eric Braithwaite finds digital life today increasingly more sophisticated. Is Mission's new DAD-7 CD player the latest statement in this rapid evolution?

ugly, or clumsy to be real hi-fi.

And in sonic terms as well as looks the DAD-7 is far from clumsy. If it isn't of shot-putter bulk in build, in the music it makes it's a lithe, firmly-muscled sprinter. Take Miles Davis' In a Silent Way. Apart from that hallmark, plangent, floating trumpet, the rest of the band sounded so tight it could have been on tiptoe for every bar. This player is as crisp as a newly-starched shirt and as detailed as the lace in a Van Dyck painting.

In the best sense, the Cyrus is an 'easy listening' player. Listening to Rod Stewart's Unplugged album (don't groan) it cleaned up what is technically, on the part of whoever chose the mics, a rather mistaken act. In reality, the recording doesn't have the dynamic range it deserves, presumably having been deliberately recorded for TV rather than hi-fi. But the Cyrus smoothed out the compression, allowed the acoustic instruments to expand and Stewart's voice a degree of huskiness. It turned the album back into the 'performance' it was on MTV. Given a good rhythm, the Cyrus slips through the gears in perfect synchronism with its foot firmly in control of the accelerator.

This argues a kind of delicacy with muscle that has made the Analog Devices' chip a well-deserved favourite, and the transport section makes a perfect partner. The delicacy came in by the same door as the orchestra in the first bars of the RPO's Carnaval Romain, with a sweet sound and well-spread soundstage. Where the Crystal equipped Quad 67, at around the same price, perhaps scores higher points is in a wider rage of tonal colour, particularly

among the strings and woodwind. Here, the Cyrus lacked that lustre that a fuller colour could give. This, too, is something of a hallmark of the Analog Devices' breed: two bits of the spectrum short of a full rainbow.

However, be that as it may, the Cyrus was rhythmically well on-the-ball, taking signature changes well in its stride with remarkable deftness. While the bass is not entirely well-defined, lacking a little in dynamic power, it is fast and keeps time, one of the great stumbling-blocks of the Crystal, which tends to be a fraction of a second behind. When it came to Dance music, the Cyrus is very much on its toes. In a genre where the beat is tight and metronomic the DAD-7 produced a stoboscopic regularity and crispness ravers wouldn't need to take ecstasy to enhance.

With all this, the DAD-7's resolution is well up in the run of CD players, with a well-spread and cleanly defined soundstage. Players are well-defined in space; not quite holographic, but clearly placeable. There is, rare still among digital, a very respectable element of

depth, though lacking the three-dimensional air and space in and around players that is the province of the high-end. Nonetheless, the Cyrus performs very respectably in this area. Even if this player tends more to layer a band - or an orchestra - between back and front, it is subtly done and it enhances a good number of rock mixes that too often fall flat - literally - in perspective.

Clarity, crispness and above all a general feeling of well-being and involvement with the music. Who could ask for more? At this price, not much. The Cyrus joins the ranks of the upper-bracket Teac VRDS players, the Quad 67 and Sugden's integrated as another of the relatively few £900 players to write down on the shopping list in capital letters ●

“In a genre where the beat is tight and metronomic the DAD-7 produced a stoboscopic regularity and crispness ravers wouldn't need to take ecstasy to enhance.”

Mission DAD-7
Mission Electronics,
Stonehill,
Huntingdon,
Cambs. PE18 8ED
Tel: 0480 451777

£900

MEASURED PERFORMANCE

Following Mission's twin box Discmaster transport and Dacmaster convertor, comes the one box DAD-7 CD player. In similar fashion to the two box system, the DAD-7 has some gentle treble roll off that will give a smooth balance to the sound. Bass lifts slightly too, so I'd expect a solid and full bodied sound as a result.

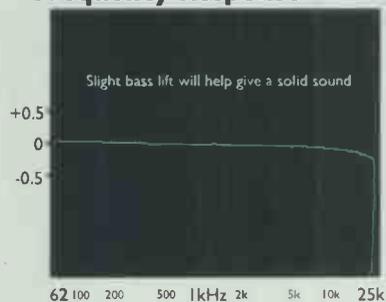
Distortion is a little higher than the more up-market two box player, as would be expected. The distortion plot below, taken at -30dB signal level, shows a wide spread of harmonics. However the most audible low order harmonics are relatively low in level, so I wouldn't expect this to colour the sound too much.

Output was a touch over 2V but not by enough to make volume matching necessary in a comparative audition. At -60dB signal level, distortion was around twice that of the best players around and the dynamic range was correspondingly low at 102.5dB. Otherwise the DAD-7 measures well, and is engineered to a high standard. **DB**

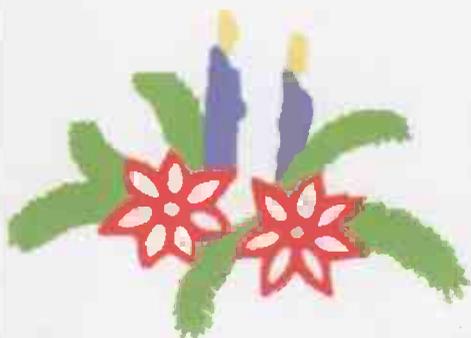
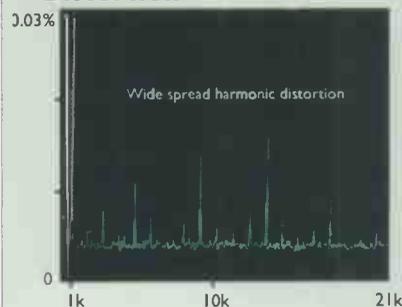
TEST RESULTS

| | | |
|--------------------|--------------|-------|
| Frequency response | 4Hz-21.25kHz | |
| Distortion (%) | | |
| -6dB | 0.01 | 0.01 |
| -30dB | 0.024 | 0.033 |
| -60dB | 0.77 | 1.13 |
| -90dB | 37.1 | 45.6 |
| -90dB dithered | 12 | 16.5 |
| Separation (dB) | left | right |
| 1kHz | 108 | 103 |
| 20kHz | 82 | 78 |
| Noise | 110dB | |
| with emphasis | 107dB | |
| Dynamic range | 102.5dB | |
| Output | 2.07V | |

Frequency Response



Distortion



Building by Numbers

The Sonic Frontiers Assemblage DAC-1 is a CD convertor with a difference: you have to build it - MFI style - before you can use it. And ease of build rates alongside that of simple MFI furniture too, the main board coming pre-assembled and tested, only a handful of solder joints to be made and a few pieces of hardware bolted up before the convertor is complete.

It took me around half an hour; less experienced builders may spend a little more time, and some with smaller fingers and faster hands a little less. But I'd almost go as far as to say that just about anyone should be able to complete the Assemblage convertor. As I mentioned before, the main circuit board is pre-assembled and tested to help ensure that the Assemblage works first time. There are three phono sockets to be fitted to the chassis and soldered to the board via

twisted Kimber Kable, three LEDs to solder into place and the mains inlet IEC socket has to be fitted.

And that's just about it if you live in the USA, Japan or Canada and have a (nominally) 110V mains supply. If you live in the UK, or where mains is 220-240V, two small jumpers have to be removed and one of them soldered back into the 220-240V slot. For speed, and because the jumpers were soldered to both sides of the board making extraction difficult, I simply snipped them out and used a short piece of wire to set the Assemblage for 220-240V working.

The instructions are superb in every way. They begin with the basics of soldering and wire stripping, and continue

to take you through the short build sequence step-by-step with clear illustrations throughout. And Sonic Frontiers don't get too technical on you; instead of saying 'insert the LEDs with the cathode in the position marked', it is 'looking down at the top of the board with the light blue power transformer on the left, insert the LEDs with the longer lead to the right into the holes'. So I finished building after around half an hour and, as expected, it worked first time.

Sonic Frontiers are perhaps better known by our DIY readers for their Parts Connection catalogue of audiophile components, and it came as no surprise to me to find a high level of component quality within the Assemblage. The mains input is filtered to provide a clean supply, the toroidal transformer is potted to reduce magnetic field and noise, the DAC chips themselves (one for each channel) come from Burr Brown in the form of the PCM1702, and high quality Analogue



...the instructions are superb in every way. They begin with the basics of soldering and wire stripping, and continue to take you through the short build sequence step-by-step with clear illustrations throughout. And Sonic Frontiers don't get too technical on you; instead of saying 'insert the LEDs with the cathode in the position marked', it is 'looking down at the top of the board with the light blue power transformer on the left, insert the LEDs with the longer lead to the right into the holes'. So I finished building after around half an hour and, as expected, it worked first time. Sonic Frontiers are perhaps better known by our DIY readers for their Parts Connection catalogue of audiophile components, and it came as no surprise to me to find a high level of component quality within the Assemblage. The mains input is filtered to provide a clean supply, the toroidal transformer is potted to reduce magnetic field and noise, the DAC chips themselves (one for each channel) come from Burr Brown in the form of the PCM1702, and high quality Analogue

Devices AD847 op-amps are used at the output. Even the casework is good and solid, with a thick alloy front plate giving the Assemblage a very professional image.

Unsurprisingly, the Assemblage has many sonic similarities with Burr Brown PCM63 equipped convertors; the PCMI702 chipset it uses is based on the same internal architecture. Crush With Eyeliner from REM's new album *Monster* (something of a return to their roots) came across with the stark and dry balance intentionally engineered in the studio. In fact, the Assemblage made a more musical job of this than many of the more precise and analytical convertors we listen to, giving a little extra body and warmth to the lower midrange.

One thing that this stark, stripped bare recording does bring out well is the individual character and tone of each instrument. From cymbals down to bass guitar the whole spread was natural and uncluttered. The Assemblage DAC-1, although adding a little body to the lower midrange, essentially retains the character of instruments well. This was confirmed when I switched to the Pink Triangle Da Capo convertor we use as a reference, which although having a greater sense of atmosphere and scale, with more power behind individual notes, showed how truthful the Assemblage performance was.

Primal Scream's *Screamadelica*, with its more processed, but wider ranging instruments, gave the Assemblage a chance to show what it could do with a

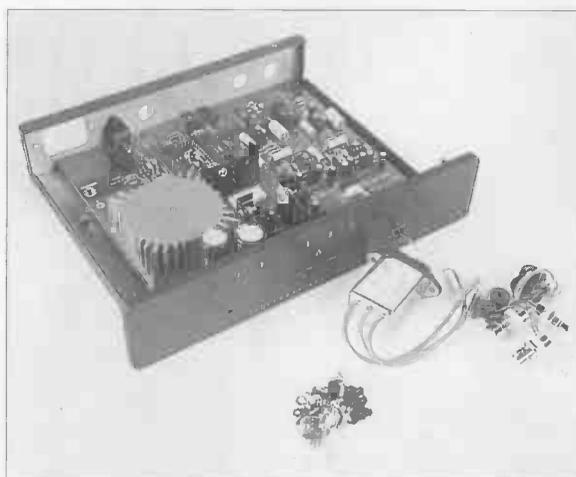
good bass line. Although fast and tuneful here, the Assemblage doesn't really put enough weight behind the lowest notes. In systems which are already a touch dry and restrained here, it could possibly take things a little too far. Even with the normally bass strong Heybrook Quartets, the Assemblage could sound lightweight

to Heaven, or Blur's *Parklife* to sample this superb driving force.

Sonic Frontiers' Assemblage is very clean and clear through the midrange and treble. As I mentioned earlier, it doesn't convey the subtle atmospheric and acoustic detail that the Da Capo manages to wrench off CD, but it comes close in terms of tonal balance and accuracy. Treble is neither too soft or too dull, with just the right amount of crispness and sparkle to bring lack-lustre recordings to life.

With more complex passages the Assemblage manages to bring a sense of order to the music, clearly differentiating between instruments and their respective melodies. A good perspective of depth and width certainly helped here, giving a large sound-stage for the performers to work in.

I suspect Sonic Frontiers will have a lot of success with the Assemblage DAC-1. It is easy and fun to build, competitively priced, and delivers fine sonic results too. A touch bass light perhaps, but then no system is perfect, and this balance will suit many a system in need of more quality and less



The main circuit board comes pre-assembled and tested, which makes building fast and accurate.

in comparison to the Da Capo and other fuller sounding convertors.

Having said this though, if your system suffers from a muddy or slow bass, the Assemblage certainly has the pace and attack further up to inject some welcome speed. The up-beat bass/mid of many pop tracks, especially, gave the Assemblage a beautifully punchy, forward attack which held the beat and under-pinned the whole track. Try the Pixies' *Monkey Gone*

quantity ●

Sonic Frontiers.
Assemblage DAC-1 £280
Sonic Frontiers Inc.
2790 Brighton Road,
Oakville,
Ontario,
Canada L6H 5T4
(Price subjected to exchange rate fluctuations)

MEASURED PERFORMANCE

The Sonic Frontiers Assemblage DAC-1 uses Burr Brown's relatively new PCM 1702 DAC chipset. This is essentially the same as the well known and much loved PCM 63 with the same internal architecture, but re-packaged in a smaller case and with lower power consumption.

Sonic Frontiers have put this device to good use in the Assemblage, yielding low distortion across a range of signal levels. It's not quite as good as top Philips DAC-7 equipped convertors, but very close all the same. The distortion plot taken at a -30dB signal level to represent a typical music signal shows extremely low distortion and I would expect a clean and smooth sound as a result.

Also helping the Assemblage to sound smooth is the gentle treble roll off above 10kHz, which normally gives CD a warm and sweet balance. Elsewhere, as you'd expect nowadays, the Assemblage measured competently with wide separation, good dynamic range and low noise. Output was a touch under the Philips standard of 2V, but not really low enough to cause problems with those of you having

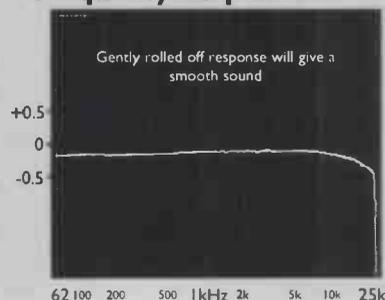
a liking for passive pre-amps.

Sonic Frontiers have done well with the Assemblage; it is well engineered in all respects. And you can save yourself a few quid by building it yourself. **DB**

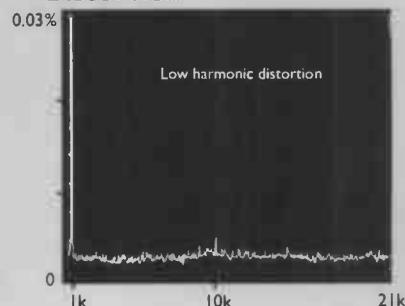
TEST RESULTS

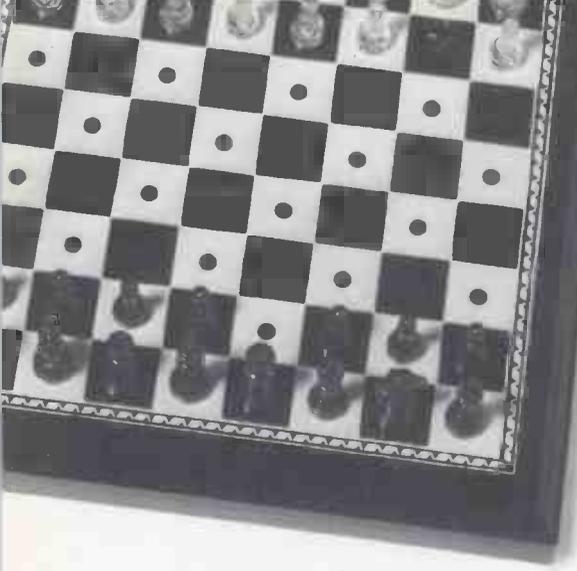
| | | |
|--------------------|----------------|-------------|
| Frequency response | 4Hz-21.1kHz | |
| Distortion (%) | -6dB | 0.005 0.006 |
| | -30dB | 0.014 0.014 |
| | -60dB | 0.50 0.60 |
| | -90dB | 28.1 28.4 |
| | -90dB dithered | 10.1 10.8 |
| Separation (dB) | left | right |
| | 1kHz | 125 123 |
| | 20kHz | 111 103 |
| Noise | | -110dB |
| | with emphasis | -112dB |
| Dynamic range | 106dB | |
| Output | 1.96V | |

Frequency Response

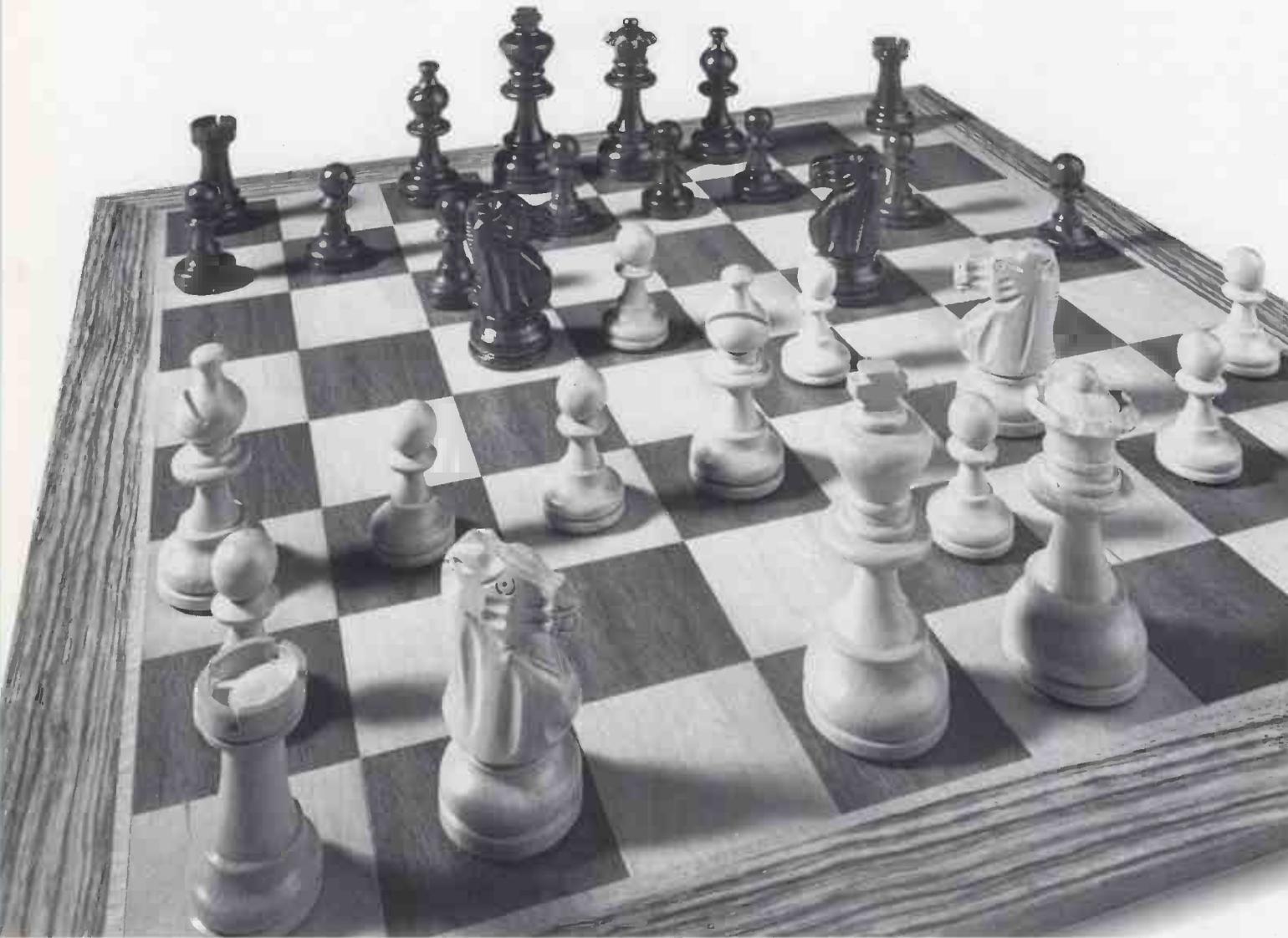


Distortion





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**CASTLE**

.... continued from page 41

units, metal drivers (Max T, where are you?) Keep up the excellent work. **Mamolis Kroussaniotakis Nicosia, Cyprus**

Hmmm, now here's a list of politically loaded questions. Taken in order - Crossovers do appear to be affected by vibration (Tannoy major on this problem) and should, ideally, be mounted outside the

serviced at source. But, as you say, its price has risen significantly to £2860, making other electrostatics (there aren't so many) competitive. The Martin Logan Aerius, with its dynamic bass unit, now costs £2288 in Britain, so perhaps we should be reviewing it.

Speaker cabinet materials are a bit of a red herring. Concrete, lead, stone chip composites and what have you all grab people's imaginations, but

the number of World Favourite recommended products had fallen; perhaps we need to review this yet again. However, the figure is not likely to increase much I feel.

We do listen to live music, but this is hardly consequential. The notion that a hi-fi system can be compared to the real thing is a misleading oversimplification. Directly a microphone and the rest of it goes in front of any musical instrument what we then hear is a version of its sound. Trying to mike up a piano is one awkward and contentious point; miking up an electric guitar or connecting it direct into a desk is another. Vocals can be more easily captured accurately, coming from one nearly-point-source, but until recently vocal mics had terrible treble lift and a peak around 10kHz, so even here it is dangerous to compare a recording with a true live (i.e. unamplified) performance.

Reviewing our own kits is too political - we only suggest people listen to them and decide for themselves. This is a problem if you live in Cyprus, but many people buy on spec. and are delighted.

The potential benefits of a full range driver are enormous, but current attempts are technically inept and incapable. We are pursuing the closest equivalent idea, that of a high performance midrange unit that covers all the important audio band, leaving fill-in drivers to cope with the last octave of treble (10kHz-20kHz) and lowest two octaves or so of bass (40Hz-160Hz). Most commercial 'speakers cross over at the worst place possible, the ear's point of

highest sensitivity, around 3kHz. A better 'speaker will certainly result from any well engineered avoidance of this difficulty. **NK**

DPA DELIGHT

I owe you a great debt of gratitude for a review of DPA's PDM ten twenty-four DAC. As a result of your review I now have this DAC myself and it has revolutionised my musical life. As you say, "It really is something special."

You also say in that review, "CD has finally equalled or bettered what a good turntable can do." I am in complete agreement, having had a top-flight turntable, arm, cartridge etc. together with over 1,000 mostly classical LPs. With this new DAC I now listen to music, music as I've never heard before except in a live concert. Music on CD.

So I was surprised to read your piece ('dB on the level') in the October issue in which you say: "And what's a little surface noise compared to a harsh and gritty treble, or the sterile and emotionless sound of CD." Come on now!

It took a long time to produce good sound from LP. The problems lay not so much with the sound of LP itself as with the means of getting that sound off the disc. We now know that the sound was always there and was better than we have ever been able to hear. Is it not certain that the same is true of CD? Is this not proved by the sounds you hear from a DPA convertor?

Mike Priestland Pembrokeshire, Wales.

For the majority of people, myself included, who can't afford the DPA ten twenty four, vinyl still offers a thoroughly enjoyable musical experience. Many engineers seem to be obsessed with noise or hiss, which is not related to sound quality.



DPA's PDM 1024 convertor brings a new level of musicality to CD.

cabinet. This is a great thing for DIYers to try. Putting the crossover in an aluminium case beside the amplifier and running separate bass and treble cables to the speaker box is an interesting arrangement. Manufacturers could perhaps mount crossovers externally on the back of the cabinet. Perhaps this will follow bi-wiring as a useable idea.

Until recently the Quad ESL63 has been a bargain and, importantly, it can be

they serve only to lessen cabinet colouration, which isn't the same as producing a better loudspeaker. A properly designed and braced MDF cabinet is little problem, it's inexpensive and it's easy to fabricate, finish and handle. It's drive unit technology that needs attention.

We still review valve amps regularly, but try to keep their presence in some proportion.

We weren't aware that

.... continued from page 47

Rob Watts of DPA actually provides switchable dither on the ten twenty four, which sounds best on the highest setting, ie. the one with most noise!

I'm glad that you are enjoying the ten twenty four convertor, and I still believe it is one of the first to produce a truly musical performance from CD. **DB**

OLD TIME

I just had to respond to your advice to David Wright about playing 78s in the September issue. A Garrard 301/401 is ideal. 78s weigh an awful lot and some suspended sub-chassis turntables might need resetting, which is avoided with the Garrards. Use a moving magnet cartridge with user replaceable stylus assembly and talk to Technical and General or the Expert Stylus Company about re-tipping LP styluses

to play 78s. Then you only need one turntable and can change the stylus and playing weight to suit vinyl or Shellac.

Playing 78s can be a minefield of differing groove sizes, speeds and equalisation curves, that keep mere mortals like myself foxed, but don't be put off - it's worth it. Almost all of them are direct cut, and if played back using the correct stylus and EQ, can be very satisfying.

Most LP and some CD transfers I own of old performances are appalling compared to the originals. In their attempt to filter out the noise, record companies lose much of the ambience and musical harmonics. I don't filter; the ear gets used to the noise and can filter it out naturally. There's a bit of psycho-acoustic theory for you.

As a very rough guide, if you only play post 1930s-ish records then a variable speed unit isn't needed. However, Columbia records were recorded at 80 rpm until the

late 1920s, and early vocal records are often nowhere near 78. So a variable speed facility can be important and the 401 has a slightly greater range than the 301. I made my own stroboscope to check the speed, it's easy to do.

For post-1950s records you can get away with one stylus, preferably elliptical. Anything earlier may require a larger tip, and if you play acoustically recorded discs as well, possibly three styluses are needed to cover the range. The size does make a difference to surface noise and information retrieval. Use an arm that is easily adjustable, and which isn't too massy, as it can get thrown around a bit, even by slightly warped discs. A Rega/Moth RB250 works well with all but the worst cases.

Replay EQ curves are the biggest problem. If you use an amplifier with tone controls then it's not too difficult. I don't, and invest in a programmable graphic equaliser (my secret is out

now). This is programmed to counteract the RIAA LP EQ in my amplifier's disc stage. How about some alternative circuits (78 RIAA, 78 FFRR, 78STD, Acoustic and at least one American, AES or NAB) in the HFW phono-stage, plus a mono button?

