

# Hi-Fi WORLD

MARCH 1993 £2.00



## SILVER NIGHT 300B valve amplifier



**FIRST REVIEW!**  
**SUGDEN SDT-1 CD PLAYER**

**FIRST REVIEWS!**

**ROGERS STUDIO 3 loudspeakers**  
**NAKAMICHI DR-2 and DR-3**  
**cassette decks**

**COMPETITION**

**CD TRANSPORT & CONVERTOR FROM DPA DIGITAL**





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102 Murray St, Monrose, Tayside Tel: 0674 73765

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**Lyric Hi-Fi**  
163 Stranmillis Road, Belfast Tel: 0232 341196  
**Lyric Hi-Fi**  
84 Bridge St, Portadown, Co. Armagh Tel: 0762 358059



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Paul Hartley Studios 071-482 3768

# Contents

THIS  
MONTH'S  
FEATURES  
ON PAGE 7



## THIS MONTH'S REVIEWS

### AMPLIFIERS

**SILVER NIGHT:** A new monoblock power amplifier to set the night aglow with two 300B valves originally designed more than fifty years ago. **15**

**CHORD SPM 1200:** Chord's switched-mode power supply is a novel part of this solid-state stereo power amplifier's design. It holds out the promise of high-end sound at not so high a price. **23**

**ARCAM DELTA 290:** An integrated amplifier packed with facilities specially for the armchair listener: Arcam's new design is fully remote-controllable. **34**



### CASSETTE TAPE

**NAKAMICHI DR-2 and DR-3:** Surprise new cassette decks from one of the world's most famous manufacturers. Will they keep their reputation? **48**



### COMPACT DISC

**SUGDEN SDT-1:** Yorkshire's first Compact Disc player and one of the first UK designs to use Philips' latest transport. **26**



### LOUDSPEAKERS

**ROGERS STUDIO 3:** Taking the place of the BBC LS3/5a monitor loudspeaker, can Rogers' new Studio 3 miniature compete with the classic? **31**

**MOREL BASSMASTER 602:** Can this small heavy box from driver-builders Morel really master the bass? **40**

**MISSION 763i:** An affordable floor-standing loudspeaker. **56**



### TUNER

**PIONEER F-301RDS:** Now you can read your radio as well as listen to it! Pioneer's budget tuner actually relays messages from the radio stations. **52**



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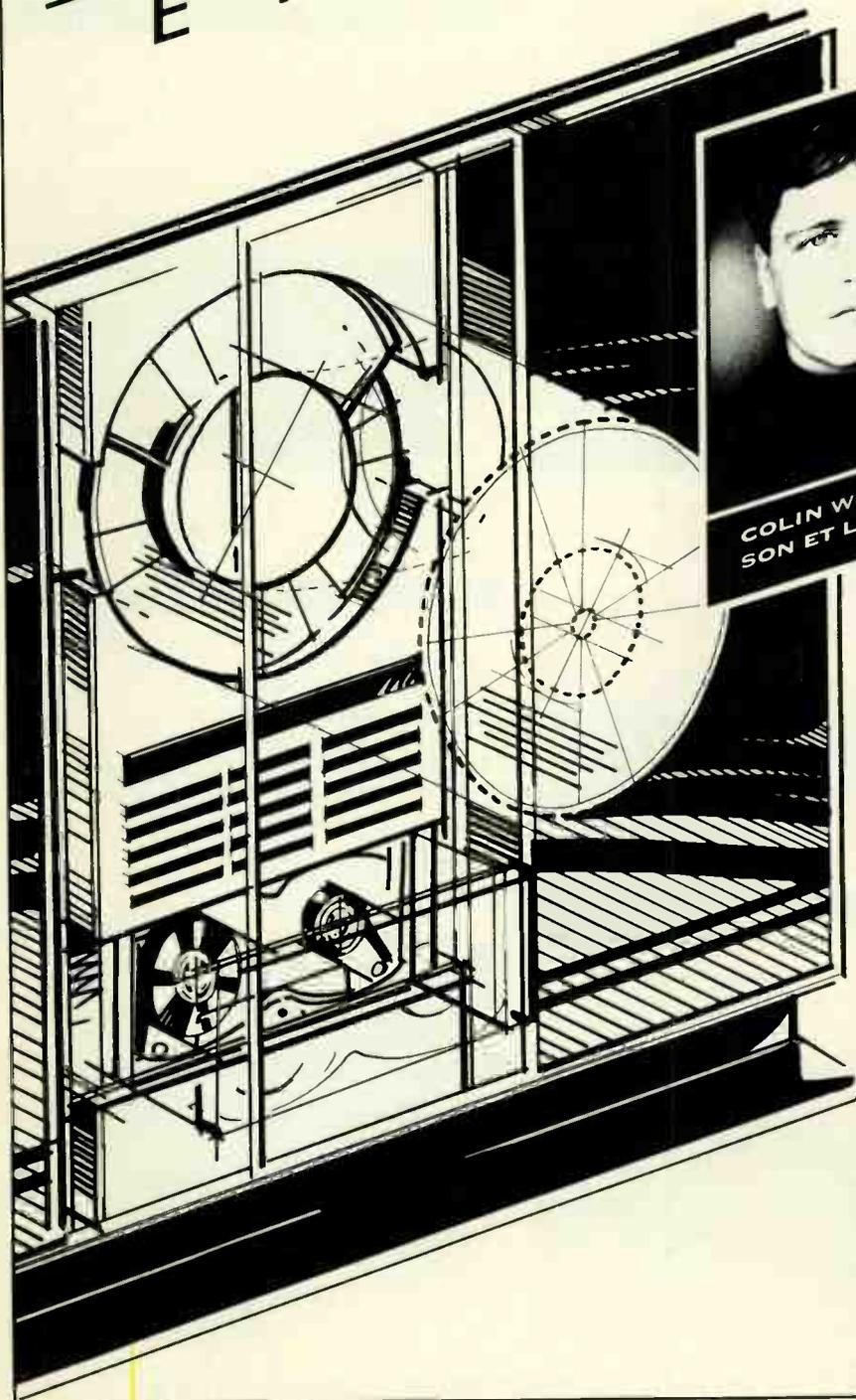
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**MORE** FOR THIS MONTH'S FEATURES, SEE PAGE 5



# SON ET LUMIÈRE



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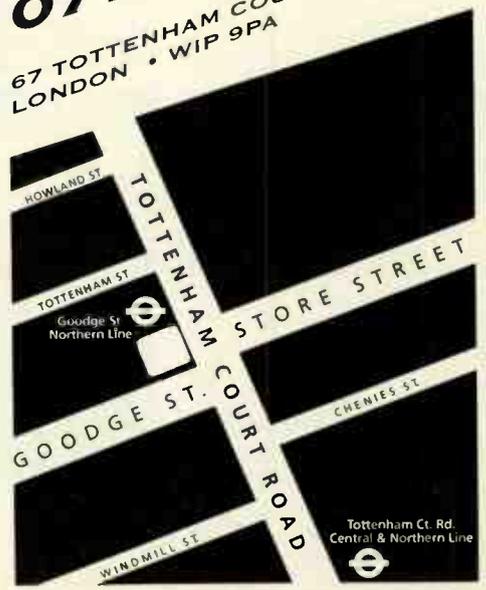
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## BUDGET EQUIPMENT GUIDE

*Broken by the bank at Monte Carlo? Never fear, our budget guide will still leave you with pennies in your pocket.*



**GOODMANS SYSTEM 650:** An alternative to a midi-system? A mix n'match group of separate components supplied with the company's renowned Maxim 3 loudspeakers. **94**



**AIWA XC-950 COMPACT DISC PLAYER:** Brand new, 1-bit, complete with Aiwa's jitter-reducing circuit. Will it give other players around £200 the jitters? **111**

**BOTHERED ON A BUDGET?** Penury need not be a problem; we answer budget queries free! **121**

## REGULARS

**NEWS:** Nods and winks from the industry about the new products for '93. **9**

**LETTERS:** Have a natter; the last thing you'll do is nod off over our readers' views. **28**

**COLUMNS:** A nudge from Noel, a debate from Dominic and a recce round the business from Richard. **43**

**QUERIES:** Tip us a wink and we'll take on any problem. **58**

**SPECIAL OFFERS:** A hot tip! Here's where you'll find a plethora of bargains. **66**



**NEXT ISSUE:** Don't be an April Fool - this is what you'll miss if you don't buy our April issue. **90**

**READERS' CLASSIFIEDS:** Where to look for the hi-fi you always wanted. **97**

**ADVERTISERS' INDEX** **97**

**WORLD FAVOURITES:** What we like and why we like it in the world of hi-fi. **102**

**TEST EQUIPMENT:** Treats for the test-bench. **117**

**AERIAL REFERENCE GUIDE:** The people who'll put up a pole for you. **105**

## FEATURES



**BRIGHTER BRIGHTON NIGHTS:** We take a day trip to Brighton to talk to the men behind the bright lights of the Silver Night 300B valve amplifiers. **18**

**TWO TODAY!** Did you realise you'd been reading Hi-Fi World for two whole years? We look back. Be with us when we celebrate our tenth! **36**

**READER'S SYSTEM:** Is a Garrard 401 turntable still viable? We spend time with one brought up to date and fitted with SME's top tonearm. **60**

## MUSIC

### RECORDS OF THE MONTH:

Lani Groves and Darlene Love bring it home.