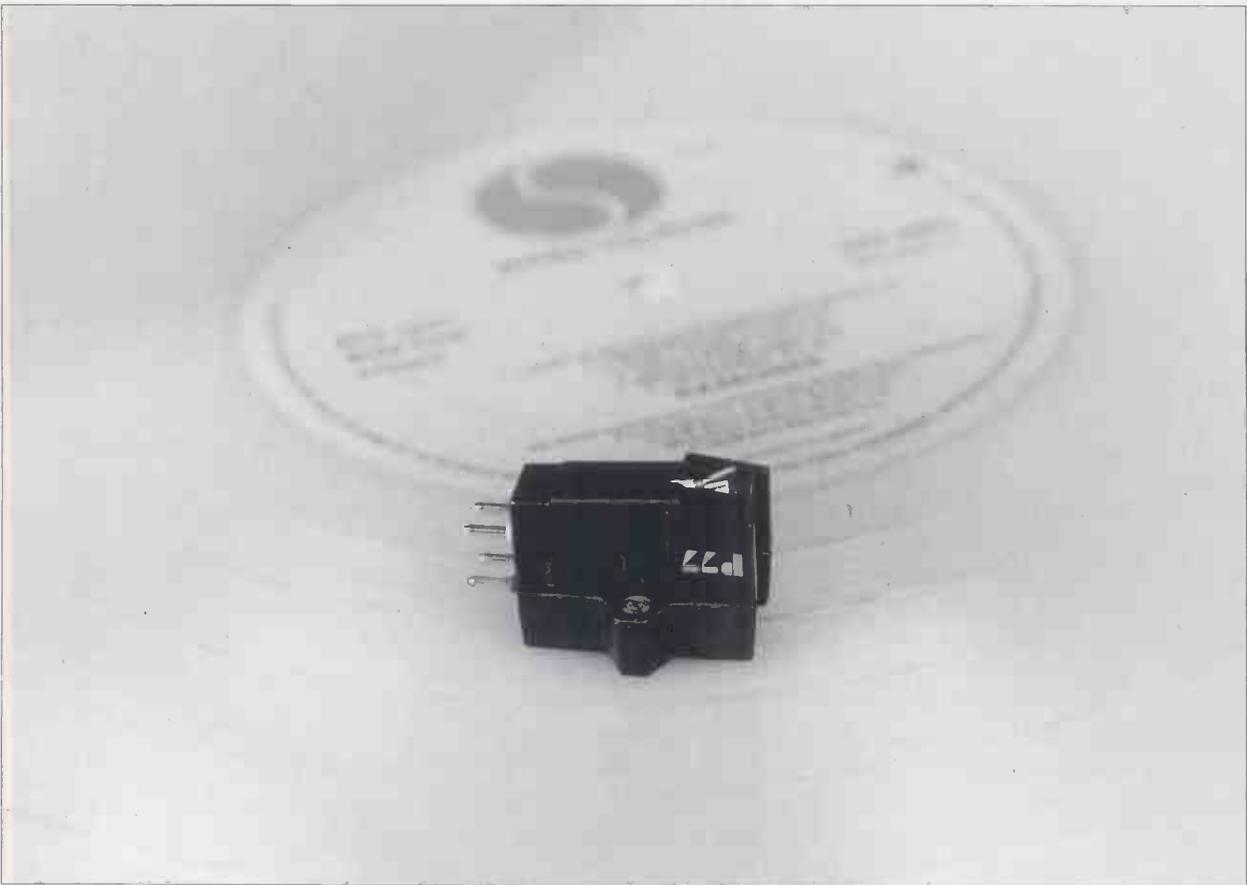
I use a Garrard 401, chipboard plinth, Moth arm, Arcam C77mg; Garrard 301, MDF plinth, Systemdek arm (temporarily), Arcam C77. I use re-tipped styluses tracking at 3 to 3.5 grammes for 78s. Oh, and a Pink Triangle Export, Rega RB250 Arcam P77mg, 33 and 45rpm only. The 401 and PT sit next to each other for everyday use, mainly the 401 which is used for vinyl as well. The other two Garrards are kept handy next to a settee, who needs to keep fit?

I standardised on one cartridge for the simple reason of cost. I recycle worn P77 and C77 styluses by re-tipping for 78s Even my very understanding wife has a C77 in her NAD turntable for this reason. Upgrading? Well, I am saving pennies for Bastin/Slate plinths and overhauls for the 301/401 and a new amplifier and 'speakers loom large in my dreams.

Come on Hi-Fi World. A serious review of a 401 with an SME 312 and a re-tipped Goldring .1042, vintage valve amp and lots of lovely shellac are called for. Ah well, back to the asylum!

Richard Zarywacz Reading Berks.

P.S. The Expert Stylus Company are at: P.O. Box 3, Ashtead, Surrey KT21 2QD Tel: 0372 276604. They re-tip styli as well.



What do you do with a worn out Arcam P77? Richard Zarywacz has them re-tipped for use with 78s.

MATCHING A DENON DL-110 CARTRIDGE

DENON DEBATE

I have a stereo that is primarily vinyl-fronted. The source is a tweaked Project 0.5 turntable. At the moment, the sharp-end belongs to a Linn K5 cartridge. Amplification is by an Aura VA-50 and fed into bi-wired B&W DM600s.

Although I'm fairly happy with the tonal balance of the system (a touch harsh, but that's all), the K5's annoying habit of moving the grand piano around the soundstage has sent me looking for a replacement.

One likely candidate has been the Denon DL110, favourably reviewed by yourselves in the March 1994 issue of Hi-Fi World. The output of this cartridge was stated by Noel as being 4.2mV at 5cm/sec rms. I telephoned B&W Nakamichi who told me that the phono-stage sensitivity of my amplifier was 2.5mV.

I would have bought the DL110 had it not been for Ian Harrison (of Discount Hi-Fi) who refused to sell it to me, saying that the DL110 had an output of 1.6mV and my Aura's phono-stage was not sensitive enough. So I called Hayden Labs and asked them what the output of the DL110 was, and they confirmed that Ian was correct. The DL110 puts out 1.6mV at 5cms/sec.

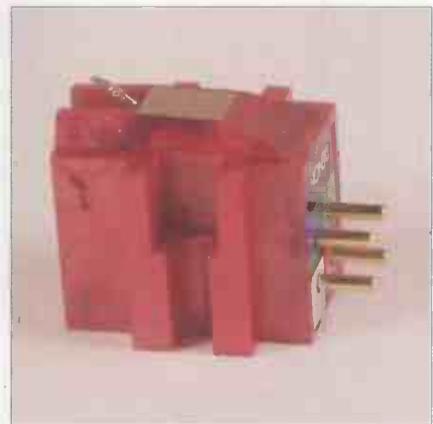
Why this discrepancy between an authoritative hi-fi magazine and the manufacturer (and a very fine dealer) of the actual product?

Further, when Hi-Fi World reviewed the Aura VA-50 in June, the phono-stage sensitivity was determined, again by Noel, to be 3.2mV when B&W Nakamichi claim 2.5mV. These discrepancies are very disturbing. I can appreciate the occurrence of random errors during measurement, but the sort of deviations we are seeing here are well beyond reason.

Now I ask you to tell me unequivocally, having tested both the Aura and the Denon, whether or not they are compatible?

Amir Isa
Barnes Keele University,
Staffs.

Now to the difference between quoted and measured sensitivities. Input sensitivity is that needed to generate full output. I measure actual full output (at clipping/visual overload) from 240V mains supply. Manufacturers always quote a lower value, to account for variations in mains voltage, wind direction, etc., and to avoid possible accusations of making an improper trade description. Because my output figure is higher my quoted input sensitivity figure is higher too. When other minor differences (test equipment accuracy, sample variations, etc) are taken into account these differences are within expected tolerances.



I asked Denon for a new DL-110 and measured it again. Using a test tone of exactly the same spec. as Denon, "1kHz 50mms/sec horizontal", output measured 2.8mV - considerably higher than the 1.6mV quoted. I normally use a 45 degree test tone which gives X1.4 more output, or around 4mV, as originally quoted in the review. So there are two discrepancies here: the test tone I used was different to Denon's and, for some reason, Denon's quoted output figure seems unusually low. Now to compatibility. I spoke to Ian Harrison and it was his view that because you would have to turn volume right up, you may well decide the two were incompatible. Being careful, and mindful of a possible complaint (a returned cartridge cannot be resold) he erred on the side of caution, which is understandable.

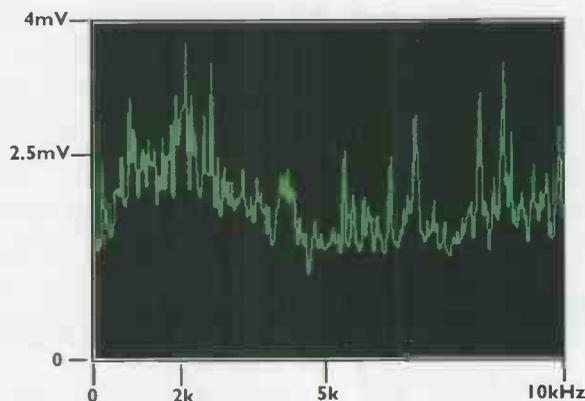
To know whether a cartridge has enough output to fully drive an amplifier (i.e. its maximum output) is difficult. This figure is commonly quoted for CD (2V), but for LP there is no fixed upper limit, because it's an analogue system. I ran our spectrum analyser fast (real time) and measured output direct from the DL-110,

cumulatively averaging a number of discs. Maximum output hit just 3.5mV maximum, but that was from just one peak. Typical level around 1kHz was 2.5mV, so with volume right up to maximum you'd just be able to drive a VA-50 to full output.

By this definition, the DL-110 and Aura VA-50 are only just compatible. However, few people run an amp. to full output and in practice you would probably back volume off a bit. If you have a small room and listen at 'normal' levels, then you might back it off quite a lot.

So there are a lot of variables, many beyond firm prediction. You can run the two, but you may not be happy at having to crank volume up, even though there's nothing wrong in this.

Pianos are notoriously difficult to record and place firmly within an orchestra. You may find that piano moves because of the mixing engineer's attempts to keep it in apparently correct proportion to the orchestra. This is the most likely cause of your problem. Since the K5 is pretty vague in its imaging, going to a more precise cartridge like the DL-110 is likely to highlight the effect. However, you will get a good overall sound quality improvement either from the Denon, which is bright, clear and precise, if a little cold, as well as bland in its bass, or from a Goldring 1022GX (my preference), which has body, strong and articulate bass, and sonorous treble. Both give clear, stable images. **NK**



Spectrum analysis of output from DL-110. Only the occasional music peak exceeded 2.5mV, mainly around 2kHz (at left) and 8kHz (at right). Otherwise, maximum output hovered around 2mV or so from 1kHz to 3kHz. So the DL-110 only just develops enough output to full drive an Aura VA-50, or most other amps, if it comes to that.

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- Bob Dylan - Greatest Hits Vol 3 (with one new song) £9.95

Back in stock Ted Hawkins - Next 100 Years £9.49

In order to fully appreciate the latest round of improvements to DNM's Ringmat, let me first recap on the history of the device.

The Ringmat turntable mat was first devised for the company's own, no compromise, Reson Rota turntable. DNM were looking for a new type of turntable mat that would offer minimum distortion to the sound, and optimum contact between record and platter. DNM found the best system to be a series of supporting rings. They took this several stages further by evaluating the optimum spacing of rings, and material used. The end results were cork rings of 140 and 230mm diameter on the upper face, and 220 and 240mm on the lower, supported by an impregnated, low resonance, paper.

The original Ringmat is still available in three different thicknesses. The thickest 3mm 330 is the ideal. But for those with non-height adjustable arms and thin (or no) mats, 1.8 and 2.4mm versions are available.

The latest improvements, so far at least, apply only to the 330. I've been using an original 330 for almost a year now, so I was particularly interested to see actually what had changed to justify the price increase from £35 to £40. The main differences are the addition of a further 117mm diameter ring on the lower face, and a paler, paper support which is said to further reduce resonance. Attention to detail even extends to a second sticker around the spindle, to balance the minimal distortion created by the original sticker. The construction is also said to have improved, with a new technique to cut the cork rings more precisely.

I found the original Ringmat to be a worthwhile accessory, but not with all turntables. There seems to be no rhyme nor reason to its compatibility, with excellent results on Linn, Thorens, Roksan and Pro-ject turntables, yet I noticed no effect whatsoever with a Manticore turntable. The MkII doesn't change this, the best advice being, try it and see. It does pose a further compatibility problem, though, in that the extra ring is as good as useless on split-platter turntables where the inner platter is a good deal lower than the outer. According to DNM, turning the mat upside down so that there is a middle ring in contact with the outer platter, is not advisable. However, there are spacers on the way to help overcome this problem, and even if there's no centre ring contact anyway, the new mat should still sound better.

This product really does have to be heard to be believed. On most turntables the bass seems to instantly reach down an octave lower, with noticeably better control and



DNM Ringmat 330 MkII

Dominic Todd experiments with DNM's Ringmat, a turntable mat designed to get the best from your records.

extension too. Dynamics, also, are less compressed, which is noticeable on dynamic material such as orchestral and brass pieces. Pop and rock material also benefits with faster, punchier drum beats and cleaner transients. Also notable, but to a lesser degree is a purer treble and mid-range, with more space around individual instruments and vocalists.

There is also a marginal increase in the sound stage width and depth with most types of music. What's more, none of these improvements are ones you'd have to listen hard for, and as yet, I've found no adverse effects, even with turntables that show no difference in sound.

Improvements on the MkII aren't

massive. If you already have one then I shouldn't worry about upgrading it. Yet, for those considering a 330, the extra £5 is worth it if you have a flat-plattered turntable and can make use of the extra ring. At least try the Ringmat, especially if you're still using a thick rubber mat. At present it's the best accessory under £40 I can think of ●

Ringmat 330 MkII
Ringmat Developments
P.O. Box 200,
Brentwood,
Essex. CM15 8QG
Tel: 0277 200210

£40

Philips, as the logo on the handbook reminded me, are the inventors of Compact Disc. And, in true Philips fashion, they've not left it there. With High Density CD possibly on the horizon the latest chipset from Philips, seen here in the CD740, could well be the last conventional bitstreamer.

As well as the new TDA1549 BCC (Bitstream Continuous Calibration) converter there's the, now universal, CDM 12 transport and a useful co-axial digital output. The Philips can also boogie with the best of them when it comes to gizmos. Despite only costing £169.99, the CD 740 manages to pack in remote control, a variable output, and enough

tape editing, programming features and display messages to keep even the most frenzied button-pusher happy. The only surprising omission is Philips' ubiquitous Favourite Track Selection.

Obvious rivals include the NAD 501 at £180 (the stripped-out audiophile choice) and the £140 and £190 Grundig CD1 and CD2 machines. Interestingly, all three of these machines use Philips components, although of a previous generation. The NAD also uses the older Philips transport, but that doesn't stop it being the finest sounding CD player under £200 in my opinion. Does the sub-£200 CD player market have a new king in the shape of the CD740? Read on.

With a good recording, such as Jennifer Warnes' Famous Blue Raincoat I was initially impressed by the refinement and subtlety of the Philips, bearing in mind its price. Vocals were smooth and grit-free, whilst excessive sibilance on female vocals didn't seem to trouble the 740. The overall balance was a touch lightweight in the bass region, yet this is a common trait of this class of machine, often due to the similarly lightweight, and cost-cut build quality. A good interconnect and isolation shelf go a long way to rectifying this shortfall, though. Although the mid-range was well defined and expressive, it did suffer from a slight veiling. The effect wasn't great, but it



BITSTREAM FLYER



Dominic Todd
is sure that Compact
Disc creators, Philips, can
stay in the hunt with their new
budget-class CD 740 CD player.

was akin to, say, leaving the loudspeaker grille on. Other models, such as the NAD 501 and 502, do sound more involving and less distant in this respect.

Higher frequencies were somewhat at odds with the natural mid-range and bass. Although instruments in this region were produced just as cleanly and precisely, the general effect could become rather synthetic. It reminded me of the way budget CD players used to be, but without the laboured brightness. Having said that, the Philips still handled higher frequencies delicately and without the graininess that can make some machines uncomfortable to listen to for long periods of time.

Refined though the Philips is, this didn't become too much of a hindrance for music with a bit more clout, or in this case, Grunge. Blur's Park life was produced the way it should be. Vocals grated and guitars fizzed, as the Philips gripped the music firmly. Despite this though, the Philips always seemed to keep its distance somewhat. It carried out its duty, but without true conviction. Again, it was a lack of sparkle and slight artificiality that kept the CD740 from quite cutting it. Of course, such a balance does have benefits too. For prolonged listening

sessions the Philips proved easy on the ear, having no rough edges. The smooth and refined balance is also appropriate on a machine of this price, bearing in mind the often uncouth nature of likely partnering 'speakers and amplifiers.

With more highly produced pop, Simply Red's Stars in this case, the Philips seemed to be more at ease.

“ Philips have been respected for their machines from day one, especially in the budget sector. ”

Saxophone was full-bodied and not too weedy. There was also pleasing differentiation between multi-layered vocal passages, which allowed the lyrics to be expressed clearly, and easily followed. The detail was better than would be expected for a machine of this price, yet there was no chance of it rivalling more expensive machines, such as the Marantz CD 63, in this respect. I wonder if a little more detail retrieval could have been sought, if Philips hadn't gone for such a smooth balance.

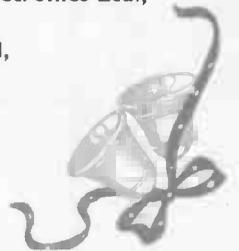
It was no surprise to find the Philips putting up a good performance. Philips

have been respected for their machines from day one, especially in the budget sector. The CD740 is yet another solid performer which I would rank up with some of the best machines in this price range. In particular, it brings new levels of refinement and coherence to this price bracket. Having said that, the slight veiling and occasional artificiality

mitigate against greatness in a class which, after all is packed with some very competent machines indeed. For me, the NAD 501 is still the best CD player under £200. But if you must have remote control and a strong feature count, then the Philips presents a very strong case for

itself, and would make a sensible purchase ●

Philips CD 740 £169.99
Philips Consumer Electronics Ltd.,
City House,
420-430 London Road,
Croydon,
Surrey, CR9 3QR
Tel: 081 689 2166



MEASURED PERFORMANCE

As you would expect from Philips, inventors of the compact disc, even this budget CD740 turns in a superb measured performance. Distortion was low at all signal levels, especially at low ones where its linearity was excellent. Pink Triangle's Ordinal, itself using Philips' DAC-7 chipset, has previously been one of the best converters we have measured, and the Philips gets extremely close.

At -30dB, a signal level chosen to represent a typical music signal, the CD740 has just the smallest amount of 2nd, 3rd and 5th harmonic distortion. This will affect sound quality little, and I'd expect the Philips to sound very clean and smooth as a result.

At a lower level of -60dB the CD740's distortion rises to 0.38%, equal to that of the Ordinal, giving it an impressive dynamic range of 110dB.

The frequency response of this player looks a little odd, having a kink at 200Hz, below which bass level rises. This, along with the slight fall in treble output, should give the CD740 a solid, dynamic sound with a sweet treble, free from sharpness. I suspect that this balance may have been deliberately engineered for budget systems, but I also suspect that the CD740 will

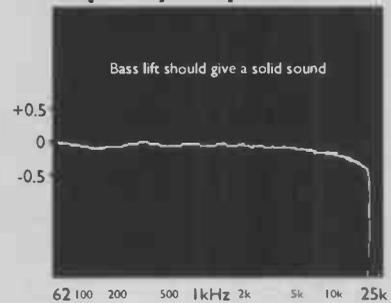
sound equally good in a more expensive mid-range system.

The Philips CD740 displays high quality engineering. There is nothing to fault in this player and - its frequency response appears to have been cleverly engineered for a good subjective sound. **DB**

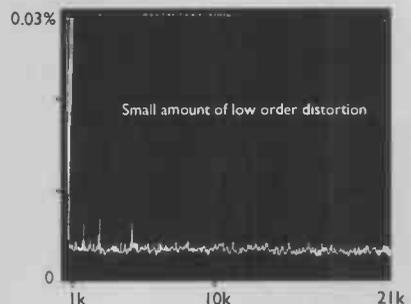
TEST RESULTS

| | | |
|--------------------|-----------|-------|
| Frequency response | 4Hz-22kHz | |
| Distortion (%) | | |
| -6dB | 0.009 | 0.008 |
| -30dB | 0.010 | 0.012 |
| -60dB | 0.38 | 0.39 |
| -90dB | 30.1 | 33.7 |
| -90dB dithered | 7.0 | 6.6 |
| Separation (dB) | left | right |
| 1kHz | 130 | 129 |
| 20kHz | 122 | 120 |
| Noise | -119dB | |
| with emphasis | -119dB | |
| Dynamic range | 109.9dB | |
| Output | 2.13V | |

Frequency Response



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Hi-Fi World magazine - Alan Sircom - February 1993

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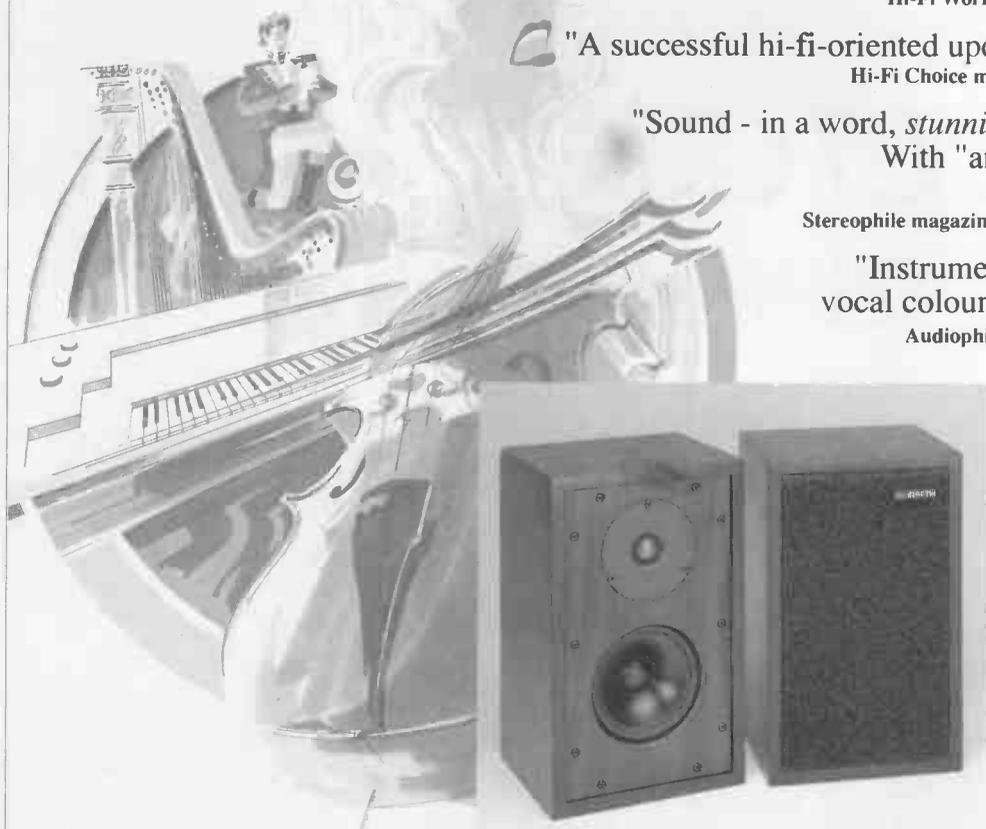
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Stereophile magazine (USA) - John Atkinson - December 1993

"Instruments had near perfect tonality; vocal colour and intonation is excellent."

Audiophile magazine - Eric Braithwaite - July 1993



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Only two years ago, a three-head cassette deck for under £250 would have been excellent value. Since then, however, DCC, Minidisc and Dolby S have been snapping at the heels of conventional cassette decks, at this price point and above. So where does this leave Dolby B/C equipped three-head cassette decks such as the Grundig CF4?

Well, the fact is that no matter how good DCC and Minidisc may be, there simply isn't the software to back up the hardware - recorders and players. But Dolby S is the biggest challenge to any conventional

cassette deck, even though there is still a very strong argument for using no Dolby at all, especially on pop or rock music; as proof of this, just listen to a good recording from a Nakamichi. So despite initial doubts about the viability of such a product, the Grundig CF4

enters a market place in which there is still scope to do well, in spite of the apparent competition.

The Grundig gets off to a good start too. It's solidly constructed, with a metal flap concealing minor functions, and smartly presented (gracefully free of silly

logos and the like). The horizontal loading mechanism is similar in principle to the one used by Denon, reducing the height of the unit. The cassette cannot be seen, which can make position-finding difficult, but a music-search system has been fitted -

LUCK OF THE DRAW

In a tightly fought cassette deck market, Dominic Todd assesses a new drawer loader, Grundig's CF4.

MEASURED PERFORMANCE

Grundig have fitted this deck with a good combination head, comprising separate record and replay elements siamesed together. It allows bias to be set by ear, by switching from the incoming signal to the recorded one. The head has a wide, flat frequency response with all tape-types, given correct bias, so a natural tonal balance can be achieved. The CF4 also has superb tape compatibility too, especially since metal bias can be altered enough to accommodate even the most coercive metals - those with a treble peak, unless high bias is applied (TDK MA-XG, Sony Super Metal Master).

Distortion was low right across the band, even at low frequencies, suggesting clean bass. Lack of serious peaks and troughs in low frequency response, due to a well contoured head, plus a +3dB peak at 15Hz, promise smooth bass too. Head overload figures were very respectable all round; Grundig have set bias high for metals, and the 0VU peak record level has been set unusually low (below Dolby flux), so metals should be recorded right up to maximum (+8) on the small record level indicators. Ferric and chromes can hit +5 or so before serious muddle due to overload sets in.

Record gain was correctly set to account for the sensitivity of modern tapes, giving accurate Dolby tracking. Unfortunately, head azimuth on our sample - different from the one Dominic Todd auditioned - wasn't set properly. As a result treble output fell steeply, measuring -2dB at 10kHz, ensuring a dull sound with pre-recorded tapes. This is a fairly shameful performance in a deck from the inventors of the cassette (Grundig, a German

company, are owned by Philips). Both Grundig and Philips know all about the relevant European (IEC) Standards, IEC test tapes (made in Germany by BASF), etc.

Input sensitivity was normal at 120mV and output healthy at 700mV.

Grundig's transport displayed very tight basic speed stability: it didn't wander at all. However, regular cyclic capstan wow was a real problem. Our analysis clearly shows this as very high 'shoulders' (FM modulation sidebands) displaced by +/-6Hz (capstan rotational frequency) around the basic test tone peak at right in the picture. This will 'dirty' apparent pitch purity, by adding a warble to everything.

After lengthy running in, there was little flutter, ensuring a reasonably clear sound free from the peculiar 'papery' colouration characteristic of cassette. In this area, the transport worked well.

In a nutshell, when auditioned our test sample deck sounded dull with pre-recorded tapes, had a slight warble noticeable mainly with pure, sustained notes (flute, some guitar, piano, etc) but matched all tape-types well and otherwise produced balanced recordings of good quality. **NK**

TEST RESULTS

REPLAY (pre-recorded tapes)

Frequency response (-2dB) 30Hz-10kHz
Speed accuracy +0.8%
Hiss (70uS, Dolby out) -59dB

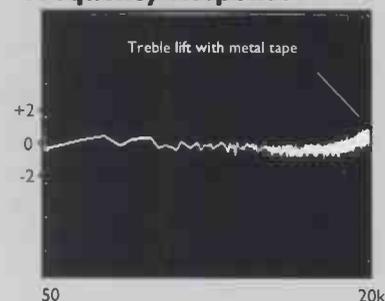
RECORDING (blank tapes)

Frequency response (IEC Primary Refs.)
ferric (IECI) 20Hz-20kHz
chrome (IECII) 20Hz-20kHz

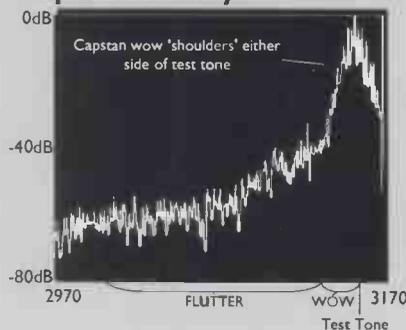
| | |
|------------------------------|------------|
| metal (IECIV) | 20Hz-20kHz |
| Separation (1kHz) | -55dB |
| Distortion (315Hz) | 0.5% |
| Hiss (70uS, Dolby out) | -56dB |
| Speed variations (DIN total) | 0.13% |
| Flutter energy (3-3.13kHz) | -30dB |

| | | |
|----------------|------------|------------|
| MOL/SAT | (IEC Refs) | 315/10k |
| IEC I | (ferric) | 2.6dB/-6dB |
| IEC II | (chrome) | 2dB/-5dB |
| IEC IV | (metal) | 5dB/-2dB |

Frequency Response



Speed Stability





useful for pre-recorded tapes in particular.

Other than that, the CF4 is pretty much what you'd expect, with no serious omissions, and a few unexpected features such as an extinguishable display.

For a cassette deck of this price to succeed, it must be able to make reasonable quality recordings on all types of tape, including Metals. Personally, I prefer Maxell tapes and in this case I used an XLI-S (ferric), XLII (chrome) and MX (metal) tapes. All the tapes are good quality, if not in the double-figure league price of some metals.

A Chesky jazz sampler provided a test of the deck's stability on piano and violin, and its ability to reproduce clean and powerful dynamics. On ferric, the CF4 had an excellent grip on the music, with the solidity of the drums being faithfully reproduced. The violin did show signs of wow and flutter. But whilst not in the Nakamichi league, it never became tiring, and considering the CF4 is only a single-capstan machine, the stability was par for the course. Other than that, I found it quiet enough to get away without using Dolby. That having been said, Dolby B acquitted itself well and made up for Dolby C's performance, which was somewhat turgid, to say the least. The recording did lose some of the space around instruments in comparison to the CD, yet instruments were still clearly distinguishable and solidly presented in their respective stage positions.

Chrome tape benefited in sounding more detailed than ferric, although this

was at the expense of a slight graininess with violin. Other instruments, such as the guitar, though, showed improvements in realism and texture. From experience, I would have thought that a smooth chrome would suit the CF4 best, such as TDK SA or Maxell XLII-S (rather than the standard XLII).

The enhanced spaciousness brought about by switching to chrome tape did also have the unfortunate effect of highlighting the lack of speed stability. The saxophone wavered more than I would have liked (more than an equivalent Aiwa or Denon I should think, too). As I mentioned before, though, it's not a serious problem, and one that could go almost unnoticed on music less critical of pitch.

Metal tape reproduction had the expected clout and authority, but this came at the expense of a somewhat constrained top-end that made the violin sound oddly boxy. Vocals could also sound metallic, where they had previously sounded refined and natural using the ferric and certain chrome tapes. Although the Grundig was by no means a complete disaster with metal tape, the improvements were sometimes patchy, and overall I felt best results came from a smooth chrome or good quality ferric.

The other aspect of a cassette deck is, of course, its reproduction of pre-recorded cassettes. For this purpose I used a fairly well worn copy of Joe Jackson's *Laughter and Lust* and a fresh copy of Gloria Estefan's *Cuts Both Ways*. The CF4 proved to be

surprisingly capable in this respect, especially with the Estefan tape. The well-balanced and open sound suggested that the heads had been correctly aligned at the factory. With Joe Jackson the deck still managed to inject some life into what is a well worn tape. It didn't make a meal out of the tape drop out, either, sounding firm and stable, somewhat in contrast with the earlier (admittedly more critical), recordings. Overall, pre-recorded cassettes sounded clean, with fine imaging and depth, although lacking that final incisiveness and power that makes Nakamichi and some other similarly priced machines sound that bit more convincing.

I must admit to being slightly disappointed by the Grundig's sonic performance. It showed little inspiration, yet by the same token had no serious flaws. My main concern is the slightly wobbly transport. Perhaps a dual-capstan is in order? If ever there was a good all-rounder though at this price range, then the CF4 is it, backed up with excellent build quality and slick controls. Yet whether it alone is enough to halt the tide of new DCC, Minidisc, and Dolby S equipped machines is doubtful ●

Grundig CF4 £249.99
Grundig International Ltd.,
Mill Road,
Rugby,
Warwicks.
CU21 IPR
Tel: 0788 577165

I heard the name indistinctly in a transatlantic telephone conversation with a reader in California. "Stanton" rang a bell, but the garbled "??100" model number did not. As fate would have it, I discovered what the missing prefix was soon after when Jerry Raskin's Needle Doctor of Minneapolis (that's up the top, by the Great Lakes), USA, faxed us. There it was, the Stanton WOS100 cartridge, priced at \$170 - top of the range. Being a long-term user by choice in the past of the 680EE, then the 681EEE, I asked for a review sample straight away.

Why? Well, the Stanton 681EEE was a great sounding cartridge. It had none of the hype that Shure managed to put behind the V15 as it went through various incarnations, but it did have a clearer, more concise sound in my view. It was very well engineered too - I never worried about mistracking, distortion, groove damage or what have you, and where Empires and Shures tracked at feather weights - cough and you faced a £100 stylus repair bill - the Stanton needed a slightly more sensible 1.3gms or so. For anyone still interested, the flat frequency response 681EEE is still available in MkII form, for \$79 from Jerry Raskin's.

But this review is about the W.O.S., according to Jerry Raskin's listing or, alternatively, the Collector's Series 100 from Walter O. Stanton according to Stanton's box and literature; I'll call it the CS100 for this review.

Whilst the Collector's Series category is new to me, much about this cartridge

was familiar. It has a brush, best immediately removed in my view, which you do by extracting the stylus assembly and turning the brush through 90 degrees. Stanton still obligingly provide a storage box for it, as well as a peculiar screwdriver. They continue to provide plastic fixing washers for the body which, for rigid fixing, should not be used either.

"Listening to the CS100 was like picking up on a story I left ten years ago."

And finally, note b) on p9 in the owner's pamphlet is all-important, I've found in the past, to prevent earth loops and hum occurring with this metal bodied cartridge. It's an obscure problem that has traditionally blighted metal bodied Stantons - and which their literature makes too little of in my view. But then, the literature looks just the same as it did twenty years ago. Little seems to have changed, other than the model number.

In most British turntables, where the

arm and turntable metalwork are bonded together electrically and earthed either by an independent wire or through one signal cable screen, this Stanton will form a hum loop. It's caused by dual-earthing: the body is earthed and it is connected, via a strap that is easy to miss, to the signal earths as well. Stanton say that "For plastic tone arm heads (eh?) leave the ground-strap as is. In metallic tone arm heads remove the ground-strap when hum is encountered". Good advice - and more good advice is to keep away from plastic tone arm heads, and especially liquorice ones.

The CS100 weighs a normal 5.5gms, meaning it will balance out in most arms; it will also fit them, since it is conventionally shaped. This is a normal moving magnet cartridge with plenty of output. But if my memory serves me correctly, the CS100 has an unusually short cantilever compared to other Stantons and it's sapphire coated for greater rigidity - a special feature of this model.

The stylus is a nude Stereohedron II (Stanton's own line contact form), tracking weight 1gm nominal, but I use 1.2gms, and capacitive load 275pF, but the less the better in fact - see Measured Performance.

So, potential earth loops apart, the CS100 is normal enough, it'll fit into and balance out in just about any arm.

SOUND QUALITY

Listening to the CS100 was like picking up on a story I left ten years ago.

Minnesota Magic



As a long-term fan of Stanton cartridges, Noel Keyword pricked up his ears on hearing about their top-flight CS100, available from Minneapolis, USA.

Stanton's had a short, curved cantilever, to reduce transmission losses. An oft quoted example used to justify the benefits of this approach was the Decca London, whose hair-trigger transients were thought to be attributable to signal sensing at the tip. The new CS100 continues the story. It has one of the shortest cantilevers I've ever seen, sapphire coated for even better rigidity. Does it work?

In a nutshell - yes. The CS100 is one of the fastest and most detailed cartridges I've heard for a long time, very impressive on toms and all percussion, super-tight on bass lines, all delivered in vivid stereo. By this, I mean that extreme left and right images were reproduced with a clarity and strength beyond anything that is common. I was struck by the tightly controlled yet colourfully resonant bass intro to Tracey Chapman's Material World, the explosive crack of the drums and the stabbing toms in the background. The CS100 has lightning speed and fierce dynamics; it has grip aplenty and many, many listeners are likely to go for it on this basis alone.

In days of yore, when LP was a force, cartridges of this nature were fave raves with Linn and Naim buffs, who gravitated to Audio Technica. However, in my view Stanton - never a common name in Britain - do it better. The CS100 offers a cleaner, tidier sound than the Audio Technicas that were once so popular. It has all the speed, tightness and dynamism, but less of the grain. However, the CS100 does push hard against limits of acceptability in one respect: it is glassily bright in its sound.

There were times when the CS100 hissed at me; there's no getting around the fact that you can hear its raised top-end. Sharleen Spiteri's vocals were light on Texas, which is a fairly balanced sounding album. Bill Withers superb Use Me, covered by Grace Jones on Nightclubbing, kicked off fast - this cartridge reproduces Robbie Shakespeare's bass lines beautifully, if with some loss of low end weight. Percussion was clean and light, but Jones' voice could spit. Direct Metal Masters, like Talking Heads Speaking In Tongues, often sound clanky, but the hardness was accentuated by the CS100. Generally, the cartridge seemingly lightened timbre, and although it took some of the body out of singers, it didn't reduce tonal colour - in fact, it could often sound quite rich in its portrayals. It does, however, have a glassiness about its upper mid-band.

As I mentioned earlier, the CS100 delivers pin sharp stereo, instruments and vocalists positioned firmly and distinctly across the full width of the stage, from extreme left to far right. With panning and complex percussion it

brought a spotlight to position.

Seeing its response curve and knowing that Stanton's aren't warm or wooly, I made sure the CS100 fed a

The CS100 is one of the fastest and most detailed cartridges I've heard for a long time.

fulsome sounding system able to complement it, driving Heybrook Quartets from our 300B valve amplifier, with various pre-amps, valve and transistor, up-front. It was mounted in an SME 312 12in arm on a Garrard 401. It has a little too much top-end output to be easily balanced though. In a bright

sounding system the CS100 could become overpowering - it's not a cartridge for all seasons, and this needs to be borne in mind.

But, hi-fi systems come in all shapes and sizes; one that needs a top-end tonic and has perhaps a little too much bass would sing with the CS100. It's specialised and perhaps a little extreme in one way, but as is so often the case with such things, the cartridge has significant strengths to balance this one weakness ●

CS100 cartridge, price \$407, supplied by Stanton Magnetics and the Needle Doctor, 419 14th Ave SE, Minneapolis, Minnesota, USA. Fax 612-378-9024; Tel 612-378-0543. Toll free order line within the USA 1-800-229-0644.

MEASURED PERFORMANCE

Stanton recommend, as they always have, 275pF loading for the CS100. With this, the cartridge develops a broad treble peak of +2.5dB, from 4kHz upwards. This will push out a lot of treble energy, ensuring a bright sound. Also, because the tweeter of most two-way loudspeakers works from 3kHz upwards, the CS100 kicks tweeter output uniformly up by 2.5dB, which in many cases is likely to cause an incohesive sounding presentation. Broad band emphasis like this is, invariably, bad news.

Increasing the capacitive loading upon the cartridge had no useful effect upon this response peak but, luckily, decreasing it did. Our lower trace in the response analysis shows that the CS100 then peaks up above 12kHz, albeit strongly with a +5dB lift. However, not only is the ear less sensitive at higher frequencies, perceiving this balance to be less bright (if more sharp), but also many loudspeaker tweeters start to roll off above 16kHz or so, providing some compensation.

Stanton, with the old 680EE and later 681EEE, used to engineer a flat frequency response into their top cartridges. Sadly, the company enclose a graph suggesting flatness with this model, but close inspection shows it uses a compressed vertical scale that disguises the same characteristic we portray, but more vividly.

Now on to the good news. The CS100 is a great tracker, clearing all test tracks available, even the very toughest. It also has low lateral distortion of 0.7%, which affects centre-stage images. However, because the short cantilever exits the body at a steep angle to give good disc clearance, vertical tracking angle was high at 31degrees. This gave rise to strong second harmonic distortion of 5.5%, which affects left and right images. It sounds bad, but in practice it is relatively innocuous,

raising timbre slightly.

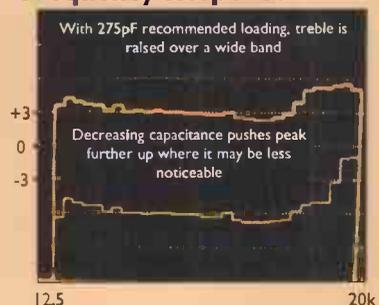
Channel separation was very high at 35dB and output also very high, especially for a quality cartridge, measuring 6.8mV at 5cms/sec rms.

I find it a little strange that the CS100 has a frequency response far less flat than top Stantons from the 70s and early 80s, but otherwise it measures extremely well. Providing it isn't partnered with a bright system, it should give fine results. **NK**

TEST RESULTS

| | |
|---------------------------------------|------------|
| Tracking force | 1gms |
| Weight | 5gms |
| Vertical tracking angle | 31degrees |
| Frequency response (+/-3dB)20Hz-20KHz | |
| Channel separation | -35dB |
| Tracking ability (300Hz) | |
| lateral | 90µm |
| vertical | 45µm |
| lateral (1kHz) | 25cms/sec. |
| Distortion (45µm) | |
| lateral | 0.7% |
| vertical | 7.8% |
| Output (5cms/sec rms) | 6.8mV |
| Channel imbalance | 0dB |

Frequency Response



IN THE FEBRUARY ISSUE

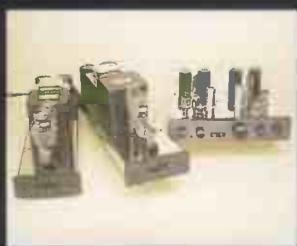
Welcoming in the new year, next month's issue of Hi-Fi World is full of new and exciting equipment for the serious hi-fi enthusiast. But, as regular readers will know, that's not all you get with Hi-Fi World. There'll be features, readers' letters and queries, news from the industry as well as a return to our FREE DIY Hi-Fi Supplement. Here's just some of what we hope to bring you.

MARANTZ PM43

Joining the 'Softline' range of electronics from Marantz is the new £199 PM43 amplifier. We take a listen.

CARY 300B SINGLE ENDED

Imported by The Audiophile Club, these American 300B single-ended monoblocks and matching pre-amplifier are now available in the UK.



AURA TU-80

Replacing one of our old favourites, the TU-50, is the new Aura TU-80 tuner. Does it still offer the sweet and clear sound that we liked so much from its predecessor?



MAGNEPLANAR MG 10

Also from the States, a panel loudspeaker from Magneplan. Slim, elegant and with the promise of clear and open sound.

COMPETITION - THREE TOP CD PLAYERS FROM ARCAM

Looking to get into CD? Or upgrading to something better? Either way we have three superb CD players from A&R Cambridge that offer first class sound. First prize will be the top of the range Delta 250 transport complete with discrete Black Box 500 convertor. Second prize comprises a Black Box 50 convertor for those who want to upgrade, and third prize the new Alpha One CD player. Don't miss it.

DENON DRM-740

Replacing Denon's well-received DRM-710 cassette deck is the DRM-740, which with a retail price of £259.99 offers a three-head, three-motor, dual-capstan arrangement for top quality sound.

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DIY SUPPLEMENT No. 12

We return to the DIY Supplements next month, just in case you DIYers were getting worried, and it's full of exciting projects. Of interest to budding loudspeaker designers is the IMP loudspeaker measurement system, an affordable system designed to run on the PC that comes from Old Colony Sound Lab in the States. There'll be plenty more though, as well as the usual DIY letters, kit news and book reviews.

Lots of activity this month as Christmas approaches. We had a busy time at the Scots Hi-Fi Show, demonstrating our valve amplifiers and KLS-3 loudspeakers, as well as demonstrating HDCD - that's High Definition Compatible Digital from the USA - for the first time in Britain. It was flown in by Pink Triangle, who will be making and marketing the first convertors available - reviewed next month.

My thanks to all those enthusiasts who turned up to see us, especially those of you who travelled hundreds of miles, from as far as Ireland, North East England and the Highlands. After the circus of Live 94 the Scots Show was a fascinating contrast, drawing the most knowledgeable crowd I've ever had the pleasure of meeting.

The Christmas issue raises another kind of activity - sitting in dark corners of restaurants, Pinot Noire nearly gone and another on its way (shurrup Eric), trying to think up crossword. I say "trying", 'cos most didn't make it. Next day, I realise the questions are incomprehensibly obscure, the answers beyond the wit of ordinary man, including those blessed with a lifetime's anorak wearing. In the end, Eric redeemed himself and paid for his meal - as well as his contribution to French vineyards - by coming up with the Whodunnit (see Supplement). For my part I decided to research a few hi-fi biographies, from around the world, helped by Andy Grove. All you have to do is fit the names to the biogs.

1. Started The Acoustical Manufacturing Co. in 1936 and introduced Britain's first and finest electrostatic loudspeaker in 1957. Author of numerous theory papers on this subject and on electronic design in high fidelity. Fêted worldwide as one of hi-fidelity's most imaginative engineers. Now retired.

2. A brand of valve carried his name - a fitting tribute for an Italian engineer who, in 1901, transmitted a signal across the Atlantic from Cornwall to Newfoundland. He subsequently set up companies to market his discoveries in the radio field and his name is used commercially, in Britain, even today.

3. His parents moved from Germany to South London. As a British subject he filed a patent in 1926 for the Tractrix horn and also attempted to file patents



Reflections from Noel Keywood kaleidoscope

for the dynamic loudspeaker, only to find he'd been beaten by a few months by two Americans.

4. Born in the USA, he lectured at Sydney University, Australia, on acoustics and loudspeakers. In conjunction with A.N. Thiele developed a mathematical routine that formalised loudspeaker design, allowing it to be number crunched by calculators and computers. Moved to KEF in Britain, but now works for Harman in the States.

5. A Franco-Japanese journalist who brought now fashionable Japanese super high-end to the West. During the Seventies he worked for the French magazine "Revue du Son" reporting from Japan. This is where he came into contact with single-ended triode amplifiers and horn loudspeakers. Now edits his own hi-fi magazine, L'Audiophile, in France

6. He designed and now produces the world's most expensive amplifier, priced at £250,000. Silver, silver and more silver is his motto

and you'll find it everywhere in the products. A Zen like attention to detail, characteristic of the Japanese, results in the use of solid copper chassis, handmade capacitors, handmade transformers, and of course silver wiring.

7. The American inventor who spoke the immortal words "Mary had a little lamb" in 1877. He invented the carbon microphone and pioneered the recording of sound on a tinfoil cylinder. He was involved in a lengthy legal dispute with a British engineer over the invention of the electric light.

8. German scientist, 1821-1894. Researched human perception of complex sounds and devised a particular resonator which bears his name. Many loudspeakers rely on this resonator for their operation. The famous physicist Heinrich Hertz was his pupil.

9. Two Americans who developed the first dynamic drive unit seen in most of today's loudspeakers, patenting it in 1925.

10. An Austro-American mathematician who revolutionised modern mathematics with his theorem. It states that in any mathematical system there must always remain true equations which are unprovable by the axioms of that system, thus lending weight to the argument that some equations are provable only by a conscious entity (i.e. not by a computer or a machine).

11. A Dutch physics lecturer who turned his hand to audio manufacture, producing a new long-

contact stylus profile in 1976 and more recently carbon fibre audio cables. Manufacturers one of the world's most expensive cartridges, known as the Grasshopper.

12. Moved from Wharfedale Loudspeakers to an engineering foundry in Kent in 1961, where he founded one of Britain's most famous loudspeaker companies, known for its depth of research. Bought a giant Fast Fourier Transform analyser, big enough to fill a room and used in America's submarine development programme, to give his company a near-unchallengeable advantage. Now retired.

Jean Hiraga
Hiroyasu Kondo
Thomas Alva Edison
Guglielmo Marconi
Hermann Helmholtz.
Kurt Gödel
AJ van den Hul
Chester Rice
Peter Walker
Raymond Cooke
Paul Voigt
Richard Small
Edward Kellogg

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The great compensations for the blood, sweat and solder that flow when building my own hi-fi equipment is that I am able to "design in" those features I especially require. No amount of shopping around can ever lead to just the right product.

It is because of this that my mind has recently turned to designing a new pre-amplifier for myself, the major design criteria being that any new pre-amp must be able to accommodate the variety of audio sources I wish to control. This has led me to a design I can only refer to as "Maximalist"!

However, although my requirements are unique, on reflection they do not seem especially freakish and I thought, therefore that others might find my engineering cogitation interesting.

Since I built my last pre-amplifier, a major revolution has taken place in hi-fi digital audio. This is aptly demonstrated by the example that my last opus has provision for an analogue line-level input labelled "CD", even though at that stage I did not own a CD player!

Now, two CD players and two DAT machines on, I am getting increasingly frustrated by the lack of facilities on my existing pre-amp. Most of all, I yearn for a digital tape-loop so that I can record directly from CD to DAT or DCC without plugging and re-plugging digital interconnects between my outboard Dacula DAC and the DAT player. (As an interesting aside, I've found the best aspect of digital "cloning" - as digital recording is known - isn't so much the better sound quality the process ensures per se, as the advantage the process confers in obviating the need to set recording levels!). I've listed the design's features in bullet-points:

- 1) Four digital inputs, for CD, DAB (Digital Audio Broadcasting), DAT machine and AUX digital

- input (alright, I haven't got DAB yet and neither have you, but it's coming soon.)
- 2) On-board DAC with jitter reducing front-end.
- 3) Digital tape-loop with copy code stripping (SCMS is a stupid system anyway.)
- 4) Dedicated record/play loop for "Soundblaster" card in/out - (for CD ROM replay and to record wicked samples and embed them in my Windows applications.)
- 5) Tone controls (see me afterwards!)
- 6) Intelligent mute circuitry.
- 7) Off-board PSU.



controls and my argument for them is simple. My existing pre-amp does not have them and I often wish it did! In the long winter evenings, I use a hi-fi system to listen to music, not to enjoy exemplary gain and phase characteristics. If I play an LP or CD which sounds soft or bright or muddy, boomy or thin, I just want to "fix it", not worry about recording deficiencies.

On that contentious subject, I'll leave it for this month. I'll let you know how I get on building and

recorded message

Left by Richard Brice

- 8) Headphone amp.
- 9) Transformer output coupling.

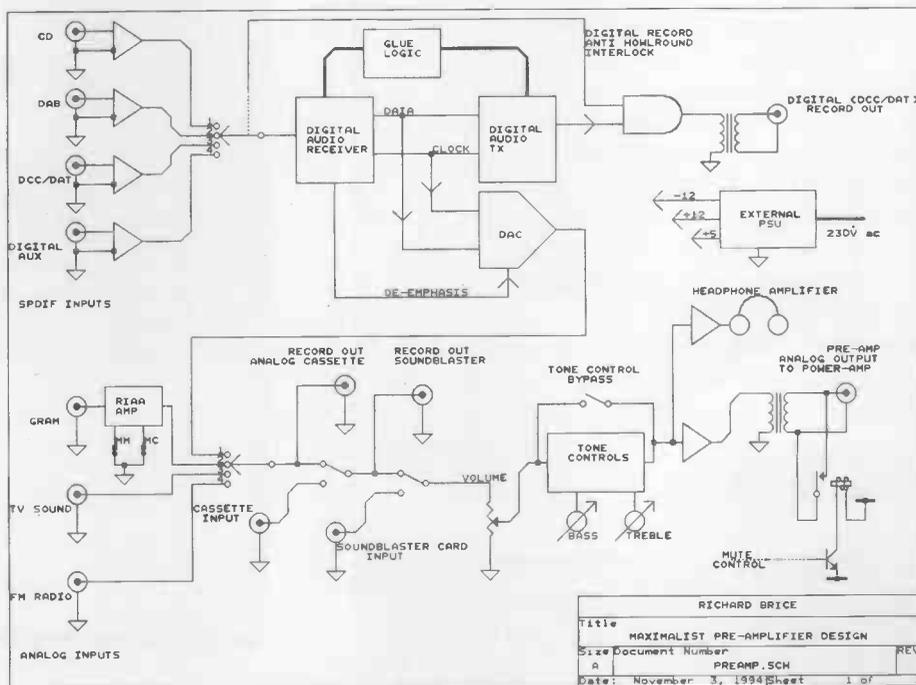
Most of these features speak for themselves, but one or two require a little explanation. The reason for the transformer coupling is as a result of the fixed connection to the "Soundblaster" card. I own several amplifiers and all of them are earthed. Unfortunately, so is my

computer. Result, HUM.

At present I use line bridging transformers on the sound card I/O lines but it strikes me the sensible thing to do is to isolate pre and power, thus ensuring earthed equipment can be connected to the system (note: disconnecting earths instead of using bridging transformers is dangerous - never do it!).

I make no apology for the inclusion of tone

testing this pre-amp. If you have any ideas for extra features you might like to see in a pre-amp fit for the 21st century (I don't intend to build another pre-amp for another ten years) perhaps you could write in and let me know and I'll see if I can suggest how to incorporate it into the design. You never know, perhaps the "Maximalist Pre-amplifier" may even become a construction article!



| | | |
|---------------|---------------------------------|--------------|
| RICHARD BRICE | | |
| Title | MAXIMALIST PRE-AMPLIFIER DESIGN | |
| Size | Document Number | REV |
| a | PRE-AMP. SCH | |
| Date: | November 3, 1994 | Sheet 1 of 1 |

V'audio

Hi-Fi Consultants

ACOUSTIC TOOLS

Last month i discussed hype no.2 and my demo room. Well in some respects the room is now less cluttered, simply because I have had to make room for a number of 'RPG acoustic tools'. This consists of 3 main items,(a) the RFZ wall abflectors which are positioned the sides,(b) skylines which are placed behind the settee to break up rear reflections from a cupboard,and (c) bass traps in the corners to prevent bass boom. I understand that what hi-fi are having their listening room similarity treated. Obviously these are not products that many wives would appreciate but for those of us with dedicated listening rooms, they do provide a means of letting speakers sound more neutral with less influence from the room.

The system is sounding particularly good at present so do come along soon in case it goes off. Trichord research are largely to blame as the combines effect of their clock mod 2 to the mephisto transport, external power supply to the pulsar and their new BNC-BNC digital lead at £64 have had quite an impact.

XMAS PRESENTS

I suppose a skyline or 2 would fit into a big pillow case but one of the new AVI units, such as the 100 watt/channel integrated or the new cd player (both bargains at £800 each) would almost fit into a sock. Being remote controlled you could stay in bed and play! So why not make your xmas and mine complete & treat yourself to the bargains of 1995!! Happy xmas to all our readers.

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The Christmas

There's only one magazine to buy this month if you want to win yourself some hi-fi - Hi-Fi World. Why? Because we've had the mad idea of giving away everything we've reviewed in this month's bumper Christmas issue. Thanks to some frantic telephoning and extremely co-operative manufacturers, there's a whole stocking full of superb prizes to be won.

Please state your order of preference with the prizes. We will be grading the winners on the quality of the limerick -

first, second, third, etc - and allocating the highest selected prize available. So winner (No1) gets first choice. The runner up (No2) gets their first choice, unless the winner selected it. If this is the case, then their second choice will be allocated. Winner No3 will get their first choice too, unless No1 or No2 selected it. And so on.

To choose a prize, please number the products available (see below) in your preferred order. Illegible entries will be ignored, so make sure you write clearly.

No.

- NAD 310 amplifier
- KEF Reference 2 loudspeakers
- Denon PMA-450SE amplifier
- Triangle Comete TZXe loudspeakers
- Rega Radio tuner
- Spondor SP7/1 loudspeakers
- Mission DAD-7 CD player
- Sonic Frontiers Assemblage CD convertor (kit)
- Ringmat 330MkII
- Philips CD 740 CD player
- Grundig CF-4 cassette deck
- Stanton CS100 cartridge

To enter this truly amazing competition, complete the questions and limerick 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 5th January 1995 to:

**THE Hi-Fi World Christmas Competition,
Hi-Fi World Magazine,
64 Castellain Road,
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London. W9 1EX.**

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

The winners will be picked by the Editor. We will endeavour to publish the results in the March 1995 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) How many prizes are on offer for our massive Christmas give away?

| | |
|-------|-------|
| A. 5 | B. 7 |
| C. 12 | D. 15 |

- 2) Pick the figure closest to the total value (recommended retail price) of all of the prizes on offer?

| | |
|----------|----------|
| A. £2000 | B. £4000 |
| C. £6000 | D. £8000 |

- 3) What is the most expensive prize on offer?

| | |
|-------------------------------|--|
| A. Mission DAD-7 CD player | B. KEF Reference 2 loudspeakers |
| C. Spondor SP7/1 loudspeakers | D. Sonic Frontiers Assemblage CD convertor |

- 4) What is the least expensive prize on offer?

| | |
|------------------------------|------------------------|
| A. Stanton CS100 cartridge | B. Rega Radio tuner |
| C. Denon PMA-450SE amplifier | D. DNM Ringmat 330MkII |

Complete the following limerick.