Rued Langaard: three symphonies from a forgotten Danish contemporary of Nielsen.

**ROCK AND POP** **72**  
**JAZZ** **76**  
**CLASSICAL** **81**

### RECORD OFFERS:

No need to rattle through the racks for your music. Mooch through our pages and order LP, CD or DAT by Mail Order. **83**



*Hi-Fi World produces the majority of reviews in-house, using our own lab facilities and listening rooms.*

## DPA COMPETITION

Win a very special Compact Disc player, comprising DPA T1 transport, sync. locked to a DPA Bigger Bit convertor, using White Slink interconnects. **88**



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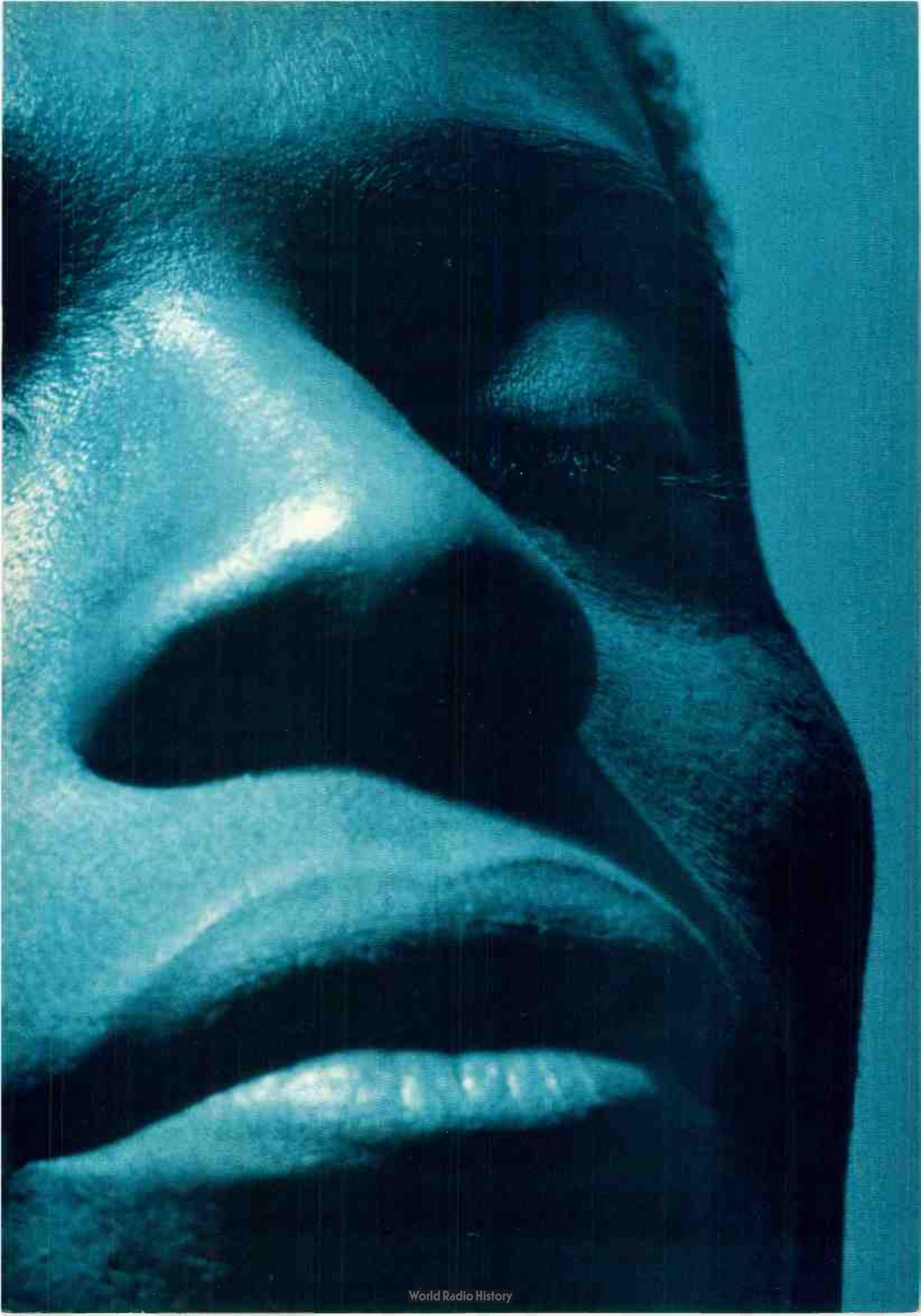


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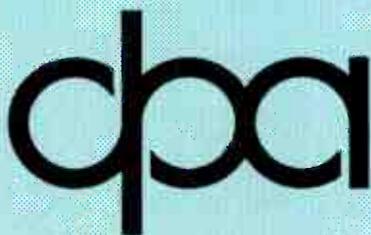
# simply the best

An overused advertising statement? After all, "Simply the best" is such a cliché in today's marketing run world. No, it is something we at DPA believe in and are justly proud of.

Our revolutionary new T1 transport, DAC's, amplifiers and cables are the best for numerous reasons, which start at the design stage. Uniquely DPA designs are heuristic in nature - with each design an incredible number of factors is taken into consideration and carefully balanced to produce the most transparent performance. We believe everything can make a difference to the sound quality and everything is rigorously explored and examined to an unprecedented degree. This approach, of making no assumptions, leads to radically unique designs.

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So why should you believe us? After all, we could be accused of bias. Throughout the world, fair but discriminating critics have been universal in their praise for DPA products. Take for example a recent review in Australia's High-End magazine Stereo Buyers Guide where the PDM2, in a group test of 27 DAC's, was quoted ..."you get a sound that can't be matched by any other. Only for those that demand the very best." Hi-Fi Choice Dec '91 also states that ..."(the PDM2) goes on to redefine many areas of CD sound quality."



However, rave reviews are not just the exclusive domain of DPA's PDM2. Hi-Fi World, on the PDM1 S3 said "Any enthusiast who wants the best from CD at a reasonable price

should consider (the PDM1)." What Hi-Fi, Nov '91 said ..."the Bigger Bit is set to destroy all its competition." Our amplifiers are equally well respected with Hi-Fi Choice saying of the 50S pre-power ..."unmatched detail resolution, control and transparency."

Why should you believe the Hi-Fi critics? After all, it's your money and your Hi-Fi. Visit one of our dealers and ask for a demonstration of DPA products. If you value music and not distortion we think you will agree with DPA - simply the best.

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**Hi-Fi World brings you all the latest news from the hi-fi industry**



## DCC PLAYER FROM TECHNICS

Technics have launched their first Digital Compact Cassette player. It was shown to Panasonic/Technics dealers in prototype form at a Trade Show last year. Priced at £699.95, the RS-DC10 uses 1-bit analogue-to-digital and digital-to-analogue conversion for DCC recording and playback. Like the first Philips machine, it is a domestic recorder, fully remote-controlled and will play back (but not record) conventional cassettes. For ordinary cassette replay, the deck is provided with both Dolby B and C noise reduction systems.

A pack of ten pre-recorded DCC tapes sourced from MCA will be given to the first buyers. Titles include Prince's *Diamonds and Pearls*, Kim Wilde's *Love Is*, REM's *Out of Time* and Domingo, Carreras and Caballe's *Music from the Barcelona Games*.