Here's a mad scheme,
Dominic devised,
Twelve items on offer,
as a great prize,

.....

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

COMPETITION RULES AND CONDITIONS OF ENTRY

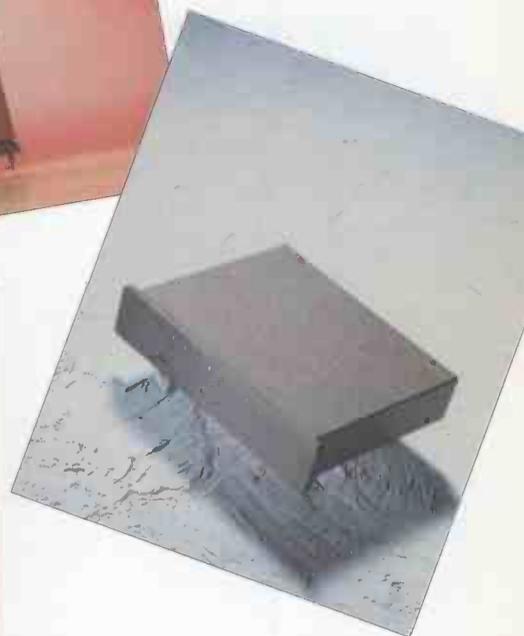
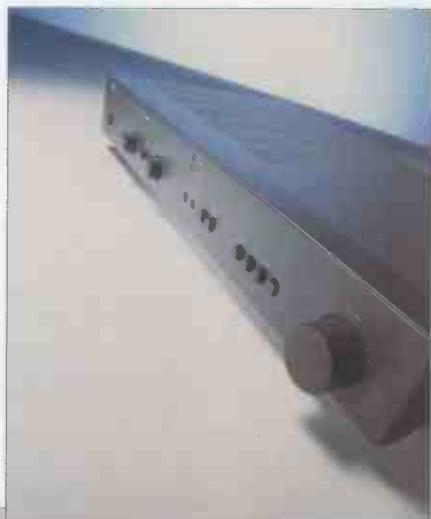
1. Only one entry per household will be accepted. Multiple entries will be disqualified.
2. Because of the size of this competition, where delivery cannot be provided by the manufacturer concerned (at their discretion), winners will be expected to arrange collection of their prize, covering carriage costs if necessary. If you cannot collect the prize it will be forfeited. No alternatives will be provided.

Your name and address may be added to our mailing list only. If you would prefer not to receive details of new products or special offers from us alone please state so on your competition reply form. Hi-Fi World magazine is published by Audio Publishing Ltd.

- Competition

Win these Prizes and more!

competition

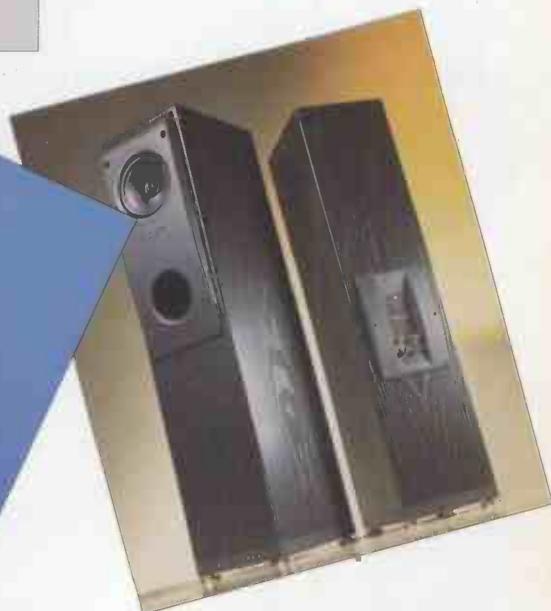


NOVEMBER ISSUE COMPETITION - A COMPLETE AURA SYSTEM

A complete Chrome plated Aura CD system comprising CD-50 CD player, VA-80 amplifier and SP-50 loudspeakers was up for grabs in the November issue, and the lucky winner was:

**Mr. A.G Munday of Seaton
in Devon**

Congratulations and happy listening.



This being our end of year issue, I thought that I'd dedicate my column this month to the past year's events in hi-fi. We started the year not really knowing where we'd end up. Would DIY still be popular, and would valve amplifiers continue their revolution? Would Hi-Fi World still be the best magazine available to the hi-fi enthusiast?

Well, with hind sight, there was never any doubt that DIY would remain popular. Readers are well aware that with a few simple woodworking and soldering skills it's possible to build loudspeakers that blend into their homes, meet their tastes and provide a great sense of satisfaction in terms of achievement too. You can tune them and use drive units that are so advanced, they may never appear in commercial designs, for reasons of cost.

For those skilled in electronics, a wide range of more complex amplifier and CD player kits have appeared over the last year. You can now build anything from an esoteric single-ended valve amplifier, to a CD convertor using the latest digital chips. This gives the DIYer a head start over many manufacturers, the production engineering involved in any commercial product causing a substantial delay before anything actually appears on the market.

An example of this is Audax's High Definition Aerogel drive units. We had samples well before they appeared in Mission's excellent 752s, and to date they are the only commercial drive units available using this new technology. Yet the DIYer can buy the whole range off the shelf, now, before they appear in any other commercial loudspeaker.

Valve amplifiers have further strengthened their market this year too, with more and more audiophiles auditioning the wide range available today. And vintage hi-fi is now more recognised than ever, with Garrards and Leaks gaining in popularity. This all gives the audiophile

a far wider and more easily available choice than ever before. We're not saying that any one of these areas offers the definitive answer, but we do recognise that they exist and that they can contribute to the enjoyment of music, whether it is played on a warm and soft sounding vintage amplifier or an accurate and powerful Naim. Everyone to their own.

Meanwhile the digital format war still continues, and is becoming increasingly confusing to the consumer. Starting at the beginning of the year,

we had Compact Disc, MiniDisc and Digital Compact Cassette as the three main digital formats fighting it out for supremacy. MD and DCC seem to have fallen by the wayside to some extent now and Pacific Microsonics' HDCD (High Density Compatible Digital) system from Pink Triangle will go on sale soon, I believe.

For either DCC or MD to succeed, one had to give way to allow the other a clear path in the market. I'd have thought that the battle between VHS and Betamax would have demonstrated this several years ago. As it stands both still continue side by side and unsuccessfully, neither dominant enough to reign supreme. It's a bit of a shame, because DCC was quite a nice idea, allowing backward compatibility, but gently introducing a new level of recording quality to the millions of consumers already using compact cassette.

As I mention above, the fight is now on for a new CD system. We've already



NAD402 tuner and the Mission 760iSEs offer devastating performance for their price. Combined with a Grundig CD3 CD player and a Denon PMA-350II amplifier, you've got a CD and tuner based system that would blow any midi to Mars for under £800.

But the action has been right across the board with outstanding products at all levels. I won't list them all here - see the Supplement for a wide range of innovative and class leading products that have been launched this year.

Although we picked four

Dominic Baker

dB on the level

seen HDCD (High Definition Compatible Digital), and have a review of this system coming next month. Philips are working on a similar system going by the same name, although standing for High Definition Compact Disc just to make it completely bewildering to the consumer, and of course Sony have chosen SBM as their 'improved CD' system. But will either of the HDCD systems be accepted by the buying public? Well, with rumours of a completely new CD standard, using a red laser (existing players use infra red) to get around four times as much information onto a disc, we'll have to wait and see.

But on to more down to earth matters. There has been a lot of activity in the general hi-fi market and some superb products have appeared, which is in part what prompted our 'awards' feature in the Christmas Supplement.

The year started well, with two outstanding budget products. Both the

loudspeakers in our list of 'awards' product, it is still one area of hi-fi that could benefit from improvement. There are a wide range of materials available for drive units, carbon fibre, Kevlar, glass fibre, HDA, HDI, etc. that are only just starting to appear in commercial designs. Under £1000, you're lucky if you get anything more advanced than a paper or plastic bass unit and a metal or fabric dome tweeter.

Anyway, all in all, it's been a good year for hi-fi. The whole subject has become much wider, with vintage, grunge, modern valve and transistor hi-fi and even DIY becoming more easily available. DIYers are not being shunned any more and if you are still using an old Garrard/Leak set-up, stay with it. There are all sorts of renovations, upgrades and improvements becoming available. In fact, many audiophiles aspire to such equipment nowadays. It's a funny old world, isn't it?

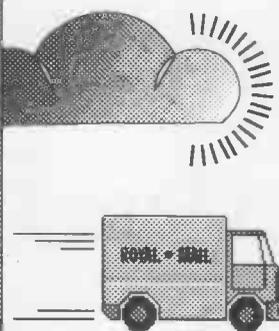
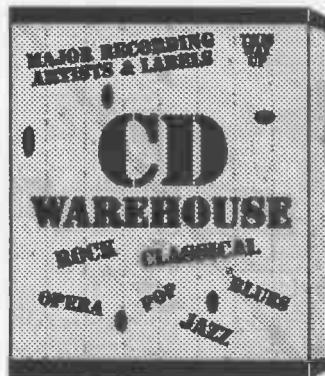
Oh, and yes, we are still the best hi-fi magazine ●

An invitation from Bill Wilson

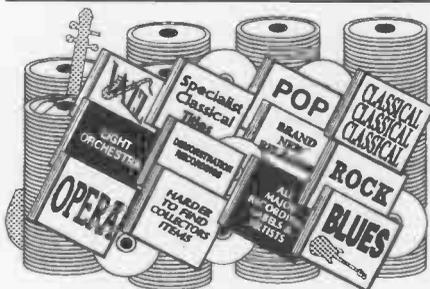


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"I found the sound of my LPs improved significantly, reminding me of the experience of listening to records on a Goldmund reference turntable with a van den Hul Grasshopper cartridge with its nude stylus. All of a sudden, much more of the music, and 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 major improvement in vinyl play." Andrew Marshall (Audio Ideas Guide, Winter '94)

Hear what your fellow music lovers say:

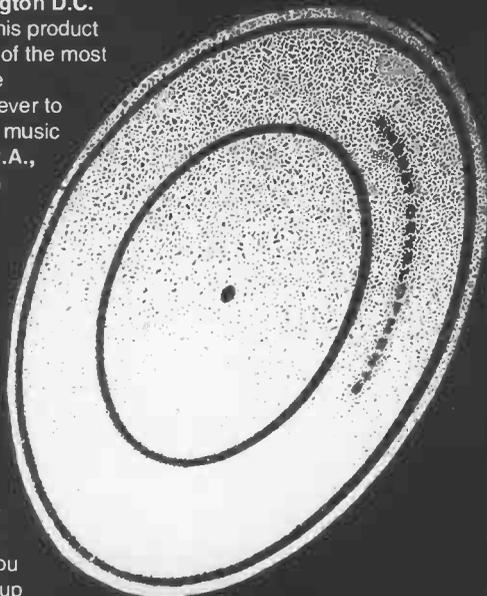
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Hardly a month goes by without some mention of classic hi-fi, and just how good it can be. And in many cases older, and often better-built, products do genuinely give new equipment a run for its money. The trouble is that all this renewed interest in classic hi-fi is inevitably pushing up prices. Many of us have experienced this, or know someone who has.

The old Garrard 401 in the loft that was sold for a fiver at a car boot sale a few years ago, would now be worth around £80-£120. It's not just Garrard 401 and 301 prices that have defied the rate of inflation recently, either. Revox A77/B77, Quad II/22 and ELS, and Radford STA 25 (to name but six) prices are all showing signs of going through-the-roof. Many prices are even comfortably exceeding new prices.

Whatever next, I wonder? Keen investors shrink wrapping Garrards and Quads?! Maybe not, but the classic hi-fi fever seems to be spreading to even more recent models, of late. I've seen older examples of Naim Nait 2s, Linn Sondeks, 8000As, Nak' BX cassette decks and B760 Revox tuners sell for prices which are, quite honestly, ludicrous. These products seem to have gained a minor cult-status, even when there are often better products around either new or used, for the same sort of money.

So what do you do if you are after decent second hand hi-fi, but at sensible prices? Well, fear not, because there are still plenty of relatively undiscovered bargains out there, and it's just a matter of putting cult-status aside for a moment and being rational. Let me give you some examples.

Recently, I came across a rather anonymous looking ERA turntable. Its small stature and bizarre Meccano-like arm didn't really suggest audiophile excellence. The Shure V15 cartridge was game, I

thought, but rather past it by now. But boy, was I in for a shock when I (and other gob-smacked spectators) heard it. It could easily have passed for a £300-£400 turntable and completely obliterated an old Linn LP12/Grace combination we had just been listening to. The bass, in particular was remarkably expressive and articulate in comparison to the Linn.

Don't get me wrong, the LP12 is a fine record deck, and makes an excellent purchase as it's almost infinitely upgradable. Yet if

you'd listened too, and seen, the two decks, the respective prices just wouldn't seem right. The Linn was rather tired and missed the odd bit of trim, yet didn't take long to sell at £250. The ERA, on the other hand, was in mint condition (even the lid was flawless) and yet, despite its

“You don't need to spend a fortune to find second-hand hi-fi that's a little bit special.”

excellent performance, a mere £80 was all that changed hands.

Another area of the market where people are swayed by image above all else is in the high-end tuner market. For many people it doesn't take long to decide on what brand of tuner they'd like. It just has to be a Revox. Now, the Revox B760 tuner is an excellent product (so tempting in fact, that I bought one last year),



Fair Views

- from Dominic Todd, our man in Scarborough

but when I see prices of between £400-£500 being asked, I can't help but ask why are people paying this sort of money for a tuner that's at least ten years old? You realise the artificiality of these prices when you see rivals from the same vintage as the Revox commanding prices that are often a fifth

of what's asked for the B760. Often they are just as well-built and specified and were even reviewed as sounding better in their day.

Take the Pioneer TX-7800 and Trio KT 917 for example. Admittedly neither have quite the British elegance of the Revox (although both have plenty of presence), yet they are just as solidly-built, have superb sound quality and, barring presets, are just as well specified, with all the tweaky bits befitting a top-notch tuner. Yet the most they seem to fetch is about £90, with a range of between £50-£70 being more realistic,

proving the old adage something's worth simply what somebody's prepared to pay for it.

Recently, a friend of mine purchased a new amp'. He wanted something second-hand for between £200-£400 which would drive a difficult speaker load and have a good phono-stage. Not being too impressed by the streams of Audiolab 8000s and Naim Nait 2s he listened to, I came up with a Meridian MCA-1, which was actually advertised in this very magazine for £200. The

MCA-1 is a fairly modest little amp' but, I think, one of the best-kept secrets around. The amp' consists of modules including two 30watt monoblock amplifiers and bolt on tape, phono MC, and aux' stages. It still looks good today, with a smart grey Nextel finish and, as far as I'm concerned, has a sound quality which puts it streets ahead of most rivals, especially on MC phono.

He managed to pick this particular example up for £175 and it even came with the matching FM tuner, a spare MC module, and all the boxes and books. It drives his 85dB 'speakers with no problem and offers a sweet sound with excellent depth on phono. Had he paid £400 he'd be happy, but at £175 he picked up one of the many unknown bargains.

Proof, then, that you don't need to spend a fortune to find second-hand hi-fi that's a little bit special. Just remember not to be swayed by fashion and don't rule anything out until you've actually heard it ●



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The parts quality is top notch. The board comes assembled and tested, implementing the Burr Brown 1702 DAC, a Crystal 8412 input receiver, an NPC 5813 digital filter, Analog Device's AD844 and 847 op amps and a custom potted toroidal power transformer.

At \$449 US, the Assemblage DAC-1 offers an outstanding value in digital conversion and comes with a *Satisfaction Guarantee* (return it with-

in 30 days of purchase for a full refund) and an *Assembly Guarantee* (if you can't get it running, we will!). We challenge you to find a DAC anywhere near this price with better measured performance, component quality, and most importantly, sound quality. Call us for more specific information on the performance or construction features.

To order the DAC-1 kit or to order The Parts Connection 1994 Catalog (for £3), full of a lot of other exciting stuff (including a \$10 US discount coupon good on your first order over \$100 US), send us your request and mailing address - or call with credit card information.

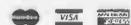
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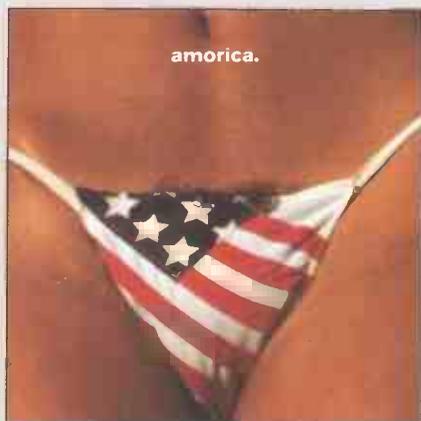
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INDEX

RECORD REVIEWS

ROCK & POP73

Giovanni Dadomo
 Jon Clarke

CLASSICAL85

Peter Herring

JAZZ93

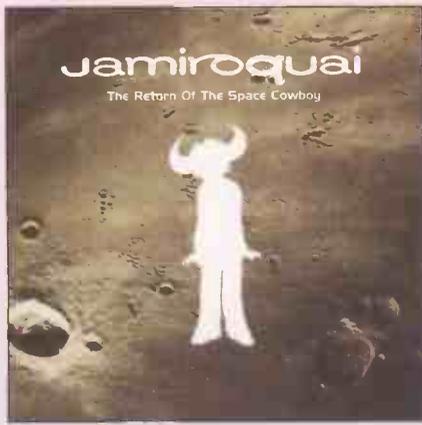
Simon Hopkins
 Simon Cooke

● Third time out for the southern sextet with the spelling problems. What the Black Crowes patently don't have trouble with is the business of delivering a brazen, hard-bottomed rock'n'roll pastiche that has been compared to everyone from classic Faces (featuring Rod Stewart) to the Rolling Stones, to the Faces, to classic Rolling Stones etc., etc. But so what? This is ruff'n'tuff rock 'n' roll that long-lost soul-mates such as the aforementioned combos, plus legends such as Lynyrd Skynyrd and a score more would no doubt be far from leery of sharing a room or record rack with. To my mind (or what little of it there remains anyhow) singer Chris Robinson owes more to the vintage personae of early Robert Plant (he was in Led

Zeppelin, remember?) and/or vintage Paul Rogers (of Free fame, recall!) than Rod the erstwhile mod.

But – and in any case, and for what remains of my money – this latest 'Crowes recording gives Guns 'n' Roses and U2 more than a good run for their stadium rock money, flowing easily and oh so potently as it does from the punchesome opening 'Gone', through the funksomely well-hung riffing of 'A conspiracy', all leading seamlessly to that cowbell-fuelled stormer 'High Head Blues', a veritable 'Honky Tonk Women' for the end of the century, and one that even manages to include a respectful nod of the Afro to New Orleans maestros, The Meters in the course of its development.

And so on. Sure, there may well be the occasional over-stated tip of the tiffer in the direction of Otis Redding and the rest of the Stax-Volt entourage and so what if the ghost of the original Allman Brothers is never more than a doom-bound Harley-Davidson away? What remains is a cocksure, hefty-rocking, hard-body, pelvis-flexing strut through an established musical terrain that not only remains faithful to its original inspirations – be they Otis or Lynyrd Skynyrd – but also contains all the fire and passion such saintly peers both demand and deserve. And so yes, perhaps I might live in a world without The Black Crowes, but living in a world that contains them sure ain't too painful neither. Familiar mayhap, but there's fire in the fun nonetheless.



JAMIROQUAI
The Return Of The Space Cowboy
 SOHO SQUARE 477813 2

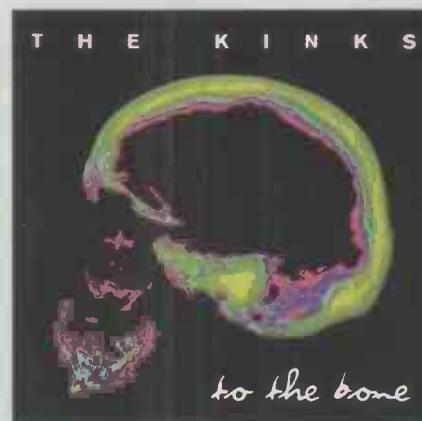
● The title's a reference to spaced cowboy Steve Miller, a yankee psychelicatasseur who made his best music circa 1967-70 and sold most records circa 1980 - I mean, who could forget such brilliant rhymes as "Abracadabra/ I just wanna' reach out and grab ya"? Word-wise, we tend to tread similarly faux-naïf territories with Jamiroquai's JK. That said, this second LP from Ealing's most convincing non-native born American has, in its meld of Latino vibes, easy-peasy stoned scat, and fat-free rock/jazz fusions, no shortage of seductive ability. Where a group like M People, say (as in M for mediocre, it's always struck me, although I love that girl's pineapple head) make a career out of pretending to be Americans, Jamiroquai have actually managed the con in a remarkably brief time. Maybe it's the hat thang, who knows?

Whatever, the band do hit several cool grooves with enviable ease. And all that stuff about him being nowt more than a poor Stevie Wonder copy, well that's patent, er, testicles, as we say in the trade. Sure, a song like 'Light Years' carries inevitable Wonder-bars, but this does not stop it from being a George Forman-tuff strut through the funk dictionary and if that weren't enough, JK's even honest enough to admit "Now I got that sunshine in my life". The fact of the matter is that Stevie W. hasn't made a decent, even less classic, record in a good decade. Compare this to Jamiroquai, who with this second helping have made two class discs in as many years. And he's only 24. And he's from Ealing (still). Don't you just hate and love him?

SANDIE SHAW
The Best Of Sandie Shaw/ Nothing Less Than Brilliant
 VIRGIN VT CD 34



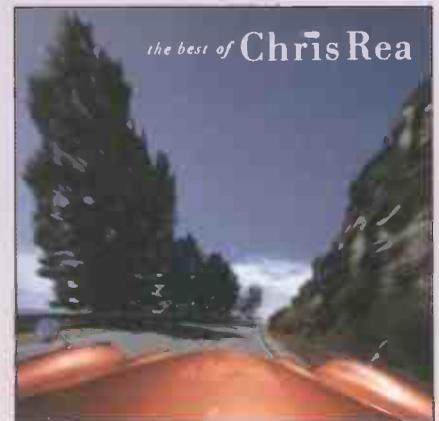
● As much a quintessential Sixties pop diva as Dusty Springfield, Sandie's collaborations with writer Chris Andrews resulted in a sparkling string of pop classics - 'Long Live Love', 'Girl Don't Come', 'I'll Stop At Nothing', heaps more. And if at times her voice wasn't the strongest in the world, she sure was photogenic, as much a face Of The Sixties as Julie Christie or Twiggy. Later works are also included - the chirpy, self-penned 'Monsieur Dupon', and her work with The Smiths. Shame about the dismal Eurovision Song Contest smash 'Puppet On A String', but then nobody's perfect. It's accompanied by extensive sleeve notes and several brill snaps of the girl who taught Chrissie Hynde one or two things about vibrato. (It's a way of singing, you filthy beast!)



THE KINKS
To The Bone
 KONK KNK CD 1

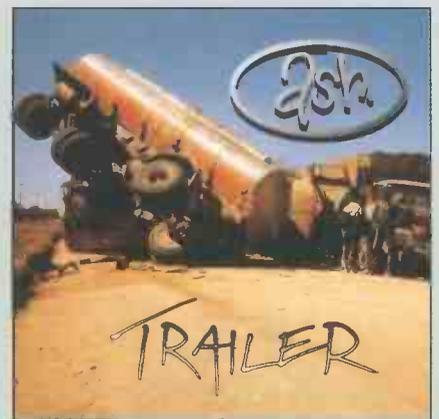
● A baker's dozen of Ray Davies' classics done 'Unplugged'-style, semi-acoustic before a teensy audience at the group's Konk Studio in North London. We've heard them all before

in a variety of versions but they're as fresh and powerful now as thirty years ago. All the big ones, from 'You Really Got Me' (the first Heavy Metal record?) 'See My Friends', 'All Day And All Of The Night' and so on and so great. Brilliant Sixties-style sleeve notes from Mr. Davies too, ditto the snap of he and sibling Dave, whose 'Death Of A Clown' is also included.



CHRIS REA
The Best of Chris Rea
 EAST WEST 4509 98040-2

● I'm not usually a big one for mainstream AOR stuff, but I've developed a soft spot for CR over the years: that gruff voice, the wry way with a lyric, and he's no mean guitar strangler neither. All his big ones are here - 'Road To Hell', 'Auberge', 'God's Great Banana Skin', heaps more. Motorway sounds of the classy kind.



ASH
Trailer
 INFECTED INFECT 14 CD

● Spirited (mini) LP debut from what's been described as an Irish 'pop-core' band. What this means is they've obviously listened to loads of Hüsker Du and Dinosaur Jr. records and turned out a highly credit-worthy re-interpretation of such styles. It may be old-hat to some, but for fans of the genre it's a neat chapeau, non?

Rock + Pop

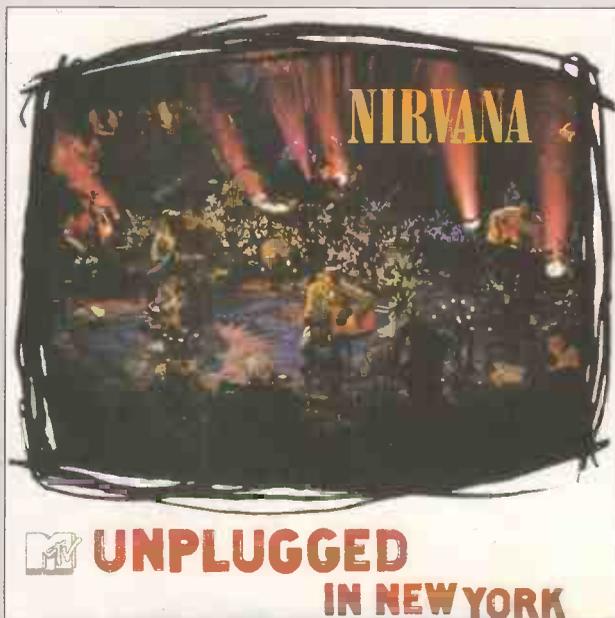
RECORD OF THE MONTH

NIRVANA **Unplugged In New York** Geffen GED 24727

● Confession: until recently (i.e., a few early November days past) I had not put a Nirvana record on my turntable since Kurt Cobain's tragic and untimely departure off this mortal coil. Call it shock, over-reaction, call it what you will – just don't call it late for dinner. Seriously though, people, for whatever deep-seated emotional reason, Kurt's death didn't send me into a bootleg-buying frenzy, nor even a play-every-disc-he-ever-made nostalgia frenzy. Quite simply, the man's music would have touched too deep and raw a nerve had it been played that close to his painfully premature exit from this weird and wonderful world. But then a week or so ago and in my cups, (that's "well-pissed" in Essex-speak, lads), I put on 'Nevermind' and realised once more that KC was a human of No Little Talent and that on this occasion at least he and his band had produced a record that would stand the proverbial time-test.

So now we come to the official release of Nirvana's contribution to

MTV's, primarily acoustic, 'Unplugged' series and it's proof positive of many things, but above all that Cobain was a singer and songwriter of rare and special talent. The songs here, culled mainly from the group's three studio LP's, stand up just as well without the benefit of studio embellishments and



the luxury of re-runs and over-dubs. There's ample proof also of Cobain's remarkable humility: rather than relying on the tried-and-tested hit material –

Nirvana were, after all, riding the proverbial crest of the award-winning, sales-galore wave at the time - of the fourteen items included here, no less than six are cover versions; there are three songs written and abetted by indie stalwarts The Meat Puppets, plus Kris Novoselic's admirable accordion-driven regurgitation of the Vaselines', (Who they? We may well ask), re-run of the semi-traditional 'Jesus Wants Me For A Sunbeam', while Kurt delivers a heart-tugging rendition of Leadbelly's classic 'Where Did You Sleep Last Night' (aka 'Black Girl') for an aptly touching last cut. And then there's Bowie's 'The Man Who Sold The World', complete with faithfully rendered Mick Ronson guitar parts, as well as being an apt reminder that Cobain was – like David B. himself – above all a musician whose nonsensical tendencies when it came to lyrics were more than made up for by a majestic talent as regards melody. Plus Cobain's primary ability as a tunesmith are amply illustrated via the likes

of 'Come As You Are', 'Polly', 'On A Plain' or 'Pennyroyal Tea'. A Jim Morrison for the 'Nineties? Good chance, big loss, essential purchase.



JERRY JEFF WALKER **Christmas Gonzo Style** RYKODISC RCD 10312

● It's been my misfortune to suffer some abominations in my years in the review dungeons, but this one takes the cake. Mr Walker and a bunch of Country and Western greybeards ham their way through a selection of Yuletide clinkers – 'White Christmas', 'Winter Wonderland', you know the ones. And they're godawful. Buy it for a deaf uncle maybe, but that's it. Hunter S. Thompson would

turn in his grave if he were dead. Most of the people on this record already are.



LISA GERMANO **Geek The Girl** 4AD CAD 4017 CD

● Doomed forever (hopefully not) to be regarded merely as John Cougar Mellencamp's fiddle player on vacation; you have to give it to Lisa G, she's hot on titles. After last year's ultra-cool

Inconsiderate Bitch EP, here she is again with – title to die for – Geek The Girl. She's been compared to every other gentle-voiced female singer this side of Mama Cass (Kristin Hersh, Suzanne Vega, Joanna Hatfield etc. etc.) but she has definite, nay, singular qualities of her own, and this second album displays them more than well. Guaranteed that 'Bye Bye Little Doggy' will break your heart, make you puke. Or both. And why not?



Jon Clarke

MADONNA
Bedtime Stories
 SIRE RECORDS 9362-45767-2

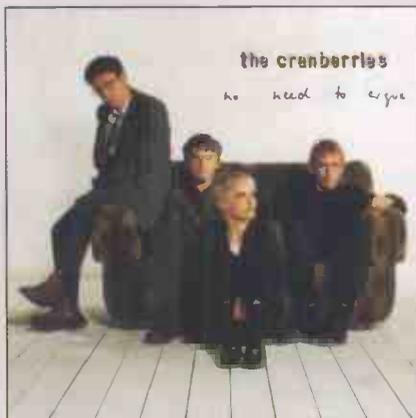


● Having leafed through the pages of Madonna's Sex book and jumped into bed with her (in the filmatic sense, of course), most of us had grown weary and critical of the old wild gal of the top 40. But as the full force of the Erotica backlash eases off, out she pops to reclaim her once rightful pop crown.

And on this effort she's given it a bloody good go. "I'll never be an angel, I'll never be a saint", begins track one. Honesty is always the answer, and with 'Survival', Madonna gets you back on her side from the very onset. What follows is a smartly penned range of Dance and Soul grooves, laced with some clever samples, particularly ones used by rappers Main Source and Brand Nubians. But what really does it is the complex production work of four well respected producers, particularly the left-field sound of Nellee Hooper, which is, as usual, moody and stylish. Having worked wonders on Bjork's album and Soul II Soul over the years, and more recently turning Massive's Protection into probably (going off on a limb here) the Mercury Prize winner of next year, Nellee has taken Bedtime Stories and given it the magic touch. Add the title track scribed by Bjork herself, and some excellent vocal back up from the funky Me'Shell and you've got the right ingredients for a great disc.

But there's something missing. Something's changed about the mid-thirties fun queen. It's her bubbly cheek, her lairy attitude, but most of all her strength of voice that is missing. The old campaigner seems to have lost that edge that we heard with Material Girl or Like A Virgin. For what we find on Bedtime Stories is a much mellower, quieter Madonna. And with this album a softer, more adult and contemptive approach.

Maybe her bubble has burst and it's time she moved onto greener pastures - how about a run for President? But then again, in the face of criticism and ridicule, maybe she's just matured. There's good tracks here, none less than 'Human Nature' and 'Sanctuary'. It's far better, more thoughtful and less commercial than the dreadful Erotica LP. But above all there's time for anyone to have a change of heart and tune. Even her. Hang in there gal. A hit anyway, but who would have predicted otherwise.



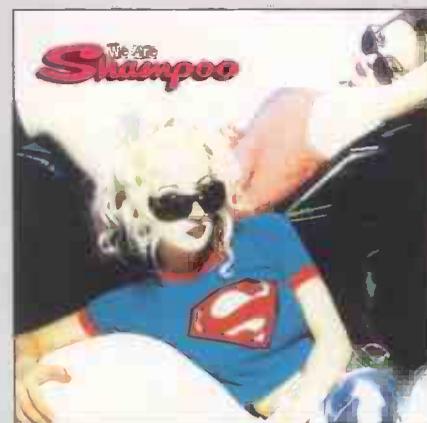
THE CRANBERRIES
No Need To Argue
 CID 8029/524 050-2

● The Cranberry Saw Us (dreadful play on words) transformed overnight when singer/songwriter Dolores O'Riorden was recruited from a local school playground. For in a backwater of rural southern Ireland were born the great pop sensations The Cranberries, who then no longer needed the sauce. Four years on and the band have sold three million albums world-wide and have packed out venues from Manchester to Manhattan. Early slatings from the music press and poor first album sales of Everybody Else Is Doing It - So Why Can't We?, which reached an unnoticed humble 78 in the UK charts, were overcome with some lucrative 'listen up' visits Stateside. Supporting The The, Suede and Duran Duran, where Dolores courted with tour manager and future husband Don Burton, The Cranberries at last made a name for themselves.

With their second album No Need To Argue, the band confirm themselves as Brit pop's new shimmering sensation. Opening track 'Ode To My Family' floats in hauntingly from across the waters in wildest Limerick, and gives a moving taste of what's to follow. At the heart of it all, as expected, is Dolores, the elf-like but stunningly attractive Gaelic beauty. Her lyrical input is clever, and her perverse, warbling Irish voice, which at times is reminiscent of the owlish croons of Liz Cocteau, charms with complete ease. She is backed up by three down to earth local lads, who know their musical onions, and play a good range of folky and melodic riffs. Everything comes together best on

the heavy, almost grungy, single 'Zombie', with its bitter, pointed anti-terrorist feeling - a poignant disassociation from the IRA activity which was particularly sparked off by the Warrington bombing while the band were on tour in the UK. Other stand-out tracks are 'Ridiculous Thoughts' and the excellent 'Icicle Melts', a moving ballad on the Jamie Bulger incident and a dig at the media for its ghoulish treatment of such tragedies.

At times No Need To Argue tends to verge on the over emotional and miserable depths of say The Smiths, and a little piece of Morrissey certainly sits on 'Disappointment'. But breaking off from the usual girl/band formula, The Cranberries, who have already cracked the lucrative US market, have translated a Gaelic folk and rock mix into quite a moving, little gem of an album.



SHAMPOO
We are Shampoo
 FOOD 7243 8 31140 2 3

● In contrast to Madonna, Shampoo have never been away, and right now they are milking the success of their last two singles. Both of them, 'Viva La Megababes' and 'Trouble' sit at the beginning of this trashy looking CD. And with these out the way, it would be easy to expect the rest of the album to trundle downhill at a rapid pace. But Jacqui and Carrie, south London's finest riot girls aren't going to allow that. What we find are 10 deliciously throw-away pop/punk anthems.

Shiny Black Taxi Cab, with its excellent "Shiny Black Taxi Cab, as you throw up your kebab" chorus line, is the pick of the bunch. It's stuff like this that endears Shampoo to the Kids. The way they tap into youth culture with songs about raves, clubs and Game Boys is completely down to earth and special. The last track, Saddo, is new punk at its best. And its this that best sums up their whole "Who gives a damn" attitude, which is probably the main reason why these two teenage twits are currently experiencing a very generous 15 minutes of fame. Less Bananarama, more '80s Anarchos Rubella Ballet, those damned Plumstead irritants might have the musical talent of the Sex Pistols, but that, I guess, is what it's all about. Good for a laugh.

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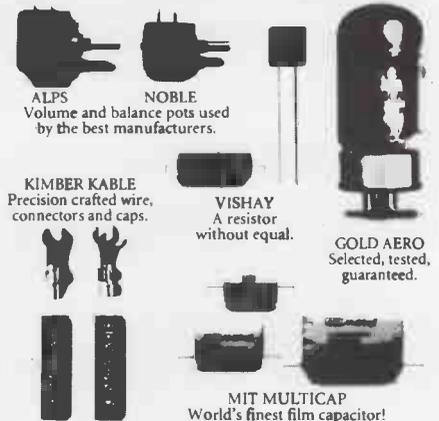
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K5881 KIT

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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.

| | | | |
|----------------------|-------------|--------------|--------------|
| SPECIFICATION | | Noise (CCIR) | -103dB |
| Power | 20watts/ch. | Sensitivity | 240mV |
| Frequency resp. | 16Hz-40kHz | Weight | 16kgs(34lbs) |
| Distortion | 0.02% | Dim. (mm) | 300x400x180 |
| Separation | 60dB | | |

300B VALVE AMP KIT

£850 ▼



This is a specialised amplifier based on the highly linear 300B triode valve. Our 300B runs in Class A, giving one of the most sweet, open and neutral sounds possible today. Matched with good loudspeakers, it is unsurpassed.

The kit comprises a strong 16-gauge mild steel chassis, fully punched, welded and ground smooth. Finish is a durable 'powder coat' black. A protective bottom plate is provided for safety. Output terminals (one pair) take 4mm plugs axially and radially for bi-wiring, or heavy gauge bare cable. Output options of 4/8/16Ω are selected internally at the transformer. A small circuit board carries most of the components. Can be monoblocked for 60watts.

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

| | | | |
|----------------------|-----------|------------------------------|--------------|
| SPECIFICATION | | Separation | 54dB |
| Power | 28watts | Noise (hiss/hum)-100dB/-72dB | |
| Frequency resp. | 5-18k-nfb | Sensitivity | 240mV |
| | 50k-fb | Weight | 20kgs(44lbs) |
| Distortion | 0.2% | Dim. (mm) | 405x295x175 |

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.

| | | | |
|----------------------|-----------|-------------|---------------|
| SPECIFICATION | | | |
| Power | 4watts | (hum) | 0.7mV |
| Freq. Response | 9Hz-64kHz | Sensitivity | 180mV |
| Distortion | 1.3% | Weight | 10Kgs (22lbs) |
| Separation | 74dB | Dim. (mm) | 260x200x180 |
| Noise (hiss) | -100dB | | |

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See page 83 for order form...

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SPECIFICATION

| | | | | |
|-----------------|-----------|----------------|-------|----------|
| Power (8Ω) | 36watts | Distortion (%) | | |
| Frequency Resp. | 1Hz-50kHz | 1W | | Full O/P |
| Noise | -104dB | 1kHz | 0.003 | 0.005 |
| d.c. offset | 3mV max | 10kHz | 0.008 | 0.04 |

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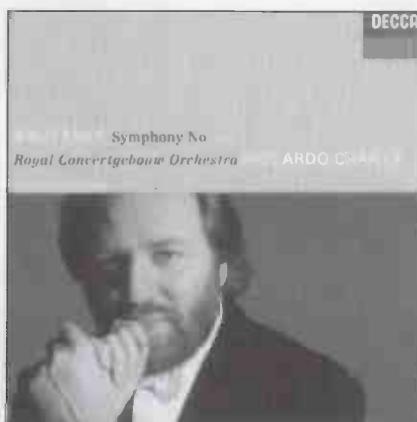
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Peter Herring

If there is a geographical focus to this month's reviews, it would have to be the Alps, with composers from northern Italy, Austria and the Bavarian court at Munich, plus two from further afield who rightly judged that crossing the Alps was a good career move!



ANTON BRUCKNER
Symphony No. 2 in C minor
 Royal Concertgebouw Orchestra,
 Amsterdam; conductor, Riccardo
 Chailly
 DECCA 436 154-2 (DDD/67.29)

● I like hearing Chailly conduct Bruckner. His grasp of the vast musical structures that are the symphonies is usually unerring and his shaping of each movement seems almost intuitive. He is not the first Italian conductor to have excelled in music which some regard as the exclusive prerogative of the Austro-German school, witness many memorable Bruckner performances by Carlo Maria Giulini. But he stops short of the expressive extremes which can make some of Giulini's interpretations an acquired taste.

The Second ranks among the least-played and least appreciated of Bruckner's symphonies. Composed between 1871 and 1872, Bruckner took the score (and that for the then-incomplete Third Symphony) with him when he undertook his pilgrimage to Bayreuth to pay homage to 'The Master' - Richard Wagner - in 1873. He earnestly hoped that Wagner would allow one of the symphonies to be dedicated to him

but the gesture was declined. Perhaps if Wagner had put his seal of approval on the Second Symphony, it would not have suffered the cuts and revisions inflicted upon the score by Bruckner's well-intentioned - one assumes their actions were well-intentioned - friends and colleagues. As with the other symphonies, we have to thank the Austrian musicologist, Robert Haas, for faithfully restoring the score to what Bruckner intended. And it is the 1938 Haas edition, naturally, which Chailly employs here.

The symphony abounds with the sublime, lofty serenity and hushed, awestruck tension and anticipation which is so typical of Bruckner. Was it the landscape of his homeland in Upper Austria which inspired those broad, sweeping planes of glorious music, as some have suggested, or are we on the edge of eternity, glimpsing the infinite. Whatever, the effect is overwhelming, even if the work was originally dismissed as "unplayable" by the conductor of the Vienna Philharmonic Orchestra, Otto Dessoff. Despite this, the work was well-received at its first performance and was even liked by Eduard Hanslick, who was later to become one of Bruckner's bitterest critics.

While not 'mature' Bruckner, the Second is full of ideas that anticipate the great symphonies that were to come. Also evident is Bruckner's masterly handling of orchestration. Chailly offers a performance to match that of Karajan on DG - arguably the benchmark - and is better-recorded. And the Amsterdam orchestra is easily the equal of the Berliners, with some radiant solo contributions from among the strings and woodwinds.

The recording, made in the main hall of the Concertgebouw, may initially seem a little distant, but this spacious quality soon comes into its own as the brass

Continue on page 87 ▶▶

Born in the Italian town of Bergamo in 1695, Pietro Antonio Locatelli was one of that group of Italian 'virtuoso-composers' who came to prominence in the eighteenth century. Vivaldi, Geminiani, Tartini and Corelli were others who, like Locatelli, took the art of violin playing to previously unimagined heights of technical accomplishment.

Little is known of Locatelli's upbringing, but he secured his first musical appointment at the church of Santa Maria Maggiore in his native town, which at the time was a notable centre of music-making. From there, he moved

to Rome where, tradition has it, he was taught by Arcangelo Corelli, although this seems unlikely since Corelli was extremely ill at the time and died just a few months after Locatelli settled in Rome.

In 1721, he published his Opus 1, a set of twelve Concerti Grossi which, inevitably, were inspired by those of Corelli which had appeared some seven years earlier. Locatelli went on to put his extraordinary talent to even greater use; his dazzling capriccios became famous across Europe. He developed many novel effects of violin technique and was noted for the distinctive sound

he achieved, partly through the use of an unusually short bow. In 1729, he left Italy to settle in Amsterdam, which is where he died on March 20, 1764.

Although he devoted his life to instrumental music, there is evidence to suggest that Locatelli was a passionate lover of opera, and it is his music for the theatre - in the shape of six *Introduzioni Teatrali* (overtures, to us) - that chiefly occupies this glorious recording on the Italian Fone label. And, although in the main an Italian production, the list of credits reveals a couple of names familiar on these shores...

PIETRO ANTONIO LOCATELLI
Sei Introduzioni Teatrali Op. IV/Concerto in A Major for violin and basso continuo

Gianco Bertagnin, Marco Rizzi, violins; Giampaolo Guatteri, viola; Alfredo Riccardi, cello; Orchestra da Camera del Festival Internazionale di Brescia e Bergamo; director, Agostino Orizio
FONE 91 F 07 CD
(DDD/52.26)

● Locatelli published his *Sei Introduzioni Teatrali* in 1735, some six years after he had taken up residence in Amsterdam. The notion of opera composers supplying their own overtures to their stage works was still relatively novel and, therefore, Locatelli would have expected his *Introduzioni Teatrali* to preface all manner of operatic compositions. In the set of six, he continued the Neapolitan tradition of dividing each overture into three sections, the outer movements lively and virtuosic, the middle section in a more lyrical, even sentimental vein. Within the confines of this structure, Locatelli conceived music of engaging brilliance and vitality and no small measure of originality.

As a virtuoso violinist himself, Locatelli would have doubtless appreciated the contribution of the soloists on this recording who surmount the technical obstacles with some panache. The orchestral contribution, too, combines polish with a zest that is wholly infectious.

In addition to the six overtures,

the disc offers a dashing performance of a superb A Major violin concerto, a work whose provenance has been the subject of dispute. There is no factual evidence to establish it as one of Locatelli's compositions, but everything about its style, and the technical devices employed, suggests it is by this virtuoso from Bergamo.

Given the prominence accorded his

UK, the recording - made in the Grand Theatre, Brescia - dates from 1989 and I was surprised to see that it had an important British - or, rather Scottish - input. The taping was done on a Linn Numerik digital recorder with Philip Hobbs, who has been responsible for some fine recordings on Linn's own label, at the controls. In overall charge of the recording,

however, was Alessandro Orizio and it was interesting to see that he had opted to use valve-powered Neumann microphones. Among other technical data, we are told that Van den Hul cables were used and that monitoring was done on Diapason Adamantie and Linn Isobarik DMS speakers. It adds up to an exceptionally full and warm sound, with a convincingly natural balance and acoustic, all of which makes discovering the fine music of Signor Locatelli all the more satisfying and pleasurable. The Fone label looks set to become a refreshing arrival among the ranks of classical CDs.



contemporary, Antonio Vivaldi, both in concert and in the recording catalogue, it is encouraging to see the equally entertaining music of Pietro Locatelli gaining at least a share of the spotlight.

Although new to the

Classical

intones those mighty Brucknerian climaxes. Overall, the perspectives strike me as pretty much ideal, and how the recording captures the full, warm string tone of the Concertgebouw Orchestra. With his imaginative shaping, especially of the scherzo, illuminating attention to detail and the bold sweep of the finale, Chailly's vision of the Bruckner Second is an enriching experience.

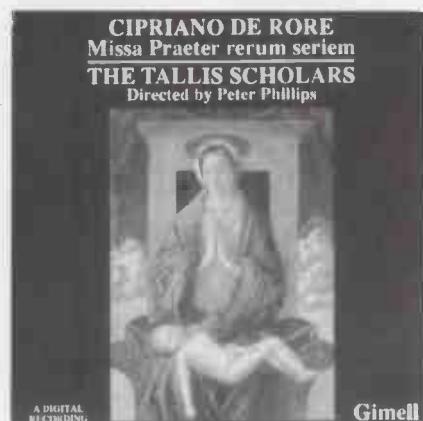


ANTONIN DVORAK
Symphony No8 in G Major
Op88/Serenade for Strings
Op22

Royal Philharmonic Orchestra;
 conductor, Yehudi Menuhin
TRING/ROYAL PHILHARMONIC
COLLECTION TRP019 (DDD/63.24)

● I suppose it would be possible to direct a disastrous performance of the Dvorak Eighth, but this wonderful symphony does seem to fare consistently well in recording. Like so many other conductors, Yehudi Menuhin responds to its rich seam of melody, its charm, its lyricism, its nobility and its wit. Quite why the 'New World' Symphony, No9, enjoys such status when both the Eighth and Seventh are of equal, or even greater musical stature has always left me perplexed. The strength of this performance of the Eighth lies in Menuhin's unfussy, but nonetheless detailed direction, the captivating playing of the RPO, and in the exceptionally fine recording which captures the orchestral sound with a satisfying combination of clarity, accuracy, spaciousness and impact. What more could you ask for? Perhaps the most distinctive quality is the string sound, which has a warmth and bloom redolent - dare I say - of the best analogue recordings. A check on the technical data for the recordings shows that it was made using the 20-bit Super Bit Mapping (SBM) technique so far the exclusive preserve (I believe) of Sony. Is the system now being licensed to other labels? The post-production employed is 32-bit Digital Sound Processing (DSP) courtesy of Sound Recording Technology of Cambridge. I can only add that the combination works.

This is not the first time that the Royal Philharmonic has enjoyed what amounts to its own label, but the recordings in what is titled the 'RPO Collection' are all new. Certainly, Menuhin's Dvorak gets the series off to a successful start; interestingly, he couples the G Major symphony not with another symphony (Colin Davis on Philips adds the Seventh in what remains a 'basic library' choice) or with overtures, but with the deliciously sunny and beguiling Serenade for Strings - Dvorak at his most easygoing and melodic. Beautiful music, beautifully recorded.



CIPRIANO DE RORE
Missa Praeter rerum
seriem/Motets: Infelix ego;
Parce mihi; Ave Regina
caelorum; Descendi in hortum
meum

JOSQUIN DES PRES
Praeter rerum seriem
 The Tallis Scholars; director, Peter Phillips
GIMELL CDGIM029 (DDD/72.10)

● It has become something of a speciality of the Tallis Scholars to produce illuminating single-disc surveys of the music of what might be described as the middle-ranking composers of sacred music in the Renaissance. Though, having said that, this series has drawn overdue attention to composers of undoubted genius: Heinrich Isaac, William Comysh, Clemens non Papa and Duarte Lobo, to name just four. Now it is the turn of the Franco-Flemish composer, Cipriano de Rore.

Born around 1515 and educated in Flanders, Cipriano de Rore followed other northern European composers in pursuing his career in Italy. In Venice, he made a useful contact in his fellow-countryman, Adrian Willaert who held what had become the most prestigious musical post in Italy, maestro di cappella at St Mark's. Between 1547 and 1558, de Rore was in the employ of Duke Ercole II d'Este at the court of Ferrara. He then spent four years at Parma before succeeding Willaert at St Mark's. But his reign in Venice was brief: in September

1564, he left the post for reasons which have never been established and returned to Parma, where he died the following year.

Music history has tended to view Cipriano de Rore as primarily a madrigalist and, true, his contribution here was significant. But his output of sacred music is no less valuable, as this recording amply demonstrates. His Franco-Flemish upbringing ensured that Cipriano de Rore was tutored in the style of his great predecessor, Josquin des Prez. Yet his use of the traditional techniques can be startlingly original and imaginative. Listening to the bright, colourful sonorities of the motets (of which he composed around eighty), it is not at all fanciful to hear the beginnings of the 'Monteverdi-style', or indeed of seventeenth century baroque.

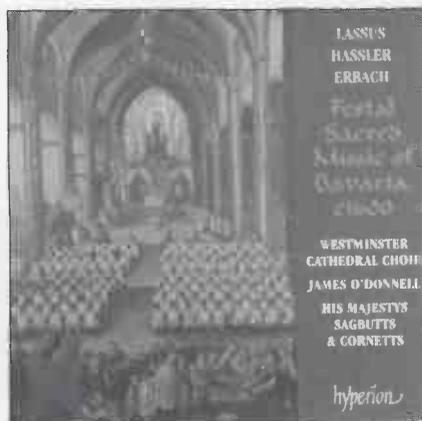
Cipriano de Rore wrote just five surviving Mass settings of which the most famous is the parody Mass based on Josquin's Christmas motet Praeter rerum seriem. As in their other recordings of parody Masses, the Tallis Scholars have included the source, and what a gem of a piece the Josquin is, weaving its polyphony around the central core of the devotional song upon which it is based. To the six voices of the Josquin motet, for his Mass setting Cipriano de Rore added an extra soprano part, so giving both scope for sumptuous elaboration and brightening the overall texture. The effect is impressive and, yet again, the Tallis Scholars' response to this splendid music is without peer. Once again, Peter Phillips and his colleagues show how music so long regarded as merely of academic interest can be brought vividly and arrestingly alive. It is not a requirement to be a 'believer' to respond to these liturgical settings, except perhaps a believer in the power of music to communicate across four centuries.

FESTAL SACRED MUSIC OF BAVARIA

Music by Orlandus Lassus,
Hans Leo Hassler and
Christian Erbach

Choir of Westminster Cathedral;
 conductor, James O'Donnell; Timothy Roberts, Iain Simcock, Iris Schollhorn, organs; His Majesty's Sagbutts and Cornett; director, Jeremy West
HYPERION CDA66688 (DDD/63.24)

● It was Andrew Parrott and his Taverner Choir and Consort who started the fashion for recording quasi-liturgical performances of sacred music, in other words placing the Mass setting or whatever within the context of a religious celebration rather than performing it in splendid isolation, as had been the norm. Parrott was highly successful in treating both Guillaume de Machaut and Claudio Monteverdi in this way and the idea was



taken up - with even more conspicuous success - by Paul McCreesh and the Gabrieli Consort, witness the award-winning 'Venetian Coronation'.

On this recent Hyperion issue, we are asked to imagine ourselves at a festal celebration in the chapel of the Bavarian court in Munich around 1600, the feast-day of a martyr-bishop perhaps. The music will be that of two native German composers, Leo Hassler and Christian Erbach, and the brilliant eight-part Mass

setting Missa Bell' Amfitrit' altera of that most cosmopolitan of the great Renaissance masters, Orlandus Lassus. Lassus, the four-hundredth anniversary of whose death has been rather overshadowed by a similar commemoration of Palestrina this past year, was Flemish by birth, Italian-educated, but at his most contented it would seem in Germany: he was a singer and then the Kapellmeister at the Munich court for almost forty years.

Contemporary accounts suggest that Lassus would not have expected one of his larger, more elaborate Mass settings such as the Missa Bell'Amfitrit'altera to have been performed without interruption as would happen in a twentieth-century concert. It was, after all, a component of the liturgical service and would have been punctuated with other sacred music - such as that by Hassler and Erbach heard here - and by organ and instrumental interludes. Here, for example, an organ piece by Erbach is included which was written with the intention of being played during the Elevation of the Host. A motet by the

same composer, O Sacrum Convivium, would have been sung during Communion.

All of this may suggest that this recreation directed by James O'Donnell and Jeremy West is of purely scholarly appeal. Far from it. The music is vibrant and colourful, with richly sonorous canzonas and sprightly toccatas. Leo Hassler learnt his trade in Venice and evidently took much of the style of the Gabrieli back to Munich with him. The antiphonal effects achieved by the divided choirs are straight out of the Basilica of St Mark, and the brilliant organ toccatas would have certainly enlivened the congregation. And, forming the basis of the whole 'service' is a glorious performance by the Westminster choir of what must rank among the greatest of Lassus's Mass settings, and one of the finest composed during that 'golden age' of polyphony, the sixteenth century. The recording, like the performances, is first-rate. If only today's church services were such splendid affairs, the pews would surely be fuller!

RECORDING QUALITY - WHAT'S IT ALL ABOUT?

Even though, more than a decade ago, the major recording companies declared it 'no contest', the argument between digital and analogue recording hasn't been entirely sidelined, as the majors would have wished. Not so long ago, the head of a leading British independent label - one of the first to embrace digital recording and CD - confided to me that he still thought digital hadn't fully captured the warmth and body of an orchestral string sound in the way that analogue could. Of course, most record companies simply fuelled the debate by digitally remastering their analogue originals for CD, often with startlingly good results, but occasionally to such crass effect that you immediately put the analogue LP on the turntable to see if you had been deluding yourself about its qualities all these years.