Panasonic Consumer Electronics U.K., Willoughby Road, Bracknell, Berks. RG12 4FP. Tel: (0344) 847652.

## BUDGET NICAM FROM MAPLIN

With Nicam stereo TV transmissions now established in more areas of Britain Maplin have brought out a stand-alone Nicam tuner. At £149.95, the Pro-Sound Nicam Hi-Fi Digital Stereo TV Receiver offers both SCART and phono video outputs as well as twin phono sockets for stereo sound. Even an aerial extension lead and twin adaptor is thrown in to link the aerial socket on the receiver with the TV or VCR as are phono-to-phono cables to link it to the hi-fi.

Maplin's Nicam tuner is also fully remote-controlled, supplied with a handset which selects from the sixteen channel memories, mutes the sound output, adjusts volume or switches the receiver to standby. Its dimensions are 354mm x 227mm x 49mm and it is available from Maplin stores nationwide.

Details are on p255 of the 1993 Maplin catalogue, or from Maplin Electronics, P.O. Box 3, Rayleigh, Essex, SS6 8LR. Tel: (0702) 552911.

## REVISED QUAD

After selling more than 25,000 606 amplifiers and wearing out their original pressure die casting tool, Quad have taken the opportunity to slightly modify and improve the mains transformer and power supply. Its appearance now also matches the 66 series separates more closely. The 180w power amp costs £675.

Quad Electroacoustics Ltd., Huntingdon, PE18 7DB. Tel: (0480) 52561.



## KIT YOURSELF UP WITH A SPEAKER KIT

Wilmslow have announced three new kit loudspeakers. One, the SPL1, is a small two-way bookshelf design, using Morel drive units. The 5in bass-midrange unit incorporates a 3in voice coil and a damped polymer composite cone and the tweeter is a 28mm soft dome. A passive crossover uses high quality components including Solen polypropylene capacitors and air-cored inductors. The internally-braced cabinet is constructed from 18mm MDF and the SPL1 can be used bi-wired. Price for the complete kit, including flat-pack cabinets, is £190.

Two other kits are based on ATC drive units, the three-way ATCK 50 and ATCK 100. Common to both is an ATC 3in dome mid-range unit, with the ATCK 50 equipped with a 9in bass driver and the ATCK 100 a 12in one. Both designs will be available in either active or passive form, the passive versions using metallised polypropylene capacitors and air-cored inductors in the crossover. Prices are expected to be around £1,500 for the ATCK 50 and £1,800 for the ATCK 100, both including all components and flat-pack cabinets.

Each loudspeaker will also be available in active form, incorporating three ATC-designed power amplifiers, each optimised for the transducer it is driving. Cost of the power amplifier packs is £1,250.

Wilmslow Audio Ltd., Wellington Close, Parkgate Trading Estate, Knutsford, Cheshire, WA16 8DX. Tel: (0565) 650605.

## CRYSTAL CONES

Goldring's latest addition to their accessories range are support cones made from crystal. Supplied in sets of four, the retail price is £49.95 a set.

Goldring Products, Ltd., 8 Greyfriars Road, Bury St. Edmunds, Suffolk, IP32 7DX. Tel: (0284) 701101.



## SD STANDING TALL

Drawing on their eight years of experience with using a ribbon tweeter in the SD1 loudspeaker, SD Acoustics have introduced a new floorstanding model using the same tweeter and mid-range units. The 1100mm tall SD5, retailing at £1,235, also incorporates two smaller diameter long-throw bass units. Power handling is 200w, sensitivity 87dB and the frequency response is claimed to be 35Hz-20kHz. Black Ash and Walnut finishes are available.

SD Acoustics, The Factory,

Alpha Road, Surbiton, Surrey, KT5 8RP. Tel: (081) 339 9594.



## B&W 600 SERIES IMPROVED

B&W's 600 series have been improved. Both the DM-600 and DM-610 have a new hard-wired crossover designed to improve driver integration and make the loudspeakers less system-dependent. The floorstanding DM-620, in addition to now being fitted with adjustable spikes, also features a new bass unit with an injection-moulded cone/surround assembly. Allowing for a simpler crossover, this driver is said to offer a smoother performance. All three loudspeakers are fitted with a new terminal tray and the bi-wiring links have been upgraded to nickel-plated high purity copper for better performance when single-wired. Prices of the Improved 600's are £169.95 for the DM-600, £219.95 for the DM-610 and £369.95 for the DM-620.

B&W Loudspeakers (UK Sales) Ltd., Marlborough Road, Lancing, West Sussex, BN15 8TR. Tel: (0903) 750750.



## ACTIVE CABLE

Bruce Rae Audio's ACAB 'active cable' system is designed to allow long links between hi-fi components of up to 100m without loss of signal. A transmitter, powered by a power supply, sends a line-level signal through balanced cable to a receiver; the ACAB is DC coupled throughout with high quality isolating capacitors at both the inputs and outputs with left and right channels entirely separate. Benefits claimed are improved system dynamics and the elimination of long runs of expensive cable, since locating the receivers near the loudspeakers will allow connecting cables to be very short. Cost of the ACAB system (power supply unit, twin-channel transmitter, two receivers and balanced cable) is £395.

Bruce Rae Audio, 12 Harpers Lane, Mancetter, Atherstone, Warwickshire, CV9 1NG. Tel: (0827) 715156.



## NEW NEODYMIUM TWEETER

Morel have brought out a new range of small hi-fi dome tweeters with a compact, light-weight vented Neodymium magnet system, coupled to a large rear air chamber for a low resonance frequency of 750Hz. Dome diameter is larger than the normal 25mm at 28mm, but the mounting face-plate measures only 54mm square, allowing it to be located closer to the woofer. The hand-doped cloth dome and voice coil assemblies with Hexatech aluminium or copper wire on an aluminium former are claimed to provide a very linear frequency response both on and off-axis with low distortion and high power handling. Various versions are available, including a top-mounting one with integral protective bars.

For further details, contact Morel's U.K. distributor, Clere Electronics, 24 Swan Street, Kingsclere, Newbury, Berks. RG15 8PN. Tel: (0635) 298574.

## XENOPHON

Due to go in production this month, the floor standing Xenophon Achromat loudspeaker is a combination panel and moving coil design. The main driver is a low-mass, twenty square cm dipole, said to give excellent transient response and low coloration. Low frequencies are augmented by a reflex-loaded 180mm moving-coil bass unit. The cabinet is constructed of medite, hardwood, bitumen sheet and resin concrete and is fitted with three carpet-piercing spikes. A constant-impedance crossover avoids the need for bi-wiring. Price of the Achromat will be £1,195.

For more information, contact Steve Hutton, 3 Jewel Close, Grange Park, Swindon, SN5 6HP. Tel: (0793) 881240.



## •SHOWS • SHOWS • SHOWS • SHOWS •

### BRISTOL SHOW - HI-FI '93

Back in a refurbished hotel for 1993, the Bristol Hi-Fi Show is all set for the Bristol Marriott Hotel, next to the Broadmead Shopping Centre, on Saturday 20th and Sunday February 21st 1993.

Hi-Fi World will be there; we expect you to make us your first call for all the accessories and records from our Mail Order pages and a chat with our ever-friendly staff.

Among the other exhibitors, Denon will be showing their new TU-580 RDS tuner, Revox will be demonstrating their 'Evolution' designer system and Celestion, Marantz, Sony and Yamaha will have Audio-Visual rooms. Acoustic Research will be showing their new Home Theatre System for the first time, along with the 'Classic' range of loudspeakers designed by David Day.

Practically every other name in the hi-fi alphabet will be there from AKG to Veda Products.

Visitors will have the chance to win £2,000-worth of Sony MiniDisc hardware and software.

Opening times are 9am to 6pm Saturday and Sunday 10am to 6pm. Admission is £3.

### NATIONAL VINTAGE COMMUNICATIONS FAIR

Last year's Vintage Fair was such a success that the organiser, Jonathan Hill is doing it again. The second National Vintage Communications Fair, with 200 exhibitors, will be held at the NEC, Birmingham on 16th May 1993 from 10.30 to 5pm. On sale will be thousands of items from vintage radios through jukeboxes to books and magazines. It should be a collectors' paradise.