To a large extent, CD has been the great leveller: there's no 'magic ingredient' in its production; the technology is available to all; and - for good or bad - that capricious variable, the human input has been markedly reduced. But, back in the good (or bad, depending on your point of view) days of analogue, when the excesses and eccentricities of the recording art were plentiful, some labels achieved a certain cult status as 'keepers of the faith'. One of those was the American Everest marque which had the inspired idea of making its recordings, not on quarter-inch tape, but on the substantially wider and thicker 35mm magnetic film. Using this medium, Everest recorded in three

channels and produced what for the time (1958-60) were LPs of breathtaking depth, range and spatial fidelity.

Those 35mm masters are now the possession of Vanguard Classics which has been busily transferring them to CD using Sony's 20-bit Super Bit Mapping system, and you can obtain a representative taste of the results from the 'Sound of Everest' sampler (EVC9050). The twelve tracks feature a host of orchestras and conductors, including Boult, Fistoulari, Stokowski and Sargent and the composers range from Berlioz to Vaughan Williams and Shostakovich. From the opening excerpt from Falla's 'Three Cornered Hat', it's all thrilling stuff and, yes, there is an immediacy and transparency to the sound which takes the breath away. One caveat - in some cases, the brass and string sound has not weathered the years too well and the effect of its bright, hard edge can be fatiguing. Nevertheless, worth investigating, even if only to see what those ancient audiophiles were going on about.

Another interesting American import, this time from Reference Recordings of San Francisco, features the music of Robert Farnon, that masterly composer of film scores. Here, the composer conducts the Royal Philharmonic in a selection of his music, including the stinging suite from the 1951 version of 'Captain Horatio Hornblower RN', starring Gregory Peck. The other, more lyrical and rhapsodic side of Farnon's style is demonstrated by the Rhapsody for Violin and Orchestra a truly delightful piece of high quality. In fact, all of

the music here is very fine and the recording possesses a striking truthfulness and clarity, as well as detail. Well worth investigating - you'll find it on Reference Recordings RR-47CD.

In the two recordings discussed above, the sound quality is unquestionably half the appeal; in the two others I've chosen, however, it's merely the servant of the performance - in both cases it just happens to be rather good sound. In recent issues, I have warmly welcomed Martin Souter's performances of keyboard music on the Isis label, in passing adding that the sound is uniformly excellent. But the sound achieved by engineer, Geoffrey Horn, from the Seede organ at Lulworth Castle is quite exceptional. Martin Souter offers an unusual selection of pieces by Mozart, Haydn and C.P.E. Bach, including a transcription of Haydn's Symphony No67. The gem, however, is the A Major sonata by C.P.E., a work of which his father would surely have been proud. Hear what makes a good organ recording on Isis CD006.

Finally, a brief mention for another in the Tring/Royal Philharmonic Collection series, where sound quality is clearly high on the list of production priorities, witness - again - the use of Sony's SBM technology. On TRP020, Stefan Sanderling conducts the RPO in eminently acceptable performances of Mendelssohn's Third ('Scottish') and Fourth ('Italian') Symphonies and, as with Menuhin's Dvorak reviewed elsewhere this issue, the recorded sound really does do justice to the orchestral playing ●

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TECHNOSOUND LTD, 7 Granville Square, Wilton, Milton Keynes. MK15 9JL. Tel: 0908 604949. Audiophile Hi-Fi Specialists. All major brands stocked from Arcam to Yamaha. Demonstration facilities and expert advice. Mon-Sat 9.30 - 5.30 late night Friday. Credit Cards accepted. Finance available.

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STEVE BOXSHALL AUDIO, 41 Victoria Road, Cambs, CB4 3BW. Tel: 0223 68305 10.00-6.00pm 6 days, 3 dem rooms. Denon, Rotel, Yamaha, Mission, Nakamichi, Tannoy, Audioblab, Marantz, Krell, Martin Logan, Magnephan, Wadia. Home trial facilities. Appointments preferred. Free install. and service dept. Access/Visa.

FENWAY, 5 High St, Ely. Tel: 0353 664421. Contact Gary Holland. For Sony, Technics, Rotel, Tannoy, Pioneer, QED, equipment and accessories. Demonstration facility, in-House Service Dept.

SWIFT HI-FI, St. Annes Parade, Wilmslow. 0625 526213. Aura, B&W, Denon, Kenwood, Marantz, Nad, Pioneer, Rotel, Systemdek, Tannoy, Revolver, J.P.W., M. Short, Mission, Celestion, Technics, Audioblab, Castle. Open 9.30-6. Dem room. No pressure. BADA member.

THE HI-FI SHOWROOMS, 12A West Str, Congleton, Cheshire (0260)280017. 1 Stanley St, Leek (0533)383780. Celestion, Creek, Exposure, Marantz, Musical Fidelity, Pink Triangle, Project, Rotel, Ruark, Systemdek, Tannoy, Technics. 5 Dem Rooms. Noappts nec. Home trial, Free install, Service Dept. Access, Visa, Lombard Tricity. Open 9-5.30. Closed Wed.

HALE HI-FI, 2 Bold St, Hale Road, Altrincham, Cheshire WA14 2ER. Tel: 061 929 0834. Open Mon - Sat 10am-6pm & later by appointment. Specialising in equipment by: Naim, Quad, Royd, Nad, Denon plus selected others. Large range of quality accessories. On site service department. Installation & delivery. Home demonstrations a pleasure

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PRACTICAL HI-FI, 88 Bridge Street, Warrington, WA1 2RF. Tel: 0925 632179. See our main entry under Preston, Lancs.

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ACTION ACOUSTICS, 155-157 High Street, Redcar, Cleveland. TS10 3AN. 0642 480723. Audio Innovations, Denon, Harman Kardon, JBL, Michell, Musical Fidelity, Pink Triangle, Revox, Rogers, Sugden, Sonic Link, Townsend, TDL, Thorens, etc. Dem room. Appointments nec. Home trial facilities, free installation, service dept. Access, Visa & HP. Open 9.15-5.30.

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UPTON ELECTRONICS, 31 Torquay Road, Paignton, Devon. TQ3 3DT. Tel: 0803 551329. Pioneer Reference Point Dealer. Denon, Sony, Technics, Harmon-Kardon, Orelle, Kinshaw, Creek, Quad, Audio-Innovations, Target, Tannoy, Mordaunt-Short, Castle, TDL, Ruark, JPW, Royd, Project, Monitor-Audio, Micromega, Chord, van den Hul, Jamo. Full range of accessories etc. Demonstration room, Home dems. free delivery and installation, own in-house service dept. AAccess, Visa, Amex. Credit facilities 9.00 - 5.30, 9.00 - 1.00 Wed.

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PRACTICAL HI-FI, 10 Preston New Road, Blackburn, BB2 1AW Tel: 0254 691104. See our main entry under Lancaster

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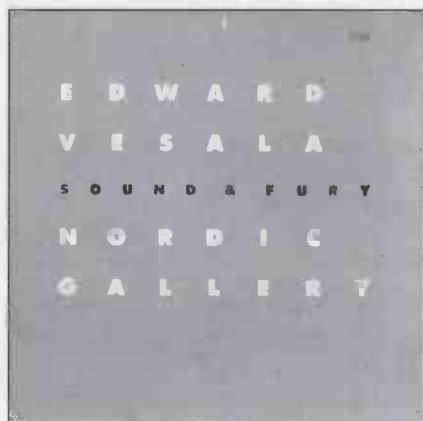
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Simon Hopkins



EDWARD VESALA SOUND AND FURY Nordic Gallery

ECM 523 294-2

● Finnish drummer, composer and bandleader Edward Vesala has been a bit of a regular in this column, mentioned as often as not for the work of some of his illustrious alumni. As if to hammer that point home, new work by one of his most astonishing former sidemen is reviewed later in this month's column. But with *Nordic Gallery* we're firmly on Vesala's own ground, with a set of his own compositions and with a new

incarnation of the shifting line-up, big band he's led for the best part of a decade.

But before all that, it's worth a word on Vesala's extraordinary background. First up, this: Vesala is without doubt one of Europe's most consistently creative, innovative and generally astonishing musicians; During the early 70s he began to record as a sideman for other European progressive jazzers, perhaps most notably with the Norwegian saxophonist Jan Garbarek; the Tryptikon trio of bassist Arild Andersen, Garbarek and Vesala remains one of the finest - and fieriest - groups to have graced European jazz.

Vesala's vision and talent were always going to put him into the leader's spot, and early Vesala-led recordings - perhaps most astonishingly 1975's *Nan Madol* - showcased his free-ranging musical imagination. Having grown bored of playing psychedelic rock and dissatisfied with the more formal training he ducked out of at music college in Helsinki, Vesala had spent much of the early 70s travelling through Asia, and the music he began to write and perform as he reached musical maturity was saturated in the exotic colours and textures he had assimilated on his travels.

This is, bear in mind, way before anything as modish or as self-conscious as "world music" creapt its way into some marketing man's vocabulary. Take *Nan Madol*: Vesala easily melded Eastern European and Asian melodies with jazz big band ferocity and the complexity of contemporary "art" music, but never with any sense of eclecticism-for-its-own-sake. This music was broad stuff, for sure, but effortlessly so: natural. And forever shot through with a beautiful austerity that it's difficult to avoid associating with the Far North (and remember, Vesala himself grew up in the middle of a forest, for chrissake, a remote upbringing even by Finnish standards).

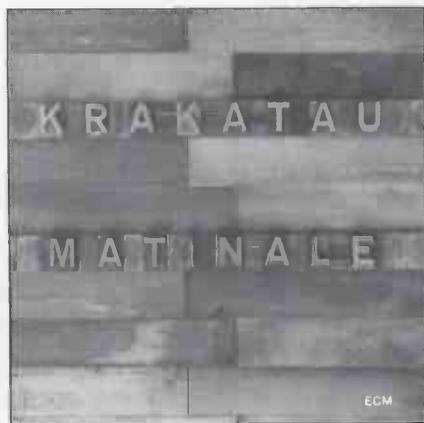
Vesala formed the band *Sound and Fury* as an extension of workshops he was running in the mid '80s. He was able

to bring together a predominantly young band from all kinds of backgrounds: from folk and classical music, from rock music, from jazz. The results have been pretty astonishing. *Sound and Fury* have recorded three albums for ECM, 1987's *Lumi*, 1989's *Ode to the Death of Jazz* and 1992's *Invisible Storm*, a trio of fantastic records which genuinely redefine what a contemporary jazz big band can achieve.

This year's offering, *Nordic Gallery*, is, texturally at any rate, certainly no more a traditional recording, and not exactly a sedate one. The basic septet of three saxes, trumpet, keyboards, guitar and drums is augmented with accordionist Petri Ikkela, bassist Pekka Sarmanto, cellist Kari Linsted and former *Sound and Fury* full-timer Tapani Rinne on clarinet. And, as ever, the band members are pretty much all multi-instrumentalists, so that thrown into the already richly variegated mix of saxes, bass and alto clarinets, flutes, piccolos, synths are such arcana as the Japanese koto, the Indian tamboura and Javanese angklung. And then... Vesala has perhaps made his most overt statement about his interest in the sounds of the global village with the introduction to *S&F* of "found sound" recordings made on recent travels in the Far East (check out those bizarre vocals on what is, for me, the album's outstanding moment, 'Fulflandia').

Despite all this, despite all these mesmerising textures, despite all the evident synchronistic thought going on between musicians who know each others playing so intimately, this is still *Sound and Fury*'s most conservative record to date. For one thing, the players seem on a much tighter rein than, say, on *Ode* or *Lumi*. Irlo Haarla's synths, whose psychotic interjections gave Vesala's twisted music yet another twist throughout *Invisible Storm*, are pretty much absent; Rinne, a strident blower (and, incidentally, leader of his own fine avant-rock group *Rinneradio*) seems oddly muted; and, perhaps most tellingly of all, the scorching electric guitar that Jimi Sumen brought to the band after the departure of fellow screamer Raoul Bjorkenheim, is almost entirely gone, limited to a few incidental bursts on the opening 'Bird in the High Room'. It's obvious that Vesala wants this band to have an ever more "classical" approach, with increasing spaces of his music taken up with meticulously written parts. The result is certainly very fine music, music by turns beautiful, ascetic, exuberant, violent and serene, but the excitement of moments like the tenor solo that erupts half-way through 'On the Shady Side of Forty' is all too rare a treat on *Nordic Gallery*.

Not, then, *Sound and Fury*'s, and certainly not Edward Vesala's furthest reaching stuff to date. Fans will need this record, but newcomers should jump on at *Lumi* or *Ode*, which is a disappointing thing to have to report, indeed.



KRAKATAU
Matinale
 ECM 523 293-2

● One of the most astonishing musicians to have graduated from Vesala's Sound and Fury has been the guitarist Raoul Bjorkenheim. A Finn born and partly raised in Los Angeles, he'd come up through a whole bunch of psychedelic rock, fusion and jazz groups when, in 1985, he was recruited to the drummer's entourage. He spent three intense years there, gradually shedding the rock and jazz clichés of his early influences and emerging on the group's 1987 album *Lumi* as that much sought-after phenomenon: a guitarist with a new story to tell on the world's most over-played instrument. Sure enough, his playing had obvious debts to Hendrix and John McLaughlin and Terje Rypdal and even Frank Zappa, but to these influences he brought a volatile, distortion-soaked attack almost punk in its aggression. Bjorkenheim and Vesala formed Krakatau in 1987 as the flip side of Sound and Fury's coin. Where S&F was a large band whose improvised solo flights were firmly rooted to Vesala's complex, almost classical charts, Krakatau was a small group whose performances were far less fettered by form: essentially, a freewheeling, improvising rock group. And one of which Bjorkenheim quickly assumed leadership.

The group's first two records, their eponymous debut and *Alive!*, were comprehensively - ridiculously - ignored (and are now nigh on impossible to find), but their 1992 debut for ECM was an astounding breakthrough. *Volition* showcased Bjorkenheim's ferocious guitar work and long-time cohort Jone Takamaki's blistering saxophone on a set of songs whose mood ranged from monastic austerity to thrashing burn-out. Half-way through the decade, *Volition* remains one of its finest jazz records, perhaps even the best, and I suspect it'll still be so in five years' time.

So frankly, *Matinale* has a lot to live up to, and, equally frankly, falls some way short. Three quarters of *Volition*'s line-up remains: Bjorkenheim on guitars, bass recorder and percussion; Takamaki on a whole array of horns that include tenor,

alto and soprano saxophones, various flutes and the stupendous, home-made Krakaphone; and Uffe Krokfors - like Takamaki, another Sound and Fury alumnus - on bass. They're rejoined by drummer Ippe Katka.

And a fine band they are, too. They work their way through eight of Bjorkenheim's compositions which have a broadly similar range of moods to those on *Volition*, operating in a realm *Matinale*'s accompanying press release quote Bjorkenheim describing as "expressionistic timbre music". It's music that encompasses the haunting tone poem 'Suhka', the slamming avant-punk of 'Raging Thirst' (a sort of Ornette Coleman's Prime time-meets-The Boredoms); the collision of Far Eastern percussion and woodwinds with full-on jazz rock guitar that is 'Jai Ping' and so on. A heady mix; eclectic to the point of category-defying and expansive enough to accommodate the intensely personal musical statements these players are all capable of.

And yet, as with the *Vesala* album, there seems to be something holding Bjorkenheim back. Remember, he's genuinely one of the finest and most aggressively experimental, searching jazz guitar players to have emerged in the last decade. Yet on *Matinale*, a great deal of that ire just isn't there, and Bjorkenheim seems palpably hampered by a guitar sound which at times borders on the slick - a real disappointment given that his direct, dirty sound has been so integral to the intensity of his playing.

It's a drag to have to carp about such a phenomenal musician as Raoul Bjorkenheim, and about such a great band (and in fairness, I must report that Takamaki is a constantly developing, blistering player, easily *Matinale*'s chief strength). A player and bandleader of Bjorkenheim's originality is a rare thing indeed in contemporary jazz; we'll just have to wait for (inevitable) greater things.



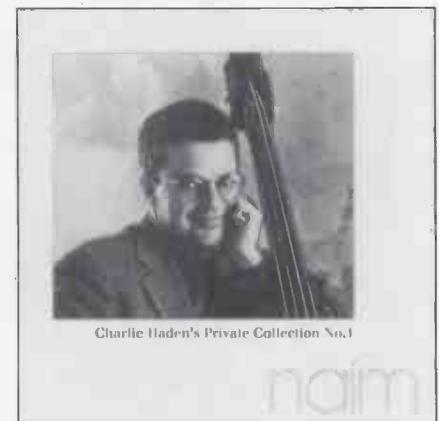
RED SUN/SAMUL NORI
Then Comes The White Tiger
 ECM 521 734-2

● Then Comes the White Tiger implausibly - and highly successfully -

brings together two groups from impossibly diverse backgrounds: Wolfgang Puschnig's Red Sun, a Euro-American avant-fusion quartet of altoist Puschnig's singer Linda Sharrock, bassist Jamaaladeen Tacuma and Tacuma's bandmate from Ornette Coleman's Prime Time, guitarist Rick Iannacone; and Samul Nori, Korea's premier traditional percussion, woodwind and vocal group.

And the music these two groups make together on *White Tiger* is exhilarating stuff, with SN's clattering, polyrhythmic percussion seamlessly welded to Red Sun's unashamedly Prime Time-ish, hyperactive improvising. This won't necessarily go down as one of the milestones in cross-cultural collaboration, but it's hugely more enjoyable than much of the over-worshipful stuff that often gets turned out when musicians from different cultures tiptoe around each other. Frankly, it sounds like this lot had a blast.

Simon Cooke



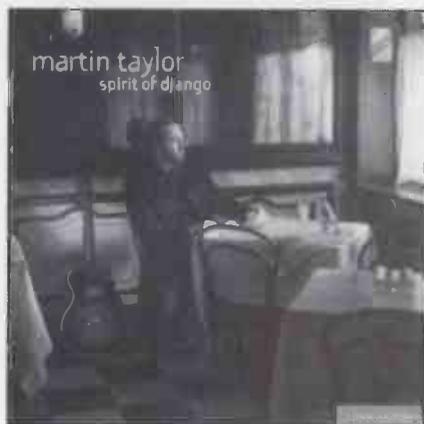
CHARLIE HADEN'S PRIVATE COLLECTION No. 1
Charlie Haden 50th Birthday Concert
 NAIMCDOOS

CHARLIE HADEN'S PRIVATE COLLECTION No. 2
Live At Webster University
 NAIMCDOO6

● Charlie Haden returns on the Naim label, with material ranging from Pat Metheny to J S Bach and proving that he is still ploughing his own furrow through different musical marl. My only quailm about this CD occurred when - on my lean-sounding system - the bass took on a billowing quality, blowing across the sound-stage rather than remaining stationary like the other instruments, (Emie Watts' sax, Alan Broadbent's piano and Billy Higgins', or Paul Motian's drums).

Other CD labels are treated sympathetically but Linn/Naim discs seem to be intractable animals and if you own an unforgiving, direct system there's the

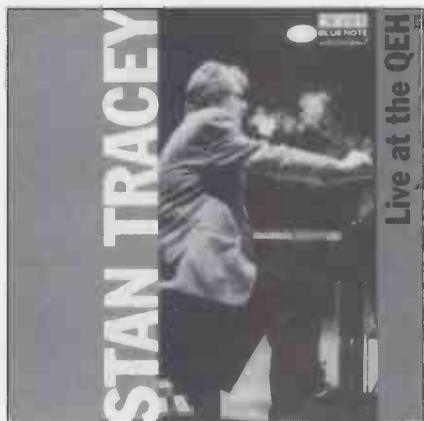
possibility that imaging will suffer. That said, it sounded magical on an appropriate system, where the whole sound is meatier and gains the beef to stand with Haden's virtuosity, and the technical excellence of the recording itself is plain for all to hear; every detail is there to be decoded by a capable system. Unless you like a hard sound, it's excellent.



MARTIN TAYLOR
Spirit of Django
LINN RECORD AKD 030

● Another excellent release from the other half of the Linn/Naim axis, as Taylor swings through a set ranging from 'Nuages' to his own 'Django's dream'. The absence of double bass in Taylor's backing means that the sound-stage here is etched with the crystal clarity normally associated with these two labels.

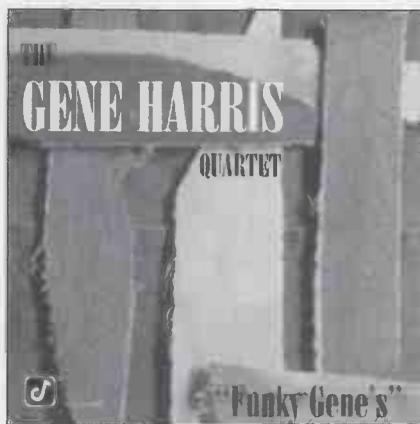
This really is an audiophile CD; all of the rough edges have been smoothed away in the mix without reducing impact. To me it's too 'user-friendly', but hi-fi is there to give a perfect performance every time and this as near to perfect jazz guitar as you'll ever get. Recommended for both jazz neophytes as well as Taylor fans. Very accessible



STAN TRACEY
Live At The QEH
BLUE NOTE 7243 8 31139 2 7

● Blue Note is a record label that has been turning out top quality recordings since before 'hi-fi' was born, and is

synonymous with the great years of jazz. This CD is one that stands up with the best as it tackles everything from the Stan Tracey Orchestra to Stan's solo piano. Too many fine musicians play too many fine tunes to detail here, but recording them all accurately is one tall order, successfully filled. It's not all down to Blue Note though; the recording was made under the aegis of BBC Radio 3 and leased to EMI for release and there is no way I can fault it: perhaps a few nuances are a trifle muddy, brasses occasionally a touch too brazen, but everything is irrefutably there. If you're going to be that picky about it, I'd recommend you scrap your hi-fi and spend the money on gigs, but reality is rarely this good.



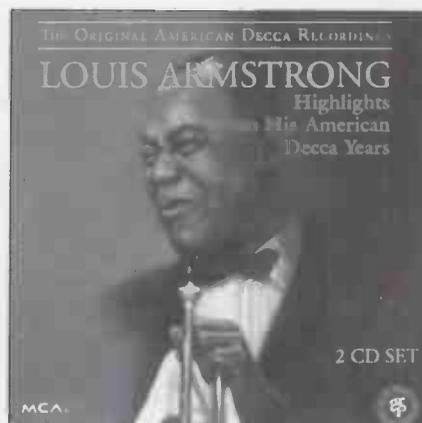
THE GENE HARRIS QUARTET
Funky Gene's
CCD-1609

● Concorde have some of the finest recordings around, and keep a more 'live' feel to their house sound than most audiophile companies, whilst not having the problem of so much history as companies like Blue Note, whose occasional duds mount up over the years. Here, Concorde do the business with Harris' funk-ed-up jazz/blues to create a terrific recording with a wide and precise soundstage. Excellent.

LOUIS ARMSTRONG
Highlights From His American Decca Years
GRP 26382

● You can pick up on CD a Satchmo compilation or album from almost anywhere, but it's often of dubious quality, which will not afford the unwary buyer many years of enjoyment. It is a pleasure then, to discover a compilation which does some justice to the originals; an even greater pleasure to hear that it is part of a series, and virtual ecstasy when the remastering has left intact that 'old world' feel in the music; the aural equivalent of the triple time motion in a silent movie. That's what MCA have achieved with this series.

With 36 tracks on this double CD, it's enough to give any Satchmo neophyte a



thorough grounding in the subject. Everything from 'Jeepers Creepers', through 'Muskrat Ramble', 'Struttin' with some barbecue' and 'I never knew' along with many more obscure tracks to keep you interested. Some of the originals may not have been of 'audiophile quality', but generally this CD presents Louis Armstrong's work to the CD generation at an acceptable level of technical competence.

If you want better sound from your Satchmo, go back to vinyl and be prepared to check every disc with a microscope before you buy it. I suggest you save the time and buy from this series.



FLETCHER HENDERSON
Tidal Wave
GRP 16432

● Louis Armstrong began working for Fletcher Henderson in 1924, but was only a player in Henderson's big band; Coleman Hawkins, Benny Carter, Lester Young and Ben Webster are among the famous names who also played.

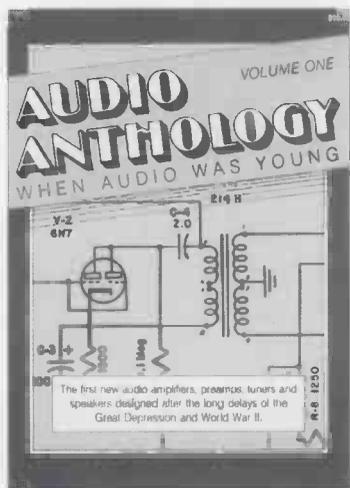
These and many others can be heard on this 'Original American Decca Recordings' compilation of what must be the seminal big band.



NEW BOOKS FOR CHRISTMAS

Audio Anthologies - When Audio Was Young

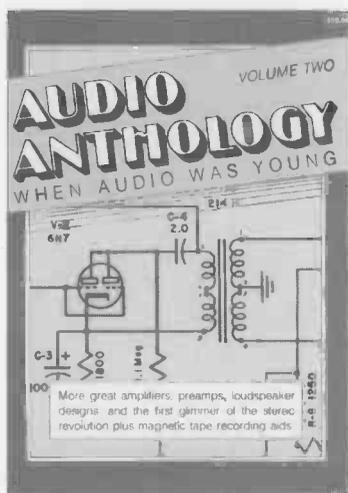
There are five volumes of the Audio Anthologies, listed below with a brief description and guide to their contents. They cover one of the most exciting and important eras of hi-fi, from the end of the second world war, through the introduction of stereo, magnetic recording, binaural recording and the FM Multiplex decoder. They contain many ground breaking circuits and theory covering all aspects of hi-fi design. A must for valve enthusiasts.



Volume One - May 1947 to December 1949

The first new audio amplifiers, tuners and speakers designed after the long delays of the Great Depression and World War II.

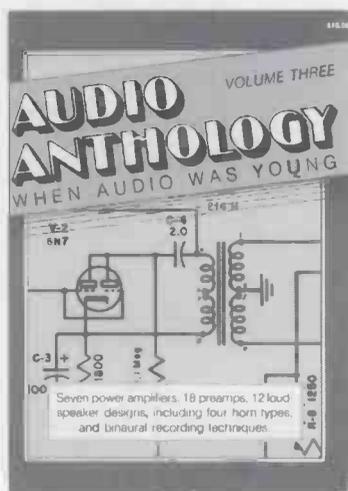
Summary of Contents: 9.5watt, 5watt and 6.5 watt 6AS7G amplifiers, 30watt 300B amplifier, valve FM tuning indicator, 30watt 211 power amplifier, cathode follower amplifier using 6V6, an adaptation of the Williamson amplifier, valve phono preamplifier, several horn and reflex loudspeaker designs and much more.



Volume Two - January 1950 to July 1952

More great amplifiers, preamps, loudspeaker designs, and the first glimmer of the stereo revolution plus magnetic recording aids.

Summary of Contents: Ultra linear 6L6 design and operation of the Williamson, a direct coupled amplifier, Williamson type amplifier using 6A5s, 40watt 845 push-pull amplifier, valve phono and line preamps, valves and loudspeaker damping, design and construction of reflex and horn loudspeakers.



Volume Three - August 1952 to June 1955

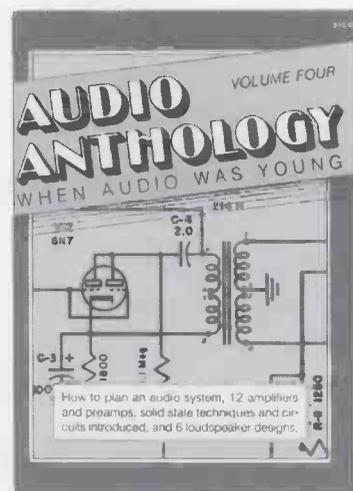
Seven power amplifiers, eighteen preamps, twelve loudspeaker designs, including four horn types and binaural recording techniques.

Summary of Contents: Simple valve phono stage, transformerless amplifier using 6082, 20watt 5881 amplifier, 10watt 6V6 amplifier, stereo valve preamp, high quality valve phono stage, a preamp for the Williamson, low distortion tone control preamp, binaural or stereophonic?, transistor phono amp, corner horn loudspeaker, concrete horn loudspeaker.

Volume Four - July 1955 to December 1957

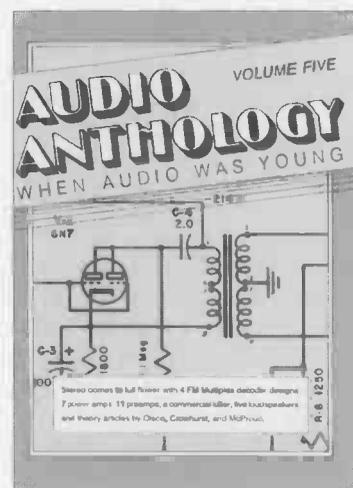
How to plan an audio system, twelve amplifiers and preamps, solid state techniques and circuits introduced and six loudspeaker designs.

Summary of Contents: 18watt 5881 amplifier, 4watt single-ended tweeter amplifier, budget 11 watt amplifier, versatile bass/treble control, transistor theory, transistor preamp, transistor techniques,



battery powered transistor phono preamp, loudspeakers explained.

Volume Five - January 1958



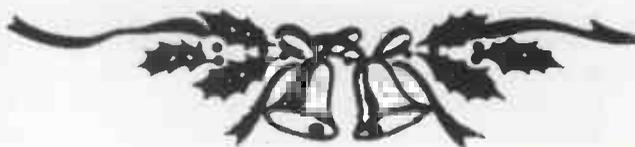
to December 1959

Stereo comes to full flower with four FM Multiplex decoder designs, seven power amps, eleven preamps, a commercial killer, five loudspeakers, and theory articles by Olson, Crowhurst and McProud.

Summary of Contents: Stereo valve multiplex decoder, 7watt EL84 amplifier, valve active crossover and 20watt treble amp/50watt bass amp., monaural, binaural, monophonic and stereophonic explained, heterodyne FM multiplex adapter, transistor preamp, 60watt EL34 amplifier, high power audio amplifiers, hi-fi loudspeaker enclosure.

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AUDIO ACCESSORIES



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AUDIO ACCESSORIES

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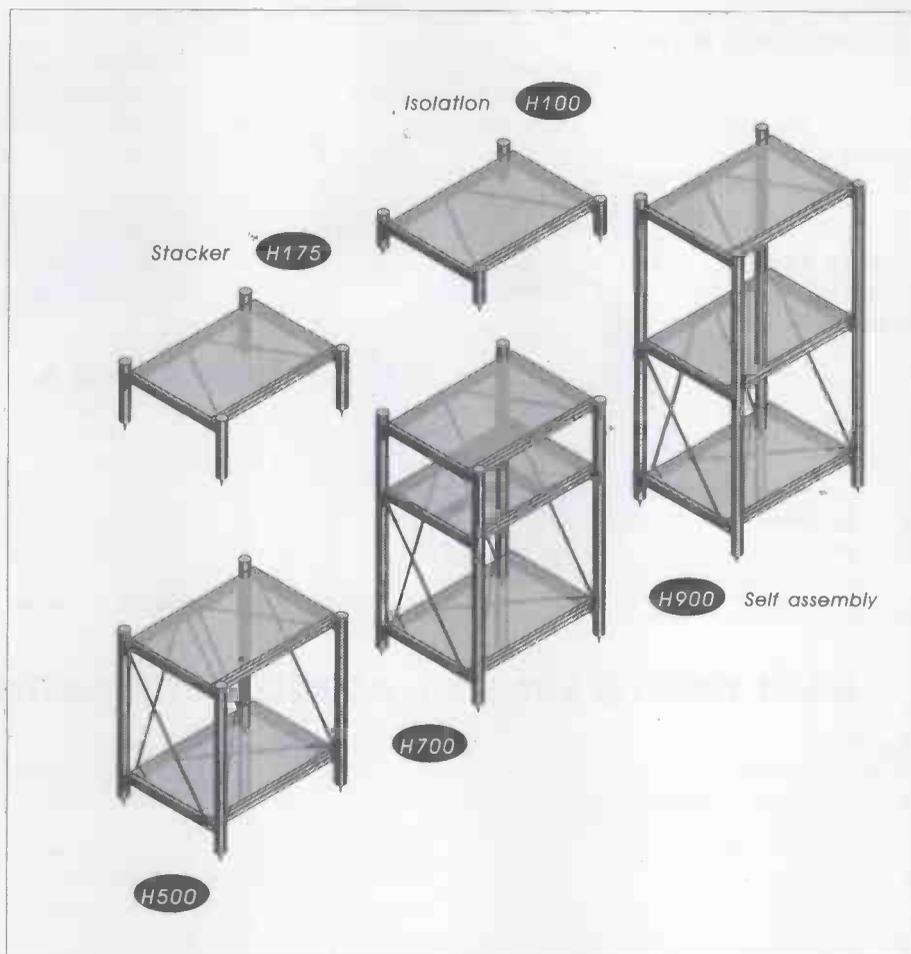
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ELECTROSTATIC LOUDSPEAKER DESIGN AND CONSTRUCTION, by Ronald Wagner. £19.95

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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.

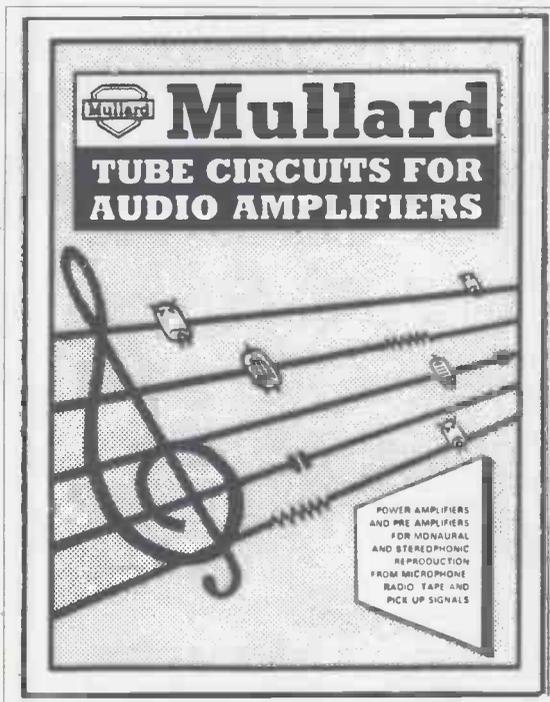
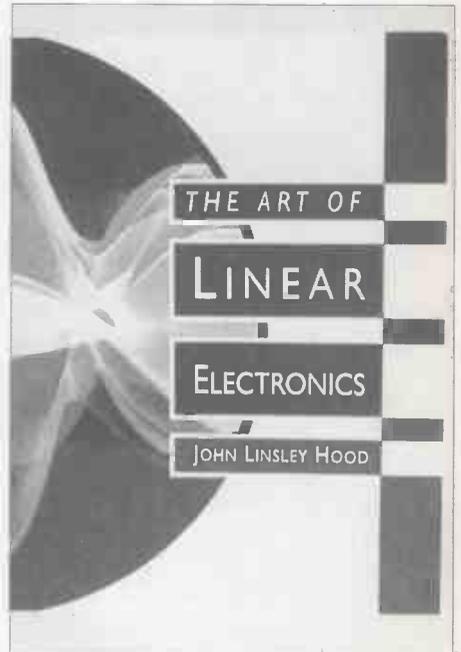
principles through to full design exercises and practical circuits.

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

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MULLARD TUBE CIRCUITS FOR AUDIO AMPLIFIERS. £13.95

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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

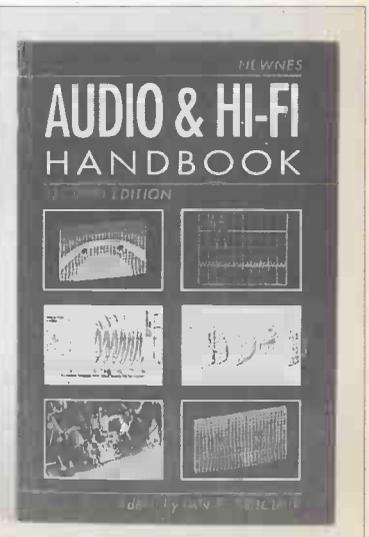
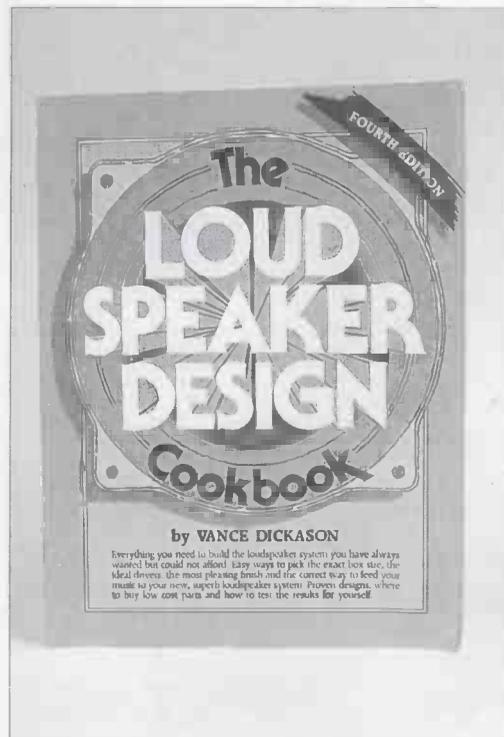
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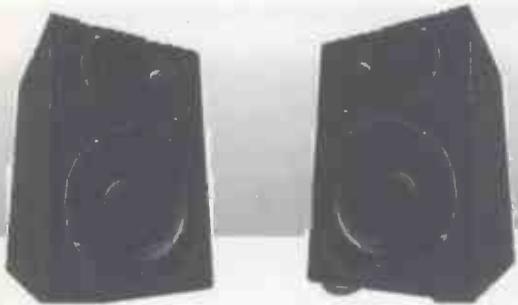
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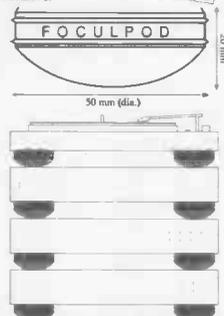
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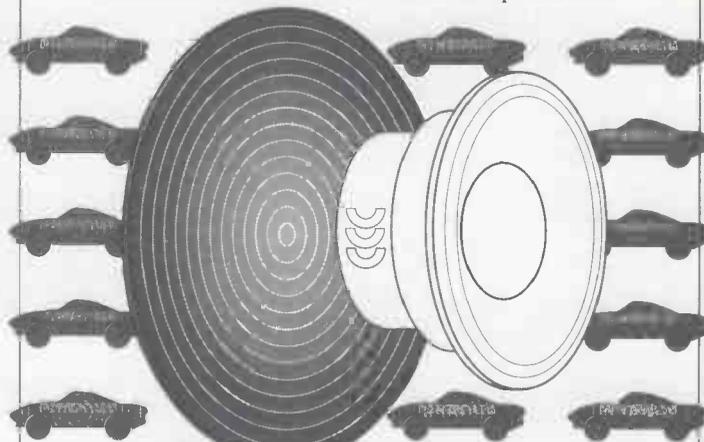


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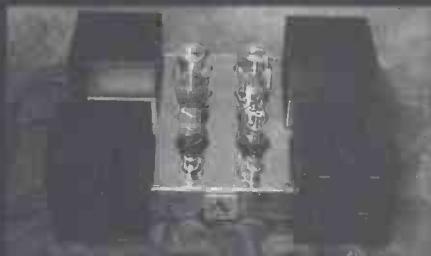
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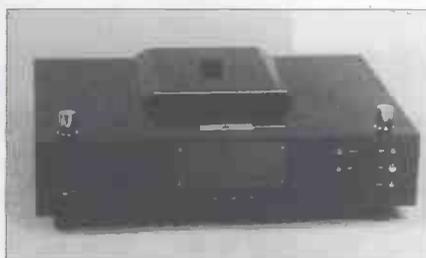


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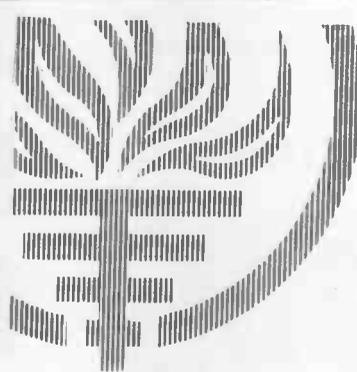
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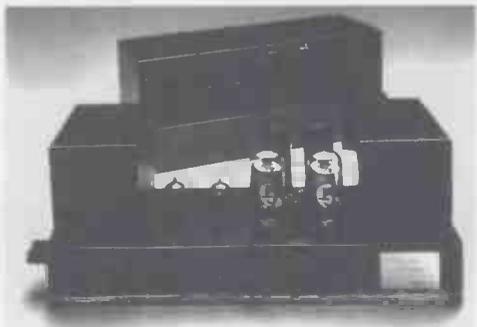
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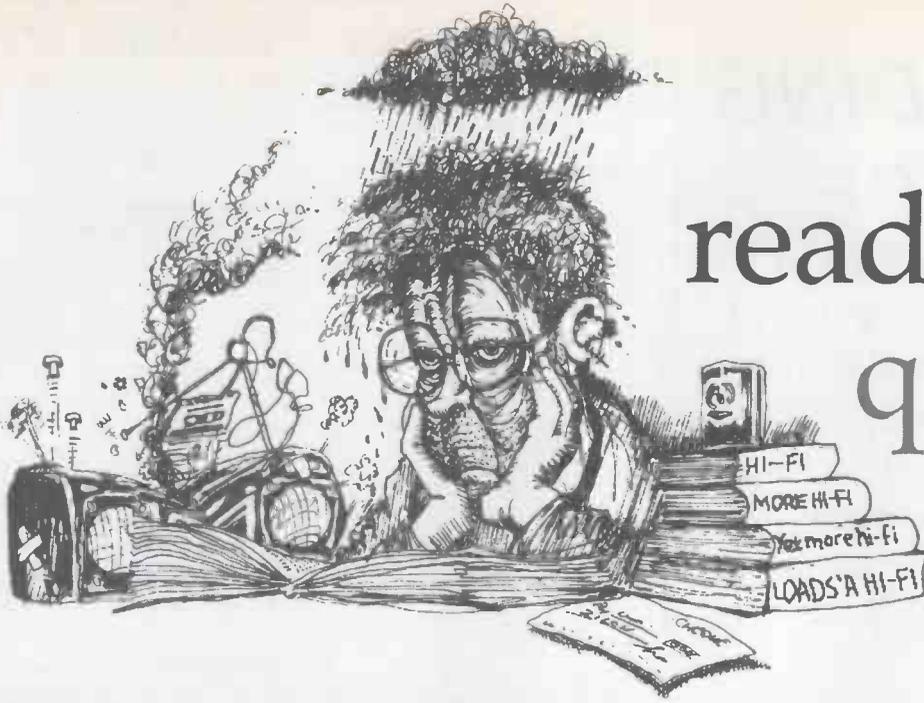
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readers' queries



POWER WITH SUBTLETY

I am writing for some advice. My system consists of DPA Transport T1, Bigger Bit, A400 amplifier and Harbeth HL-P3 loudspeakers. The speaker cable is Furukawa FS-2T20P and the interconnect is a DPA Slink. In general I like the sound of my system. It is very neutral, transparent and imaging is very good. But, sometimes when listening to heavy orchestral recordings, the system lacks drive and the sound is quite hard. I suspect that maybe the Harbeths have a low impedance and the A400 does not have enough current to drive it properly. I would like to upgrade my amplifier. My short list is: Audiolab pre and power, or DPA200s pre and power. Would you give me a bit of advice for the choice of amplifier please. I listen to classical music only.

Anthony Cheng
Cambridge.

Both of the amplifiers you have short-listed are capable of driving the Harbeths well. You are right that they do have a low impedance in the bass; when we reviewed them we measured just 3Ω at low frequencies, a tough load for all but the most butch of amplifiers. The only

Write in with your problems to Hi-Fi World, 64 Castellain Road, Maida Vale, London W9 1EX. Our panel of experts will endeavour to solve them, or at least offer some practical advice.

other pre/power I'd recommend, and worth an audition is the Sugden AU41C/P, but in the end you will have to audition all three and decide for yourself. All three are capable of driving the HL-P3s, so we would recommend any of them. In the end the final decision is personal, one you'll have to decide for yourself in a demonstration. If you are unsure, most good dealers will arrange a home demonstration where you can relax and listen in familiar surroundings. All three are excellent, and which ever you choose it won't be a mistake. **DB**

It sounds to me as if you may be over-driving your A-

400. The Harbeths are very insensitive, producing around 83dB sound pressure for one watt of power input, whereas 86dB or more is common these days. If you have a large room and play loud, this will happen with some ease. If this is the case, then you'll need a lot more power. Consider a Quad 606, which has lots of welly, slightly exaggerated bass, but an affordable price, or a Chord SPM1200 which is a power house with an especially strong grip on its bass output. **NK**

PRE-AMP PASSION

I am a proud user of a battery-powered QED Digit with split (digital/analogue) power supply; Marantz CD80 CD-transport; Audio Synthesis Passion pe-amp and Moth 30 monoblocks. The sound is very good, but I would like to have a little bit more power and dynamics. I think that this could be realised by improving the output stages of the Digit, or by adding a buffer-stage between the Digit and the Passion. Can you help me?

Also, in Hi-Fi World Supplement No8 (June 1994) I read a very interesting article about a cable compensated, passive, pre-

amp. How can I modify my much loved Audio Synthesis Passion to make it compensate?

Dieter Strecker
Sankt Augustin,
Germany.

The Moth power amplifiers you are using are very nice and sweet, but you could certainly do better with a more powerful and energetic alternative. You don't mention which loudspeakers you are using either, so it is difficult for us to provide a full answer. Try either the DPA200S which is a little more forceful and analytical, but still sweet and detailed, or Naim's NAP180 which is extremely revealing and detailed.

The Digit uses a dual op-amp NE5532 on the output, which is an industry favourite for its reasonable performance and low cost. However this can be improved upon relatively easily. Richard Bethal of Polar electronics, a specialist in this area, suggested that the OP275 from Analogue Devices would be a superb replacement offering superior sound. You can contact Polar on Tel: 0525 377093. Also, Audio

Continued on page 113...

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.... Continued from page 111

Synthesis do a high quality line driver-stage for the Passlon, which may well be worth investigating. **DB**

BETWEEN A ROCK AND A HARD BASS

A point I'd like to bring to your attention, a point that I am beginning to find annoying, r.e. 'speaker tests: "The bass has a strong throw from the cabinets"; "A good 'speaker providing window-rattling bass"; "Good bass weight....etc."



Systemdek's 931s have a natural sound without bass emphasis.

For goodness sake you chaps, why in almost every 'speaker test that I read (although, not so much with yourselves, but still prominent in your reviews), do they go on about bass, as if everything revolved around it and nought else. Oh, I wish I'd kept my little Wharfedale Diamonds.

Writing as a person who listens to most music (tolerant of everybody's tastes, my wife included, thanks Ma and Pa), I listen to Rock, or should I say to headbangers' music - Iron Maiden, Guns 'n' Roses, Bon Jovi, AC/DC et al. The trouble is my Mission 780s can't cope and I end up turning it down. As the volume goes up they become boomy; all I seem to hear are

kick drums and bass guitar.

Now, I know it's OK to some people, but I want to hear more of the lead and rhythm guitars, so is it my fault for expecting too much from £200 'speakers?

I know some people are going to say, "Uh, oh, another headbanger" and pigeon hole me, but I also listen to Suzanne Vega, Cat Stevens, Al Stewart, Steely Dan, Neil Young, David Bowie, Elvis Costello, Steve Miller and R.E.M. So I think these 'speakers handle the above quite well, but maybe the 'little Diamonds' had such

a small bass/mid-range, that it was simply unable to produce this boominess.

I have seen quite a few bands live, and like most hi-fi people I want to get as near to this as I can, but I think I'll have to spend a lot of dough before I come even near.

My 'speakers sit on Linn Kann stands which are now sand-filled. I've tried dense foam plugs, in-out, polystyrene cones, on and off, grills on and off, you name it, but I'm still open to ideas. They are bi-wired with Naim NAC4 cable from an Exposure integrated and fed by a Rega 3 with standard arm. The chink in this armour is a Linn K9 cartridge which I hope to replace soon with either a Goldring or a Super Bias.

I do live in hope and I've faith in the Exposure and Rega, so I guess I'll have to go listening and shopping. For now I'll have to put up with Axel Rose swimming in the back of these over-rated (to my ears) 780s.

Well done on a good balanced mag that I buy most months. I'm not convinced of CD yet, although I do use a Kenwood DP2050 sometimes.

**Martin Wilson,
Eastbourne,
East Sussex.**

Funnily enough, in our view too many people want extraordinarily heavy bass from their hi-fi systems and seem to consider this a simple arbiter of goodness, whilst we often veer in the other direction, finding, like you, that heavy bass is tiresome and overpowering. There's more to music than boom...boom...boom. As editor, I detect no bias in Hi-Fi World toward talk about bass, but having said that, I do like to see bass quality given consideration in reviews to keep them balanced and comprehensive in their subjective sweep.

One other point to bear in mind is that many quite-acute problems in domestic audio reproduction occur only at low frequencies, where wavelengths are long and energy in the signal high. Room resonances and loudspeaker cabinets all suffer in these regions and we do, necessarily, have to concentrate on the subjective consequences. Perhaps this appears to swing us toward talk about bass. **NK**

Mission's 780s, in my experience, do have a heavy, slightly muggy character to their upper bass, which may be giving you the boom you find so unpleasant with high level metal rock. It is common, (almost the rule) with small standmounting loudspeakers, to give them

bass and treble lift at frequency extremes. The bass response is lifted to give them a 'larger than life' sound with apparent deep and powerful bass coming from a small box - it impresses potential customers. The treble is lifted to a similar degree to balance the overall sound; bass lift alone would give a dull presentation. If a loudspeaker this size is designed with a 'flat' response it can often sound tinny and midrangey.

There are a couple of little tweaks you can apply though, that may go some way to solving the problem without having to change the Missions. Firstly, a light foam bung inserted in the port and moving them out from the walls will reduce bass prominence significantly.

Swapping over your loudspeaker cables to one of Ortofon's high purity copper SPK cables will also help to give a dryer, more controlled bass and improve midrange and treble detail at the same time.

If these tweaks fail, or don't clean up the bass enough for you, try having a listen to Systemdek's 931s. They don't have the bass peak of most miniatures, but sound full and solid all the same, without boom or overhang. They are also superb across the mid and treble and would suit the rest of your system particularly well. **DB**

DIGGING FOR A LEAK

Could you please advise me on which Leak amplifier would be suitable for my Mk2 ProAc Mini-Tower 'speakers and Marantz 63 CD player. Has it an input for taping? Thank you.

**Mr C Williams
Wrexham,
Clwyd,Wales.**

Continued on page 115...

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| Denon 2500/4400 pre/pwr | mint s/h | | | £895 |
| Beard P35/C35 pre/pwr | mint s/h | | | £1095 |
| Exposure XI, IX, IV pre/pwr | mint s/h | | | £1295 |
| Musical Fidelity P150/P3A | mint | | | |
| s/h | | | | |
| 450 | | | | |
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|---|-----------|---------|---------|
| MARK LEVINSON ML7A PREAMP. MINT | 2995 | S/HAND | £8900 |
| WELL TEMPERED WLT TURNTABLE & ARM. MINT | £1,095 | EX/DEMO | £1,995 |
| MERIDIAN 602 TRANSPORT 608 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 |
| METAXUS ICARIUS INTEGRATED AMPLIFIER CHROME. MINT | £595 | EX/DEMO | £895 |
| AUDIO RESEARCH SP15 REVISION A PREAMP BLACK | £3,495 | S/HAND | £7,000 |
| PINK TRIANGLE PIP 2 MK2 VISHAY MODIFIED PREAMP. MINT | £1,795 | S/HAND | £4,500 |
| CARY CAD 5500S PREAMP PHONO & PROCESSOR. MINT | £995 | EX/DEMO | £2,250 |
| COUNTERPOINT SAIL LINSTAGE & SA9 PHONO STAGE GO BLOW YOUR MIND & WALLET 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 SA4 OTL MONO AMPS 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 | £9,250 |
| 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 |
| CELLO ANATI 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 CONSEQUENCE SPEAKERS FLAGSHIP MODEL IN CHERRYWOOD DYNAMIC DRAMA, STUNNING MINT | £10,250 | EX/DEMO | £15,275 |
| GENESIS 8300 SPEAKERS & STANDS PIANO BLACK MINT | £1,395 | EX/DEMO | £1,895 |
| MERIDIAN ARGENT 3 SPEAKERS ROSEWOOD MINT | £995 | NEW | £1,485 |
| PROAC PROSTATIC ELECTROSTATIC SPEAKERS RARE V.G.C. | £1,995 | S/HAND | PHONE |
| SNELL A3 SPEAKERS WALNUT V.G.C. | £4,495 | S/HAND | £8,995 |
| APOGEE DIVA & DAX TAUPE SPEAKERS MINT | £6,995 | S/HAND | £15,000 |
| METAXUS IRAKLIS MK2 POWER AMP CHROME MINT | £895 | EX/DEMO | £1,500 |
| AUDIO RESEARCH D125 KT90 VALVES AMP. MINT | £2,250 | S/HAND | £ 4,650 |
| MUSICAL FIDELITY P270 MK2 POWER AMP. MINT | £895 | S/HAND | £1,500 |
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| MARANTZ LEIZ CD PLAYER LTD EDITION BALANCED QUICKSILVER PRE AMP MINT | £1,549.95 | S/HAND | £3,000 |
| MERIDIAN 601 DSP PRE AMP BALANCED MINT | £1,250 | NEW | £1,750 |
| CARY 2A3 VALVE POWER AMP 15 WATT TRIODE MINT | £1,995 | EX/DEMO | £2,750 |
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| AUDIO RESEARCH M100 VALVE MONO AMPS MINT | £2,995 | S/HAND | £7,000 |
| AUDIO RESEARCH M300 MK2 VALVE MONO AMPS MINT. | £4,995 | S/HAND | £12,000 |
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| CABSSE SKIFF SPEAKERS WALNUT MINT. | £1,200 | EX/DEMO | £1,500 |
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| NEW IN THIS MONTH | | | |
| AUDIO RESEARCH SP14 PREAMP BLACK MINT | £1,995 | S/HAND | £3,300 |
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| RESEK CHALLENGER INTEGRATED AMP. MINT NEW | £795 | EX/DEMO | £12,000 |
| RESEK EXPONENT REFERENCE MONO BALANCED MINT | £395 | S/HAND | £2,250 |
| DIAMOND ACOUSTIC REF 2 SPEAKERS & STANDS OAK MINT | £395 | S/HAND | £1,400 |
| B & W ACTIVE 1 SPEAKERS OAK & STANDS VGC | £895 | S/HAND | £1,400 |
| BURMESTER 846 LINE PREAMP CHROME BALANCED MINT | £795 | S/HAND | £1,650 |
| AUDIO RESEARCH CLASSIC 30 POWER AMP MINT | £1,595 | S/HAND | £2,600 |
| ROKSAN DPI CD TRANSPORT MINT. | £795 | S/HAND | £1195 |
| ENLIGHTENED AUDIO DSP1000 DAC MINT. | £595 | S/HAND | £1000 |
| CONCORDANT EXHILARANT VALVE PREAMP MINT. | £595 | S/HAND | £1000 |
| AUDIO RESEARCH LS2 LINE PREAMP BALANCED MINT. | £195 | S/HAND | £2795 |
| CONRAD JOHNSON PREMIER 3C VALVE PREAMP MINT. | £1595 | S/HAND | £3600 |
| CJ PREMIER 4 POWER AMP | £1995 | S/HAND | £5000 |
| CONRAD JOHNSON PREMIER 4C VALVE PREAMP MINT. | £695 | S/HAND | £1100 |
| DYNACO ST 70 SERIES VALVE POWER AMP MINT. | £1495 | S/HAND | £3000 |
| MARTIN LOGAN CLSI ELECTROSTAND SPEAKERS VGC. | £4995 | S/HAND | £10900 |
| APOGEE DEVITA SIGNATURE & DAX CROSSOVER MINT. | £795 | S/HAND | £1,450 |
| LYNX PULSAR PRE & POWER AMPS MINT | £795 | S/HAND | £1400 |
| AUDIO INNOVATIONS L2 PRE & POWER MODIFIED VGC | £795 | S/HAND | £1400 |
| MELOS 222B PREAMP BALANCED MINT. | £695 | EX/DEMO | £2995 |
| MICROMEGA TRIO CD PLAYER MINT | £2495 | S/HAND | £4499 |
| KLYNE SK 5A PREAMP MINT | £1495 | S/HAND | £2750 |
| CITATION 18 TUNER ORIGINAL ATIERICAN V.G.C | £295 | S/HAND | £650 |
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| ROWLAND MODEL 3 MONOS POWER AMP BALANCED MINT | £2495 | S/HAND | £4000 |
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| MERIDIAN 605 MONO AMPS BALANCED MINT. | £1550 | E/D | £1900 |
| MARK LEVINSON NO 20 REFERENCE MONO BALANCED | £5995 | S/HAND | £11000 |
| SOTA COSMOS VACUUM PLATER MINT | £1995 | S/HAND | £4400 |
| SOTA STAR SAPHIRE 3 SME 908 MINT | £1250 | E/D | £3400 |
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| GLASS AUDIO DRINK2 PREAMP BALANCED MINT | £2495 | S/HAND | £3900 |
| GRYPHON LTD EDITION PREAMP BALANCED MINT. | £3995 | S/HAND | £8000 |
| AUDIONOTE M7 SILVER PREAMP MINT. | £2250 | S/HAND | £8000 |
| DYNAUDIO FACESTE SPEAKERS CHERRYWOOD VGC | £1200 | E/D | £2600 |
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| SONUS FABER EXTREMAS & STANDS WALNUT WALNUT MINT | £4795 | S/H | £6900 |
| WILSON WATT 2 PUPPY 1 SPEAKERS PIANO BLACK MINT MINT | £6495 | S/H | £13000 |
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.... Continued from page 113

The Mini-Tower has a reasonably well controlled 8Ω impedance and average sensitivity. It needs 20watts or more, so we'd recommend a Leak TL50. Contact Graham Tricker on 0895-833099 who can probably help. **NK**

If you are considering vintage Leak equipment, we'd strongly advise using a modern pre-amplifier to drive a Leak power amplifier, say the TL50 as recommended above. Many of the vintage pre-amplifiers, whilst being beautifully made and styled, are easily bettered by modern alternatives. Even a budget NAD or Rotel preamplifier should sound notably cleaner and clearer and will have the tape monitor facility you ask about. **DB**

ROGERS REJUVENATION

I wonder if you can help me with my problem?