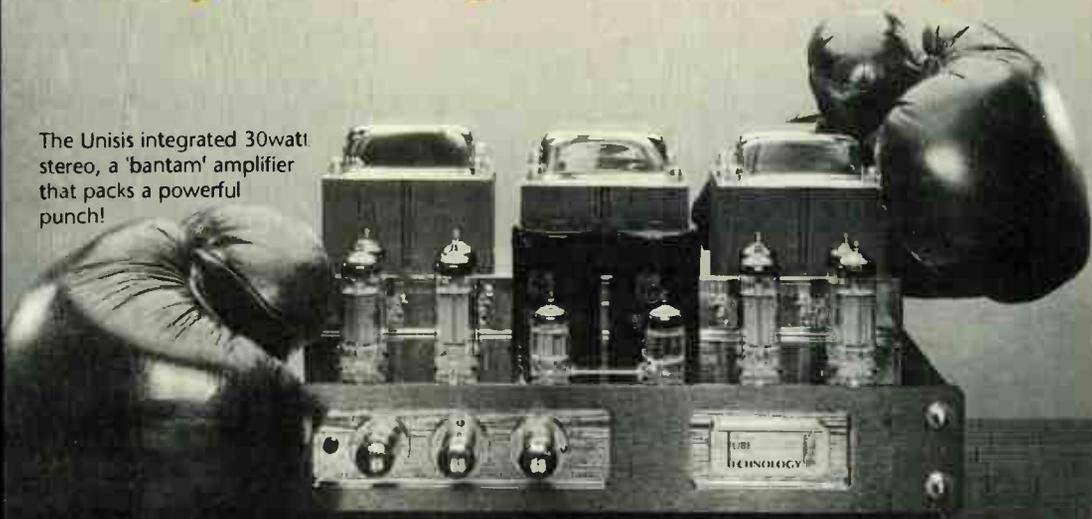
Contact Jonathan Hill on (0398) 331532.





## Have you been gobsmacked lately?

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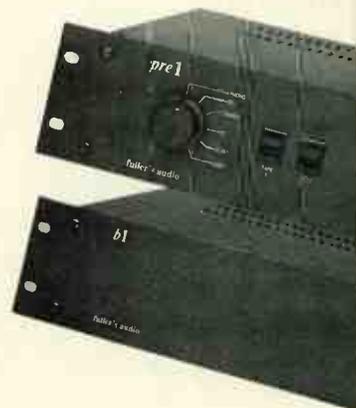
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## IN BRIEF

### TEAC HEAD UP-MARKET

Following the success of the VRDS-10 Compact Disc player with its 'Vibration Free Rigid Disc-clamping' system, TEAC have announced they are to concentrate on mid-to-high end products with new items for the British market in 1993. Teac's sales agents for the new line of products will be RAM UK, headed by ex-Denon sales manager Peter Ratchford.

TEAC UK Limited, 5 Marlin House, The Croxley Centre, Watford, Herts. WD1 8YA. Tel: (0923) 819630.

### AIWA PERSONALS

Aiwa have announced three recording personal stereos including FM/AM tuners so off-air tapes can be made even on the move. All are supplied with a stereo microphone, and the most expensive, the £99 HS-JS415 has Dolby NR on playback and twenty pre-set memories. The HS-JS215 costs £69 and the HS-JS315 £79.

Aiwa (UK) Ltd., Unit 5, Heathrow Summit Centre, Skyport Drive, West Drayton, Middlesex UB7 0LY. Tel: 081-897 7000.

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Contact BEUC, Avenue de Tervure, Bte 4, 1040 Brussels. Tel: Brussels 322-734310.

### PIONEER'S VISIBLE POP

Latest in Pioneer's Laser Disc music releases after a deal with PMI which has already resulted in titles from The Pet Shop Boys, Roxette and John Lennon, is The Best of Joe Cocker Live. Nineteen tracks have been taken from the 1992 Night Calls European tour, recorded at the Westfalenhalle in Dortmund, Germany. Pioneer Laserdiscs are available in sixty stores in the UK, including Tower Records and selected HMV shops and Virgin Megastores.

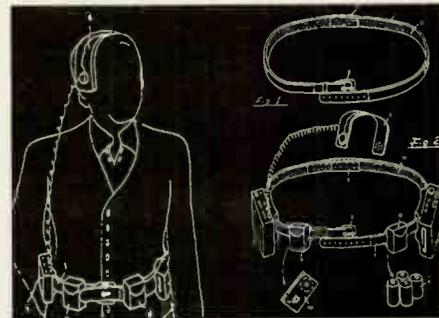
Pioneer, 417 Bridport Road, Greenford, Middlesex UB6 8UE. Tel: 081-575 9898.



### SONY WIN PATENT CASE

The term 'Walkman' has entered into common parlance, much like Tannoy. Most of us think 'Sony Walkman' and in fact Sony have registered the name Walkman, meaning they own it. If it isn't made by Sony then in print at least, it has to be called a 'personal stereo', the generic term for the beast.

You might well think that Sony invented the personal stereo, calling it the Walkman. A German inventor, Andreas Pavel has been contesting this notion by claiming that he invented the personal stereo, contrary to the common perception. Strange, you might think, that the various learned gentlemen from Japan and Germany should be arguing the toss about who invented the personal stereo in a court in North London - Finchley to be precise.



The Pavel patent drawings, showing a personal stereo 1977 style.

What Andreas Pavel is defending here, however, is a British

Patent that he claims effectively covers the concept of the portable personal stereo. It's interesting that Sony don't actually claim to have invented the thing, but together with Toshiba are saying that it wasn't a novel idea that can be attributed to one man, so much as the outcome of natural product evolution which they exploited.

Were Mr Pavel to win this case, Sony would be obliged to pay substantial back royalties for every Walkman sold in Britain. Others, from Toshiba through to Sharp and Philips, would similarly be charged. The sums involved would probably be astronomical.

Briefly, Pavel filed a British patent for a portable personal stereo in March 1977. An important feature of this is that, in itself, there is little of unique invention. Only that all the necessary components, which already existed in one form or another, should be hooked onto a belt and connected up to a pair of ordinary headphones seems to have been novel, but whether this is sufficient to warrant a patent is questionable. The U.S. Patents office thought not and has never granted one.

Sony introduced an all-in-one portable for entertainment purposes, based on a dictating machine mechanism, in Japan during 1979. It was developed in a mere two weeks by Mr Asai after, legend has it, Akio Morita recognised its potential and ordered an immediate and rapid go ahead. The Walkman arrived in Britain one year later, being launched in 1980 as the Stowaway.

Judge Peter Ford, in a sixty three page judgement, observed that although minor infringements had occurred, Sony had put such a good case in establishing the existence of 'prior art' that the British Patent had been invalidated and would be cancelled. This effectively destroys Mr Pavel's claim of originality, appearing to leave him the loser in a very expensive action, with costs that could amount to more than £1 million. He has been given twenty eight days to appeal.

In citing prior art, Sony interestingly referred to two Nakamichi recorders, the DT-350 and 550. These, Nakamichi tell me, were launched in 1974. Crucially, they were fully portable and could be used for entertainment purposes, although I suspect their main function was for reportage. Carrying straps, headphone outlets and a lead/acid battery were the items that established their potential in this respect.

A Sony spokesman said "we are delighted that our argument has been vindicated", but that they did not want to dwell on the matter and would not be making any official statements. Mr Pavel may appeal and is said to be considering the defense of his patents in others countries. Meanwhile, we have all learnt how the Walkman really came about: it was evolved by Sony from a Nakamichi! NK

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# NIGHT LIGHT

**Alema UK's Silver Night monoblock amplifiers**

**use the famous 300B valve of the Twenties.**

**Eric Braithwaite tries out their bottle;**

**Noel Keywood visits the manufacturer**

**in Brighton and talks to the designer,**

**Eric Andersson.**

**I**n Winter, there's nothing like a big valve to bring a ruddy glow into your living room. And a 300B is a pretty big valve. In the case of the Silver Night monoblock valve amplifier, the glow, however, isn't just the red of fire embers, but blue-tinged from each pair of the enormous 300Bs standing proud, upright and bulbous above the chassis. Put a pair on your doorstep last thing at night and the milkman would be quite likely to leave a couple of pints in exchange.

In case you immediately associate valve 300B designs with price tags that belong more in an Estate Agent's window than a hi-fi dealer's, the Silver Nights from Alema U.K. will set you back a fairly reasonable number of notes: £1,995 the pair.

There had been some doubt as to whether this 300B design would function adequately with my

stand-  
ard Quad  
ESL-63  
electrostatic  
loudspeakers. As it so  
happened, they did, but  
whilst also displaying quite clearly  
a trait of choosiness over partnering  
loudspeakers that did become something of  
a problem later.

Common to whatever speakers they were  
loaded with was a superb, immaculate mid-

range. Vocals had an ethereal quality without becoming disembodied. Acoustic instruments like cellos and basses were turned out with a splendid texture; listening to anything from Haydn to John Lee Hooker, it was impossible not to be delighted by the sensation of fingers plucking strings. It didn't matter whether they were gut or steel. Vocalists had an extraordinary degree of fine inflection and nuance. I expect to hear catches in the voice; even that most ethereal thing of all, the impression that a singer is smiling in front of that microphone. All this the Silver Nights put on a broad, deep, well-scaled stage in front of a listener. I've seldom heard recorded ambience so tangible, the feel of a hall or studio so clearly pictured.

However, we're talking essentially about the mid-band and however brassy and full-throated horns or trombones sounded, however sweet and clear a voice, however pure and sustained a flute note, when it came down to a rhythm section or the bass lines, it became obvious that the Silver Nights simply couldn't persuade the ESLs to start working lower down the range. At best, a

Rock beat was sluggish. Classical music fared no better, side-drums and kettle drums slowing behind the beat. It was infuriating, since, like the mid-range, all the textures were so evidently coming through with an accuracy that is unhappily rare.

Whilst it's possible to plug in speakers

which allow the Silver Nights to find their grip a little better, finding ones that are evenly-balanced enough to take advantage of that lucid and liquid mid-range, without demanding greater reserves of bass to speed up the bottom end, is going to be something of a conundrum. A pair of Morel Bassmasters tended to harden the

Put together, the Audion Silver Nights will fit a standard equipment rack; they take up little space.

The front panel carries power switch and volume control.



### MEASURED PERFORMANCE

Here's a fascinating prospect: an amplifier that uses valves designed in 1929 and has no feedback, yet relies on modern circuits and parts. Some of our older readers believe that amps such as this are mere recreations of old designs, simple replicas in fact. They are not.

This amplifier, like other modern valve amplifiers, is an attempt to get past the evident limitations of solid state amplifiers, illustrated by their questionable sound quality and poor correlation with measured performance figures. The 'perfect' solid state amplifier was produced some years ago now - and it sounded no better than run-of-the-mill product.

This for me marked the end of the old naivete and the start of a new and more open outlook. I had already grown doubtful about the wisdom of measuring down to tiny fractions of a percent of distortion; it seemed not to correlate with what I was hearing. Others thought the same.

Valve amplifiers served to reinforce doubts; their measured performance was mediocre by solid state standards, yet their sound was often more lucid, natural and convincing. Even the apparently confusing fact that not all valve amplifiers sound good, nor all solid state amplifiers bad, irrespective of measured performance, only seemed to suggest that what we measure isn't good enough to describe what we hear.

Is measurement invalid? No, not this either! It is the case that harmonic distortion affects sound quality, although whether it is detrimental depends upon its type, as well as level. Frequency response has a direct effect too. These characteristics must be controlled.

The revised design tenets used for modern valve amplifiers like this one are modest but realistic. They are to use as few amplifying devices as possible, to use the simplest and purest circuits and, in particular, to apply very

little or no feedback at all. In a nutshell, it's an attempt to produce the simplest and most elegant signal processor possible. The goals of low distortion, flat frequency response and low noise haven't been abandoned. Quite the opposite; they have been carefully borne in mind and great care has been put into achieving the best measured performance possible, but within the constraints I have mentioned.

So this is not an 'old' amplifier. Quite the reverse, it is very modern and it acknowledges standard parameters of measurement. It also looks past them and attempts to solve other more subtle and less easily identified problems that people have come to believe exist with solid state amplifiers.

Feedback is one of them. It has been used in amplifiers since the war to improve their performance. It flattens frequency response, reduces output impedance and, best of all, it reduces distortion. Transistor amplifiers can, and do, rely upon it more heavily than valves because transistors are small, so more can be used in order to apply higher amounts of feedback.

### Solid State ills

At worst, feedback is used as a panacea for solid state ills. A poor amplifier can be magically transformed into a good one by its application. An amplifier without feedback, like the Silver Night 300B tested here, cannot hide behind this electronic conjuring trick. The performance measured is the basic performance of the amplifier, undisguised by feedback. What I measure is what you get! It places greater constraints upon the designer, since feedback isn't available to disguise a lousy basic circuit.

A feedback amplifier needs lots of gain and, therefore, amplifying devices. Each makes its own contribution to the degradation of sound quality. This hardly seems a good way to go about things, unless you believe unflinchingly in

the effectiveness of feedback. A feedback-less amplifier requires the opposite approach - as few amplifying devices as possible and the best ones available. To most people, this makes sense; only engineers weaned on the Gospel of Feedback resist such logic.

The Western Electric 300B triode is widely considered to be one of the best valves available for hi-fi use when these criteria are applied. It produces little distortion and it will handle reasonably high power. It is also easier to work with than the bigger 211/845 valve, needing less H.T. volts. In the Silver Night no overall feedback from the transformer secondary is used, no local feedback from primary tappings or output anodes is used and no current feedback from undecoupled cathode capacitors is used. At 1watt output - the basic measurement level I use for all amplifiers - distortion measured around 0.2% at 1kHz and, more surprisingly, the same at 10kHz as well. Valve amplifiers commonly distort more at high frequencies because of the output transformer, but this one had no such problem. The analysis clearly shows that second harmonic predominated (0.18%), third contributing 0.05%. Because second harmonic is inaudible in such quantities and third is adequately low, this is a perfectly acceptable result; in fact, it is a very good one.

Distortion increases steadily as output rises, as expected. The 1% mark is hit at around 8watts. At full output of 18watts, just before clipping, distortion measured 2% in the mid-band and 4% at 10kHz. Again, second harmonic predominated. In use this level of distortion can be heard, but so long as it tinges occasional peaks, it won't dominate or sound unpleasant.

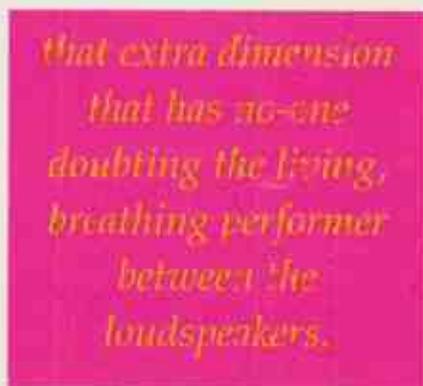
Amplifiers like this I find must be run within their limits. Yes, they do clip softly and appear to go louder than you might expect, but the resultant muddle and lack of ease soon

treble, whilst still obviously needing more wattage to power the bass. I ended up using a pair of Rogers' new baby Studio 3s, which while producing a damn good semblance of real bass, don't require an amplifier able to disturb the foundations. That combination brought bass lines and the lower end much more into time. I had to conclude, alas, that as far as driving bass goes, the Silver Nights could do with just that bit more bottle.

If you don't mind being restricted to one 'line level' source at a time (i.e. CD/tuner tape, or disc with equalised preamp), any can be plugged into the back of the Silver Nights directly. The gain control on each front panel can then be used to control volume; a pre-amplifier becomes unnecessary. I found this beneficial, tightening up the performance by a worthwhile degree. The only difficulty is aligning each knob so correct stereo balance is maintained. While the designer suggests placing the power amps together, and linking the controls with a rubber band, that does look clumsy. It's awkward, but there's nothing like a mono recording to adjust channel balance satisfactorily.

At least one reason for valve amplifiers

regaining a good deal of ground over the last few years is their comparatively broader range of tonal colour and texture than is present in most solid-state designs. For twenty years or more, Jazz lovers who have wanted to recognise every rasp of a



saxophone – and instantly recognise a tenor almost before the first note has been played – have had to rely on some loudspeaker fakery to enhance it. The Silver Nights are adept at reproducing it on demand; it's a great strength of valve designs.