I recently bought an old valve amplifier, a Rogers Developments RD Junior amp and control unit. The problem is the 'speaker impedance matching. On the back of the amplifier is an international octal socket and a plug; apparently, when the amplifiers were in production, you bought a plug which was wired to match the output transformer to your 'speakers. My amplifier is wired for 2Ω to 3Ω , I want to use 8Ω or 15Ω . I have looked at the rear of the socket, the wires from the output transformer are just different colours, no other indication as how to wire it.

I have the handbook for it, but this unfortunately does not include include the circuit diagram. I am hoping

that you may know how to wire this plug to match either 8Ω or 15Ω .

I have re-built the rest of the amplifier, all resistors, capacitors and a new set of valves, to try it out. I wired a pair of Leak 2030 4Ω to 8Ω , in parallel - it sounded good.

I collect and play 78rpm and mono LPs, the various filters on the control unit will suit this purpose well. I want to be able to use the Leak 8Ω 'speakers, or an old Wharfedale 10" Gold unit I have which is 15Ω .

Eric Lowe, Rochdale, Lancashire,

Haden Boardman of Audio Classics (if we don't know, we know who does know!), provided the following sage advice, from his dusty archives of Britain's industrial history:

2Ω - 3Ω - strap pins 1, 5 & 7 together and pins 2, 6 & 8 together also. Connect a 1800Ω resistor in parallel with a 300pF capacitor across pins 3 & 5.

6Ω - 8Ω - strap pins 1 to 6 and connect a 3300Ω resistor in parallel with a 300pF capacitor across pins 3 & 5.

12Ω - 16Ω - strap pins 1 to 8 & 6 to 7. Connect a 4700Ω

resistor in parallel with a 200pF capacitor across pins 3 & 5.

Haden Boardman, Audio Classics, Tel: 019042-57525.

BASS DEPARTMENT

I should like to request your advice/assistance with two problems which can be quite simply stated, I only hope they can be as simply solved.

1) One of my Gale GS401 'speakers is producing a sort of 'fuzzy overhanging' sound at the bass end of the sound scale. It is particularly noticeable on reproducing electric bass guitar, having eliminated everything else in the sound chain, I am forced to conclude that the culprit is the bass unit of the offending 'speaker. Do you know of any source for a replacement bass unit or someone who can effect a repair?

2) I am planning to emigrate to West Africa where the climate is extremely hot and humid. I understand that in such a climate vinyl LPs warp dramatically and become unplayable, dust can also be a problem.

Not being in a position to convert my 1,000-plus collection from LP to CD, I am hoping you may be able

to recommend a storage system which will enable my LPs to survive the rigours of the proposed new home.

Michael D Foster Oughtibridge, Sheffield.

The Gale GS401 loudspeaker used Peerless drive units, Lockwood Audio the 'speaker repairers told us (081-207-4472), and it's available from Wilmslow. Wilmslow filled in the rest of the picture: the original doped paper cone Peerless unit isn't manufactured any more but there is a near equivalent, the Peerless 210WR, that gives a similar performance. It's available from Wilmslow Audio, Wellington Close, Parkgate Trading Estate, Knutsford, Cheshire WA16 8DX, Tel: 0565-650605, price £45 inc. VAT. **NK**

As far as your records are concerned there are a couple of things you can do to help keep them in good condition. You need to find a storage system that can be closed tight to reduce the amount humid air your records are subjected to. Try Traxs, Tel: 0803 855746, who make sturdy flight cases that could be sealed with the addition of a

rubber strip or draft excluder around the seals. Make sure that the record storage boxes are full so that your records are held flat and firmly in place. You could also use desiccators - the little sachets that are used to absorb moisture often found in packaging - placed in the storage boxes. These measures will only help slow the deterioration of your records, but hopefully enough for you to get a lifetime's worth of enjoyment from them. If you are worried about dust, a Nitty Gritty

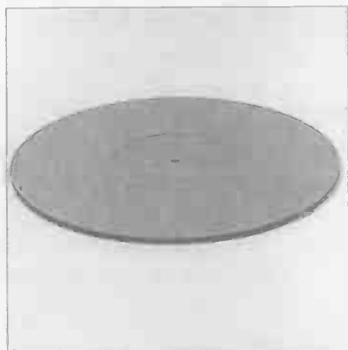


The Nitty Gritty record cleaning machine will keep your records in top condition.

Continued on page 117....

SLATE AUDIO

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THE GLASSMAT

This turntable platter mat was designed to improve the performance of the Garrard 301 and 401 record players. However it was soon realised that it gave astonishing results on other turntables. So good was its performance that we decided to make it available as a universal replacement mat, suitable for any other deck. We had known for some time that the surface on which a record is placed has a profound influence on its sound quality. We also knew that any ringing or resonance in the platter would be transmitted into the pick-up and inevitably introduce colorations. In order to cure the inherent ringing present in both the 301 and 401 platters, it was clear that what was needed was a mat capable of a high degree of damping. A new rubber mat was considered, but after extensive tests on various compounds, it was discovered that rubber was the least likely candidate for the job. Although successfully damping the platter, in all cases rubber introduced colorations of its own, as well as robbing the music of large amounts of detail and ambience. Other materials were tried, all of which varied in their performance according to the relative hardness. We therefore came to the conclusion, that in order to achieve maximum information retrieval with optimum damping, a hard and unyielding material was required. Glass was found to be ideal in every respect, damping is complete, the playing surface being quite simply sublime. In terms of detail resolution and sheer three dimensional ability, no other mat comes close. But then you still have to consider the absolute clarity, precision and solidity of the presentation. This is the ultimate platter mat.

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| Musical Fidelity 3A Pre P140 pwr | £750 | £375 |
| Albarré AP3 Pre amp ex dem | £300 | £220 |
| Revox A700 excellent condition just serviced | Offers | |
| Quad 33/303 mint | | £220 |
| Rotel RD 955 Cassette Deck ex dem | £200 | £160 |
| Mission 770 | £400 | £180 |
| Marantz CD 52 MKII mint and boxed | £170 | |
| Technics SAGX 530 Prologic receiver ex dem | £380 | £320 |
| Sony CDP 911E ex dem | £300 | £235 |
| Heybrook HP1 MKII speakers | £250 | £125 |
| Harmon Kardon 300 Loudspeakers | £200 | £165 |
| Denon DRM34 3 head Cassette Deck boxed | £329 | £185 |

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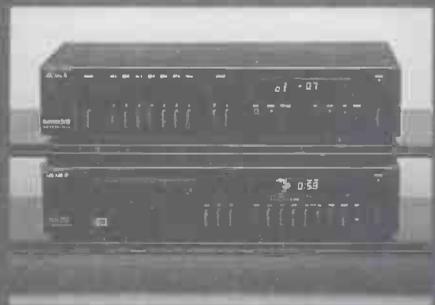
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... Continued from page 115

record cleaning machine is the best answer. Although reasonably expensive, they are superb. Nitty Gritty machines are available through our mail order pages. **DB**

UPGRADE HIGH ROAD

My system consists of a 2 year-old Cyrus I amp, Link Mimik CD, Aiwa AD F410 tape deck, Cyrus 780 'speakers, F14 cable, Cyrus 'speaker stands and an Alphason 4-tier glass shelf rack.

On reading your reviews, I would like now to hear or maybe buy a valve amp. I would be very grateful for some of your expert advice. My musical taste is for Counting Crows, Love and Money, any 'unplugged' soft rock and some jazz. The volume I play this at is rarely at the 11 o'clock mark on the volume dial. I'd also like to hear an Audiolab 8000C and 8000P, could you advise me on the valve amp side in the price range of £1,000 and maybe £1,500.

Next year I would like to upgrade the 'speakers. What do you think of the Royd Abbots and would a valve pre-power drive the Mission 731s. Once again I would be very grateful for your advice.

I look forward every month to reading your magazine. I have only been into separates for about two years, and find I have been missing out for years.

Maria Clow Luss, Loch Lomond, Scotland.

The nearest dealer with valve amplifiers is Hi-Fi Corner, Glasgow, Tel: 041 248 2840. They have an Arion Electra, Minstrel, EAR519 monoblocks, Counterpoint and others. A longer drive from Loch Lomond is the Music Mill in Edinburgh. They have Audio Innovations, Lumley, Tube Technology, Gamma Acoustics and Audion; Tel:

031 555 3963. When you are luxuriating in the warm glow of valves in the middle of winter, have a wee dram on us. Also, 'phone Audionote in Brighton (0273-220511) for availability in Scotland. We would direct you to Audio Innovations and Audionote amplifiers and, if you like a bright-ish sound, Tube Technology. **NK**

TAILORED RESPONSES

I have a couple of queries on which I would value your comments.

Firstly, while I understand the drawbacks of tone controls and graphic equalisers, isn't it the case that the frequency response of a system is often tailored in the loudspeaker also? In the commercial world, where any 'speaker could be used with any amplifier, it makes sense for each to have a flat

response. But, in the DIY arena, isn't it better to tailor the frequency response at the amplifier stage rather than the 'speaker? Obviously you need measuring equipment to do this accurately,

but it should be possible to get reasonably close doing it by ear.

As you may suspect, I have been prompted to ask this question by reading V. Capel's book on loudspeaker enclosure design (available from Maplin). His logic seems sensible to me, but am I missing something? Have you ever heard 'speakers built to the designs in this book?

My second query relates to output

transformers. If you are building a design not available as a kit there seems to be a range of transformers available at a wide range of prices. Is it simply a case of buy the best you can afford, or what? Would it be possible to run a comparative test as you do with drive units? I hope you can help, keep up the good work.

R W Patterson Milton Keynes, Bucks.

The response of a loudspeaker is equalised electrically in the cross-over network. It can be done elsewhere; for example, in an active 'speaker the crossover and any equalisation can go in the amplifier's tape loop. So, yes, a loudspeaker can be equalised electrically which, if you like, can be in the amplifier. However, it isn't easier for the DIYer to do this and the simple response shapes provided by graphic equalisers would be of little help, if this is what you have in mind.

In practice, integrated circuits (silicon chips) are used, around which sophisticated equalisation and filter curves can be engineered, but this is no simpler for the DIYer than a cross-over network. In fact, it is a lot more complex, when power supplies, casework and such like are included, not to mention the calculations involved.

Vivian Capel devotes two paragraphs to active cross-overs, listing their benefits, all of which are true. The complexity isn't mentioned though. If a magic solution lay here, you can bet the technique would be more popular than it is. For DIY purposes we are happy with the standard cross-over, which with a handful of high quality passive components, can do as good a job as a brace of silicon chips festering with transistors and blighted by feedback. Yeech! **NK**



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LINN LP12, plus Ittok, £395; Sony PCM-F1 plus video, £450; PX quality headphones or CD transport or sell Wadia DAC, buyer collects. Tel: 0386 446756

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LINN HI-FI FOR SALE, Majik-1 pre-integrated amp with mc phono input, £465; LK100 power amp £425, both 6 months, old, perfect (Stafford). 0785 715650.

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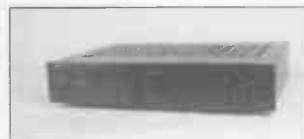
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LINN LP12 Deck & Basik Arm £150; Linn Sara Speakers £350; Electrocompaniet Power Amp £75; Meridian 103 pre-amp £50. Call Richard on 061-941 1405 (S. Manchester).

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COUNTERPOINT SA12 Classic Hybrid Power Amplifier mint boxed £500.00. MagnaPlanner SMGa Panel Loudspeakers oatmeal Grills Brass or oak trims boxed £325.00. Phone Paul 7-8pm 0481 723280.

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| | OM30, OMP30 (T4P) | £72.00 | £58.00 | Shure | N75 ED/VEJ T2, N95 ED/VEJ | | £8.00 |
| | OM N'CLUB S | £26.00 | £18.00 | Sony | ND 133/134/142/150/155/200 G | | £8.00 |
| | | | | Technica | EPS 23/24/25/27/290, P 30/33 D | | £8.00 |

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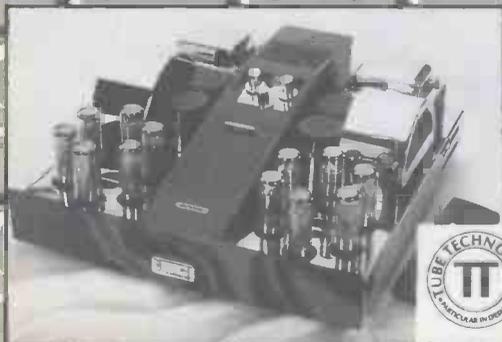
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FOR SALE Counterpoint SA-9 all valve phono amp W/valve P/S, black; counterpoint SA11 remote controlled valve line stage, black. Mint condition. £3,750 for both. Audio Research SD-10 Mark II, silver. £1,200. Jim 071-823 8366.

KEF Q60 BI-WIREABLE Speakers, unmarked, boxed, 2 years old, cost £400+ new, sound great! Plus spiked Target stands (cost £35+ new). Can demo. Buyer collects. £300. Tel: 0793 763934 (Swindon) evenings.

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ROTEL RB850 £110.00. Mission 763s Black £230.00. Systemdek Iix inc Akito, K5 £260. Tandberg TD 20A £150.00 o.n.o. Linn Isobank £650.00. KEF 103/4 black £800 unused. Tel: 0792 280061

(WANTED) **TRIO KA. 907** Amplifier or Luxman amp L-550. Must be excellent condition. Please phone 0837-54683 evenings after 6.30 pm (Malcolm).

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LINN LP12, ITTOK, Karma, boxed £600. Quad 34, FM4 Tuner, 405/2 amplifier - 34 needs attention £350. Meridian MCD Palyer £150. Linn Kan speakers and stands £200. Tel: 0420 842 84 (Hampshire).

CELESTION SL6Si Speakers (Walnut) £250. Audio Technica ATH-70 electret Headphones and adapter £85. SME 3009 Series IIII tonearm with flexible link £50. All boxed, pristine. Tel: 0539 734531 (Cumbria).

SONY MDS-501, minidisc, 'finest recorder, excellent recording' unfulfilled order forces quick sale: £799 retail, sell for £499 no offers. Tel: 0956 343615

WANTED: SHURE VSTV Hafler Iris; Sugden AU51P or YBA3. Selling: Sheame Phase I pre £450, Power £550; Voyd Valdi + Moth + Goldring Electra £475; Audio Innovations S500 £495. Tel: 071-730 1614.

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QUAD IIs, 22 and FM2, recent Quad service, groove tubes, £370 o.n.o. Tel: 01280 817321 evenings.

WIFE WANTS Spare Room Back! Sugden A28 Class A amp £125, Quad 33/303 pre/power amp £125; Leak stereo 70 £45, Delta 70 £50; Marantz 2215BL, Leak 1800, Pioneer SX-450 receivers £45 each. KEF Reference 104ab speakers £65, KEF Delta 2 speakers £45, Celestion Ditton 22 Speakers £60, Richard Allan Chaconne speakers £45. Guildford 0483 - 233952.

ARCAM ALPHA 5 CD £300. Gale 301 MK II Loudspeakers £175. Musical Fidelity B200 Integrated Amp £150. All boxed in excellent condition. Tel: (071) 652 1960.

MERIDAN 203 DAC, excellent condition. £200. Tel: 0592 772806 (Fife).

UNWANTED INHERITANCE QUAD QCII Controller. Quad FM3/30/303. Quad ESL Gold (Pair). Garrard 401/ SME 3009/Plinth. All with original manuals. £600 o.n.o. Tel: 0633 614919.

MICHELL SYNCRO Turntable - RB250 Arm, Nagoaka MP-II Boron. 13 months old. Pristine condition, boxed £280 o.n.o. WANTED: Quad 44/405 MK2, must be in excellent condition. Tel: 0582 573286.

MICROMEGA SOLO II C.D. Player, top loader. Warranty to match, new £1,600 accept £825 o.n.o. Audiolab 8000A MK1 Amplifier. £160. Musical Fidelity Ref 4 speakers. Black. £400 new, sell £160. Tel: (0271) 46300.

JPW AP3s complete with target single pillar stands. Pristine condition. Boxed. £160. Tel: 0252 614574 (Hampshire).

SPENDOR BCIII, custom stands and cables £600 o.n.o. Demo possible. Tel: 0689 874 438 evenings. Near London S.E.

ROYD TOPAZ £173, sell £85. Royd Sintra II £375 sell £299. TDL N.F.M. £119 sell £65. N.A.D. 306 amp 50 watts £329 sell £249. All as new. Boxed. Demo. Tel: 0865 59737. Steve.

GYRODEC RB300 Linn K18 £450. Revox A77 33/4 - 71/2 Dolby, cover remote control £475. Lecson API and AP3 pre/power amp £400. Yamaha cassette deck (wedge shape by Bellini) TC - 800GL £85. AR CD4 Player £60. All above very good condition. Stored last 3 years. Tel: 081-948 7694.

RADFORD STA15, SC2 pre power £390. Rogers cadet 2 pre/power £90. Cadet 3 pre/power £85. Garrard 401, SME 3009 £95.00 o.n.o. Pioneer PL12D £25.00. Reading (0734) 314269.

LESLIE SPEAKER Model 825 400W Two Channel Pre-amp. Two Speed Foot Control. Suit organ/disco. £250.00 o.n.o. Tel: 0323 411 807.

GOODMANS ACHROMAT 400s wanted. Working preferred but anything considered. Depending on response to this ad, may have pair of RB 35s for sale, excellent condition, £40. Tel: 081-777 8939 (anytime) Roy.

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KEF 104/2 REFERENCE bi-wire speakers plus Kube 200, as new £850, o.n.o. (Cost £2,070). consider part/ex for Castle Howards; Winchester; Naim SBLs or Quad 66/606 units. Various cables / interconnects and CD stabilising mat, offers? Southampton 738935.

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QED DIGIT Modified, Rogers Cadet, Garrard 301, 401, Quad electrostatics, Leak Varioslope Musical Fidelity B200 amplifier, MC2 speakers, Heybrook stands Heathkit valve tuner, MA12 monoblocks, Partridge and Magnequest SE300B OPTX. Tel: 0642 559543.

PINK TRIANGLE PT-TOO Turntable, with external power supply, SME Model-309 Tonearm and OTC-5 cartridge. Superb sound/condition. Cost £1,500 new, must sell hence £550 or best offer. Guildford (0483) 34599, Chris evenings.

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NAIM SBL LOUDSPEAKERS, black, passive crossovers £895. EPOS ES14 Loudspeakers, walnut £200. Target sand filled speaker stands £30. Sound Organisation table £20. Mike Tel: 01799 530839.

ROKSAN XERXES Deck, Artemiz arm, black, excellent condition. Boxed £875 o.n.o. Free Shiraz cart not working worth £200 as your part exchange. Tel: (0903) 261931 Sussex.

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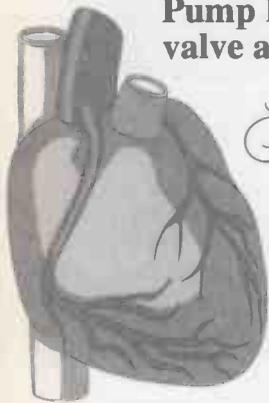
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Advertisers Index

| MAIN ISSUE | | | | | |
|--------------------------|-------------|---------------------------|-------|-----------------------|--------|
| ACOUSTICS ART | 26 | ESOTERIC AUDIO IMPORTS | 108 | SLATE AUDIO | 116 |
| ADDA SUPER CASES | 122 | F&S TRADING | 62 | SME | 24 |
| ALEMA UK LTD | 110 | FOUNDATION AUDIO | 128 | SONIC FRONTIERS | 72 |
| AP ELECTRONICS | 65 | FULLERS AUDIO | 22 | SOUND FOUNDATION | 26 |
| ARION ACOUSTICS | 109 | GAMMA ACOUSTICS | 24 | SPALDINGS | 24 |
| ART AUDIO | 24 | GROOVE TUBES | 108 | SPECTRA DYNAMICS | 104 |
| ATTIC MUSIC | 112 | HARBETH ACOUSTICS | 55 | SPENDOR | 14 |
| AUDIBLE DIFFERENCE | 112 | HART ELECTRONICS | 102 | STUDIO ONE | 22 |
| AUDIO AMATEUR | 62,72 | HEATHERDALE AUDIO | 124 | SUSSEX SURPLUS | 128 |
| AUDIOCAB | 120 | HI-FI CONFIDENTIAL | 126 | TANNOY | 12 |
| AUDIO COUNSEL | 120 | HI-FI CORNER | 54 | TEAC | 8 |
| AUDIO GALLERY | 124 | HI-FI EXCHANGE DARLINGTON | 116 | TESSERAC | 62 |
| AUDIO ILLUSION | 16 | HOME CINEMA CONSULTANTS | 116 | THE CHORD COMPANY | 64 |
| AUDIO PHYSICS | 122 | IAN EDWARDS HI-FI | 28 | THE RECORD SHOP | 50 |
| AUDIO ROOM | 105 | IAN HARRISON HI-FI | 120 | THE SOUND ROOM | 50 |
| AUDIOPHILE INTERNATIONAL | 107 | IPL ACOUSTIC | 34 | TRIANGLE | 17 |
| B&W | 16,20,22,29 | JE SUGDEN | IBC | TUBE TECHNOLOGY | 17,128 |
| BRENTWOOD MUSIC | 32 | KJ WEST ONE | 29 | V'AUDIO | 64 |
| BURY AUDIO | 24,116 | KRONOS DISTRIBUTION | 105 | WILSON STEREO LIBRARY | 70 |
| CABLE TALK | 128 | LASER AUDIO | 122 | WOLLATON AUDIO | 28 |
| CAD | 29 | LFD AUDIO | 108 | | |
| CASTLE ACOUSTICS | 46 | LINN | 65 | | |
| CHELMER VALVE COMPANY | 103 | LISTEN INN | 32 | | |
| CHOICE HI-FI | 114 | LOCKWOOD AUDIO | 122 | | |
| CHORD ELECTRONICS | 55 | LORICRAFT | 64 | | |
| CLASSIC HI-FI | 124 | MANTRA AUDIO | 126 | | |
| CLASSIQUE SOUNDS | 126 | MISSION | BC | | |
| COTTAGE AUDIO | 120 | MJS HI-FI | 29 | | |
| COURT'N'SPARK | 124 | MUSICAL TECHNOLOGY | 26 | | |
| CREEK | 119 | NAIM AUDIO | 6 | AUDIONOTE | 10 |
| CRICKLEWOOD ELECTRONICS | 112 | NORTHWOOD AUDIO | 34 | B&W | 10,12 |
| CUSTOM CABLES | 119 | ONKYO | 10 | CAMBRIDGE HI-FI | IBC |
| DAN DULEY | 112 | ORANGES & LEMONS | 20 | DOUG BRADY HI-FI | 12 |
| DCN ASSOCIATES | 55 | ORTOFON | 16,20 | HARBETH ACOUSTICS | 12 |
| DEFINITIVE AUDIO | 107 | OXFORD AUDIO CONS | 118 | HARMAN KARDON | 6 |
| DIGITAL CONNECTIONS | 32 | PERFORMANCE HI-FI | 122 | HI-FI SHOWROOMS | 10 |
| DPA | IFC,40 | POWER PLANT | 107 | MANA ACOUSTICS | 6 |
| DYNAMICS | 114 | QTA SYSTEMS | 116 | MISSION | IBC |
| E.J. JORDAN | 28 | RDL ACOUSTICS | 118 | ORTOFON | 4 |
| ELVINS ACOUSTIC | | RICHARDS AUDIO VISUAL | 116 | PINK TRIANGLE | IFC |
| TECHNOLOGY | 32 | RINGMAT DEVELOPMENTS | 70 | PROAC | BC |
| | | SERIOUS KIT | 109 | ROYD LOUDSPEAKERS | 6 |

CHRISTMAS SUPPLEMENT

| | |
|-------------------|-------|
| AUDIONOTE | 10 |
| B&W | 10,12 |
| CAMBRIDGE HI-FI | IBC |
| DOUG BRADY HI-FI | 12 |
| HARBETH ACOUSTICS | 12 |
| HARMAN KARDON | 6 |
| HI-FI SHOWROOMS | 10 |
| MANA ACOUSTICS | 6 |
| MISSION | IBC |
| ORTOFON | 4 |
| PINK TRIANGLE | IFC |
| PROAC | BC |
| ROYD LOUDSPEAKERS | 6 |



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