Not that this new 300B design is free from needing some of the tender loving care required by vintage examples. The monoblocks run hot, for instance – underneath the transformer casing to a degree that would not do French Polish any good at all. Glass or MDF shelves below them are essential, and more heatsinking would be better. There's also a slight – but to me distracting – hum transmitted through moving-coil speakers when quiescent and some transformer hum which was irritating when the music and neighbours fell silent.

None of this should detract from the Silver Nights' real strength. It is to make music gloriously real, to endow recordings with that extra dimension that has no-one doubting the living, breathing performer between the loudspeakers. The technology of the valve that produces it may seem close to retirement age, but the Silver Nights are doubtless not the last in an honourable line of supremely musical designs capable of delivering musical textures richer than those we have become accustomed to from solid state amplifiers ●

becomes apparent. I've never subscribed to the view that valve amps go louder than solid state designs, nor that their distortion, when it becomes high enough, cannot be heard for some magic reason. Eric Andersson, the designer of the Silver Night, agreed that valve amplifiers can and often do sound nasty. It is good ones used with necessary care that don't; then their magic will shine through.

Frequency response was adequately wide at 30Hz - 30kHz. An amplifier like this is all about smoothness, lucidity and naturalness. It isn't about power and pyrotechnics, so the high-ish low frequency limit is consistent with the design philosophy and the intended conditions of use. Our loudspeaker tests show that in-room, modern loudspeakers get down to 40Hz or so (-6dB). The Silver Night matches this limit. If subsonics are wanted as well, a powered subwoofer system like the REL should be used.

The transformer used, designed in-house, is a good one. Not only does it pass high power at low and high frequencies, without excessive distortion, but it also rolls off smoothly above 30kHz. There were no supersonic peaks and no tendency to oscillation (helped by lack of feedback).

Sensitivity was very high at 140mV for full output. All tuners, cassette decks and CD players match this, so the Silver Nights need no preamp.

Hiss was very low at -98dB. There was a trace of hum, but it was only audible right up close to the loudspeaker.

The output taps offer matching to 2, 4 or 8Ω loads. Ideally, since UK loudspeakers commonly measure out at 10-12Ω, a higher tap should be provided. Lacking feedback, output impedance of this amplifier was high at around 2Ω. Because of this, loudspeakers with an impedance curve that doesn't swing too wildly will suffer least response variation. Load

sensitivity is a problem with an amplifier like this. Ideally, loudspeakers with flat impedance characteristics should be used. Only some KEF and TDL models meet this criterion, but they are not ideal in other important ways, namely sensitivity and general lucidity.

Loudspeaker matching remains a problem with valve amplifiers in general; it's one I haven't fully solved yet. Speakers should be chosen solely for complementary sound quality. Mismatching will lessen power output a little and may result in a curious tonal balance, at least with speakers that exhibit wide impedance variation. However, it won't cause damage, so there is no need to be fearful about the consequences of a mismatch.

With satisfactorily wide bandwidth and low enough distortion (0.2%), even at high frequencies, this amplifier puts up a remarkable performance for a zero-feedback design. Few solid state amps would match it at high frequencies in particular, if their feedback was removed.

Feedback-less amplifiers do, in my experience, generally sound more easy and open than feedback types and this, in my short time with the 300B Silver Nights - before they went off to Eric - was the case. Texturally richer than solid state amps and capable of greater resolution of tonal colour and low level ambient information, the sound was also easy to listen to, lacking in hardness and grain. I was aware of how sensitive the amplifier was to the loudspeaker (Heybrook Sextet, which offers a fairly even load); using different output tapings altered the sound and volume had to be used with discretion.

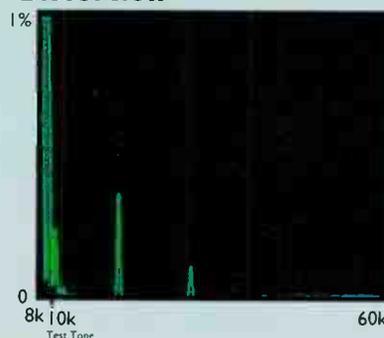
There was a softening and sweetening of transients, one that many listeners would find agreeable - but not all. This, I felt, was a superb amplifier for Classical music and for Rock not centred on hard transients and crashing dynamics. Vocals were handled superbly. The

best solid state amplifiers don't match this sort of delivery, even if they can sound faster and more incisive. For naturalness, for openness and for sheer ease, here's an amplifier that sets standards. Its 1930s based technology doesn't offer a woeful measured performance. Quite the reverse, the Silver Nights measure well, showing that triode amplifiers, as rumour would have it, can and do sound superb. The Silver Nights were a wonderful example of the breed; I loved listening to them - and it was an education too. **NK**

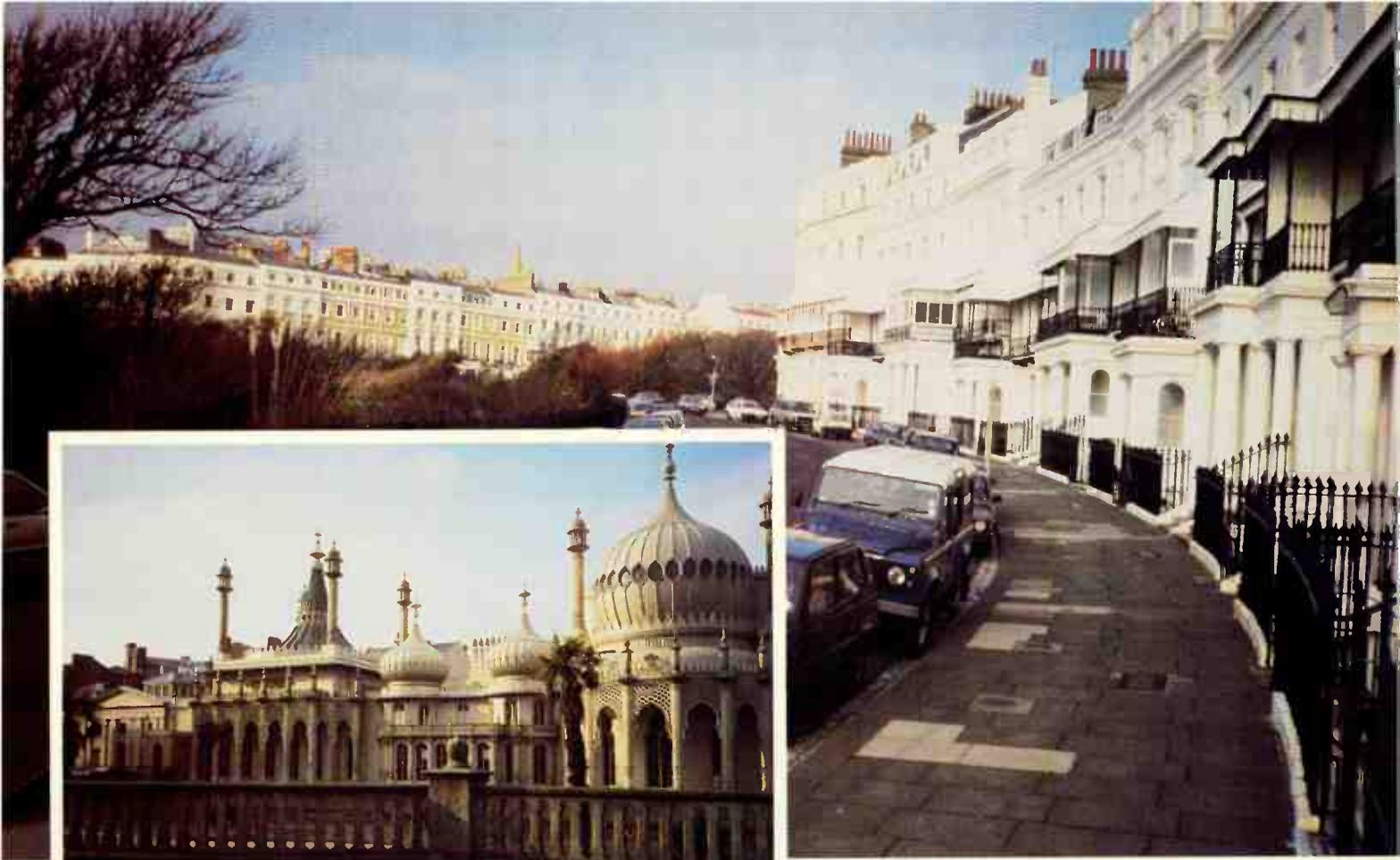
#### TEST RESULTS

Power	18watts
Frequency response	30Hz-30kHz
Noise (CCIR)	-98dB
Distortion	0.2%
Sensitivity	140mV
dc offset	none

#### Distortion



A reasonably low level of distortion (0.2%) at 1 watt output.



The terraces and Pavillion of Brighton.

# B is for Brighton ...

**Noel Keywood visits Brighton and Alema UK, manufacturers of the Audion Silver Night.**

# and 300B.

**I**t was December, but a trip to Brighton appealed. The seafront has its good moments, even in the middle of the winter. There aren't so many of them amongst the gales and the scudding grey clouds, but Brighton has managed to fight off the ravages of decay that affects towns like Hastings, as well as the ribbon development that blights towns like Worthing and much of the rest of the South Coast. It remains a pretty town, the front well cared for.

Brighton's Regency crescents are splendid affairs and still in good shape. They contrast with other more curious buildings, such as the tarred, pebble-fronted fishermen's cottages and the peculiar bow-fronted 'bungarouche' walled town houses that I found, when I rented one, have no right to defy gravity in the way they do.

Brighton is now becoming increasingly well known for hi-fi as well. It has long had Exposure and Onix, plus a few second



Above: a fast through route to the M25 being completed.



Right: a characteristic pebble fronted cottage.

valved (high output 211) power amplifiers capable of 45watts apiece. Each has a separate power supply. Using fixed bias, driver transformers and working in Class A, these brutes rely on a triode valve designed in 1919. Price? "Oh, around £10,000 I suppose" said Eric.

Wanna make your own? No problem. However, the transformers have to be custom built and cost £150 each - payment in advance please! Then there are the lethal voltages to contend with. Hobbyists are gently steered away from this sort of thing. Alema do have off-the-shelf transformers for some of the more popular Sixties designs however.

### Scary Feedback

In their shop, pride of place was taken by the Audion 'Silver Night' 300B monoblocks reviewed in this issue. They use the amenable Western Electric 300B triode, designed in 1929 and working in push-pull. Signal is fed to them by a 5687 valve acting as a paraphase splitter, which itself is fed by an E88CC double triode acting as an input amplifier. Eric was adamant about the absence of feedback: "If you know how feedback is working you are going to be scared, I tell you; it is a dynamic limiter, but you must use it in some amplifiers. It is the way to sweep muck under the carpet - you try and hide what is wrong, but it doesn't work."

Spotted close by were another pair of monoblocks in prototype form. Similar in appearance, they turned out to be a single-ended version due out early in 1993. Known as the Golden Night, these power monoblocks use two 300B triodes acting in parallel. My impression of their sound after a brief audition was that they offer the same sort of all-embracing sense of atmosphere an Ongaku achieves. David and Eric were cautious: "Yes, they are better than the Silver Night in some ways,



The monoblock 845 amplifier with its independent power supply (at rear) capable of 45 watts.

hand hi-fi shops. Then Audio Innovations moved into town in 1985 and has since splintered to produce no fewer than three separate valve amplifier specialists: Audio Note, Audio Innovations and Alema (UK).

We were searching for off-the-shelf output transformers, as it happened, for an easy-to-build, reliable DIY valve amplifier that so many of you seem to want to build. A softly spoken voice said slowly but confidently over the 'phone: "Yes, we can supply any type of output transformer and we have the one you require in stock. Supply is no problem. Ours have a good performance but they are not too expensive. We can supply transformers for 211 or 300B amps as well if you want."

That last offer rang bells. No one supplies 211 transformers unless they're very serious or plain deluded! The 211 runs at 800V or more; it isn't the most sensible choice for home construction.

### Elusive Swede

"I'm Eric Andersson." The soft lilt, rolled Rs and rise in pitch at sentence end suddenly made sense. Of course, I was talking to the elusive Swedish valve amplifier designer I had heard so much about, but had never met. It was time to take a trip to Brighton.

The town's delights weren't for savouring. The weather defeated us. As we left London it started raining. All the way down the heavens stayed open. Motorway fast lanes were awash; water cascaded everywhere and arched in big sheets over the central reservation as vehicles travelling in the other direction ploughed into giant pools. And there were roadworks too; Brighton is finally having its fast link from the M25 completed, after the M23 was abandoned - left to peter out in mid-countryside - years ago.

Alema (UK) isn't the sort of name you'd place with exotic valve amplifiers, but it's the name chosen by David Chessell and Eric Andersson for their new venture in Hove, a Western suburb of Brighton. Just as promised, unusual and unique valve amplifiers weren't in short supply; they made Brighton worth missing. I'm not talking of late Fifties GEC and Mullard designs - staple fare for many a designer and builder. I'm not talking about KT66s and 88s either. High output pentodes and ultra-linear operation requiring the use of feedback belong to an altogether later era than the one Alema refer back to for inspiration.

On the floor stood monoblock 845-



Prototype single-ended 300B monoblock amplifiers nearing completion.

but not in others" was their opinion. Single-ended working is the ultimate in simplicity, since it doesn't require phase-splitting. However, most valve and nearly all transistor amplifiers work in push-pull, because it possesses fewer problems and is more practicable.

Most Alema valve amplifiers use simple triodes. I asked whether they thought triodes were best: "Oh yes, there is no question. And not pentodes connected as triodes. Actually you can't do it. Most pentodes have a sup-

pressor grid internally connected to the cathode. For a good triode you must connect all grids to the plate, which you can't do. But triodes give the sweetest sound."

Even though we had to give the seafront a miss - the weather had beaten us - Brighton still has its attractions. Looking at rare and unique valve amplifiers was a good enough day out. We'll take down the buckets and spades next time! ●



An unusual stereo power amplifier using 211s in single-ended configuration.

# And

## Noel Keywood interviews

*NK* What brought you to valves and high end hi-fi?

I started in valves because they were still in use in 1957. I worked on Centrum radios and tape recorders before I opened the shop. On the radios we made everything, even the transformer cores. From this I became a radio dealer but I got fed up with old ladies complaining about everything so I started in hi-fi in 1975. I got a shop in Borlange in the middle of Sweden.

*NK* The Japanese were getting big in hi-fi in Britain then. What was the situation in Sweden?

The same. There was only Japanese equipment, although not at the real high end. At that time I thought valves were past it. I had a couple of valve amps, the Luxman M40 and Audio Research D150 and both sounded not interesting at all. One day something happened. A customer found, in a garbage bin, two Leak TL12 amps with triode connected

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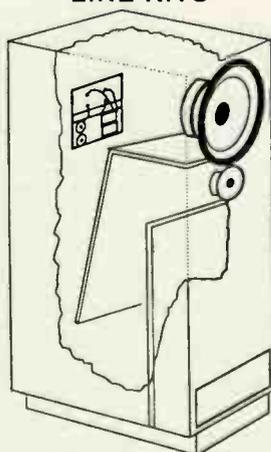
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# A is for Andersson . . .

**Eric Andersson, designer of the Silver Night 300B triode valve amplifier reviewed this month.**



**Eric Andersson.**

KT66 output valves that looked like something the cat comes in with. There was a bag of valves too. He asked me to restore them. I did that then hooked them up to listen to them - then I sold my shop! They were completely superior. They outperformed everything. I sold my shop and went to the USA for two years where I had a gift shop. It took me five years to find out why the Leak sounded so good, but not the other amps.

*NK Did you make any hi-fi in the States?*

No, no. I was designing for myself. I went to the States in 1979 and came back in 1982.

*NK To where?*

Back to Sweden, to Stockholm. I brought back many valve books from the States, including one called Vacuum Tube Amplifiers. It's very good.

*NK Did you start designing in Stockholm?*

Yes. It was in 1982 and I started with a preamplifier because there and then I couldn't get output transformers. I sold a few, but not a lot. I kept my head above the water.

*NK What were your first products called?*

Purist Audio initially. I continued until about 1984 or '85. Then I joined Peter Quortrop in England. I first met him in Copenhagen where he had a hi-fi shop.

Later he rang me up about the Snell Type E and then asked what I was doing in Stockholm. I said "not too much" so he asked me to come over to England where he had a house - near Basingstoke. He had moved there from Copenhagen. It was a lovely house, but the lease ran out

and we had to find a cheap place to live.

We moved to a friend in Shoreham, on the West side of Brighton. Peter found a good shop and small factory unit in the centre of Brighton, so we started the Audio Innovations valve amplifier business there, around 1985.

*NK Did you start designing the crucial transformers in Sweden?*

No. That was the difficulty there. The Swedish factories didn't bother about ten transformers; they wanted orders for 200.

*NK But you say you sold a lot of units into Sweden.*

Yes, I went back to Sweden in 1987 where I started Edison, designing and selling kits, using output transformers from England. They were 12watt amplifiers using EL84s.

*NK Was that when you started with triode amplifiers?*

Yes, with 6B4s and that was where I designed the First and Second Audio amplifiers, which are now made here by Audio Innovations.

*NK The Second Audio was the best match we found for the huge Tannoy GRF. It was a sweet sounding valve amplifier with beautifully liquid treble. But when did you return to England?*

Oh, in 1991. I was in Sweden for four years and sold over 2000 kits. They were sold through magazines and we started a club which was popular. But people became

jealous of my success so they stopped me, so I started advertising.

*NK So what induced you to return to England again?*

I saw the Japanese triode amplifier, the Ongaku, on the front cover of a magazine and I don't want them to take over the triode market which is our market; we have the knowledge. They are all copies of Western Electric circuits and old application notes.

So I came back to design and build good triode valve amplifiers, because I think they will become more and more popular. We can get transformers manufactured in small quantities to our own design. We can also get valves now from P.M. Components; their new 300B is better than the old one, it's a very linear valve. A guaranteed supply at reasonable prices has allowed us to design a 300B amplifier. We couldn't do that using original 300Bs, they were too rare and cost too much.

I knew David (Chessell) from before in Brighton. He was Production Manager at Audio Innovations and went on to launch Audion preamplifiers. Now we have put our abilities together and started Alema (UK). It means we have a range of valve amplifiers and preamplifiers straight away. The 300B Audion Silver Night is our first production amplifier; it will be followed by the Golden Night early next year, which is a single ended version. We think when people hear amplifiers like this they will like the sound. Triode amplifiers are more popular around the world, but they are copies. Our designs are new and original; we think they're better ●

**David Chessell.**



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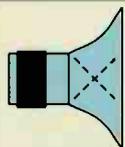
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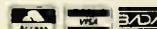
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# LOST CHORD FOUND

**While listening to Gilbert and Sullivan, among others, Eric Braithwaite discovers the delights of the Chord SPM 1200 power amplifier.**

**A**fter I had installed Chord's SPM 1200 stereo power amplifier and listened right the way through Lou Reed's *Magic and Loss*, Dr John's *Goin' Back to New Orleans*, and a few others taken whole, I knew it was something special. My calculations suggested that if I set to and listen to the whole of my record collection from start to finish, eight hours a day, seven days a week, I might spare a bit of time to write this little piece around April '94. This Chord is one of the best power amplifiers around. Now you know, you can go off and read the *Encyclopaedia Britannica* or do the washing-up while I get on with my listening.

Oh, you're back? I've not even reached Bowie and Brahms yet - and I'm a good nine months away from Zemlinsky. You're just as bad as Noel - he insisted I scribble something in '93; he said '94 was too late. I took the 'phone off the hook. He sent the boys round and pointed out you'd all be queuing expectantly in the newsagents with your pair of pound coins in your hands. Apart from that, Chord pointed out a customer also had a bag of two thousand, two hundred and eighty-five jingling coins impatiently awaiting the very amplifier in my possession; I started writing.

John Franks of Chord has produced a

box of electronics not only of an unusual design philosophy, as far as using a switched-mode power supply is concerned (for which, read the Measured Performance section) but sonically one of great lucidity and fluidity. Listen, if you wish, to a percussion section and you can practically feel the quality of a side-drum or read the maker's name on a cymbal. With Quad ESL-63 loudspeakers on the end, the Chord's analytical properties - of studio control-room clarity - can sometimes be almost painful. A listener, especially like me with ESL-63s and their imaging precision, almost needs his head clamped in place - you realise the crick

developing in your neck is because you've shifted position to follow an edit which has shifted the vocalist's position by an inch or two.

The real beauty of the Chord is that this open-window on the sound extends a long way down into the bass. "What have you done to your ESLs?" a regular visitor asked. "Where's all that bass coming from?" she wanted to know, peering about for a subwoofer of some kind. Few amplifiers - the only other has been the Michell Alecto - have had the ability to produce this sort of illusion as a bass guitar or double bass twangs, buzzes or thunders down apparently effortlessly into regions the '63s aren't supposed to go. It's a matter of cleanliness: the cleaner, more controlled, more distortion-free the bass is, the greater the illusion.

On Classical recordings, this rare trait is marked by a purity of the sound of stick hitting parchment followed by the resonance of the body of the timpani. Using the Chord, I reckon, given loudspeakers pure enough in themselves in the lower reaches, it would be possible to recognise the note to which the timpani are tuned. That is a real surprise when you realise how seldom, using domestic hi-fi, even a frequent listener is likely to recollect that they are tuned at all.

### Fundamentals

It is this extraordinary grip on the fundamentals - pun very much intentional - that marks out the SPM 1200 from all but the serious mortgage, ultra high-end. It contributes to a reproduction of beat and rhythm which is exceptionally tight and accurate. I found myself first doing a delighted one-man conga around the flat to Dr John's New Orleans Marching-Band style track from Goin' Back To New Orleans, clapping my hands in perfect timing. I couldn't help noticing guests tapping their feet absolutely in time to a beat, or following time-signatures with unusual precision without even realising they were doing it. This kind of spot-on flawless timing sounds so natural, it's a jolt coming down to earth and realising how infrequently one hears it.

Equally natural is a sonority, fullness and scope of tonal colour that portrays every nuance of emotion in a recording. While in a review one might normally pick out a particular singer, one instrument, or one recording, even, with the Chord in place such navel-examination becomes futile. With friends sitting in front of three radically different loudspeakers over several days, all connected up to the Chord, none of them wanted to go home. We went from Coltrane to Cats, The Pirates of Penzance to Pink Floyd, stopping at any number of other musical stations on the way.

Mention of inner detail is usually qualified - there's a quality in the upper mid or lower bass which fuzzes the edges or hardens an image, for example. It was only when the Chord had to be replaced that it dawned on me how much of the



The unusual switch mode power supply with its small mains transformer and toroidal chokes (at right) can be seen at the front of the amplifier.

recording it transmitted. It was impossible to believe that there wasn't a direct line straight into the studio. It sailed through my standard torture tracks, concealing nothing and being consistently enlightening. Nothing is artificially spotlighted, just precisely located in time and space, with not a foot wrong in timbre or tone, instrumental and vocal colours being maintained with marked integrity.

Pink Floyd and Gilbert and Sullivan's Pirates exemplified the Chord's attributes in different ways. The initial beat on Dark Side Of The Moon was tighter than I've ever heard it; the individual sonorities of the clocks striking chiming and ringing was so well delineated they could have been sorted by size and made on listening alone. Each singer in the Gilbert and Sullivan operetta had his or her unmistakable character in every note, instantly recognisable. This even included the chorus, which everything but the high-end usually submerges into an amorphous mass barely recognisable as a collection of individuals.

### Trustworthy

I've seldom had through my hands an amplifier I felt was so inherently trustworthy - not only with music, but with mundane considerations like partnering speakers. It worked a treat with ESL-63s and also reproduced its tight, dry, accurate bass with ease into a pair of six-foot MAG Audio A90 full-range ribbon speakers which have a thoroughly awkward impedance. The SPM 1200 also made a pair of Rogers' Studio 3s expand and bloom so that - like the others - they disappeared and left music in the space instead.

In case this sounds as though the Chord is the best of all possible amplifiers, I have to admit to reservations. Some care has to be exercised with the volume control, or a kind of 'slippage' occurs. It's hard to describe except as a hardening of

upper-mid and treble notes, imparting a slight steeliness to flute, sharpening up the attack on a pizzicato that bit too much and pushing the instruments forward. It happens only at a certain level. The upper-mid range was somewhat more forward in projection generally, in fact. Compared to the Michell Alectos, the Chord also lacked some of those amplifiers' superb three-dimensional depth. It wasn't as easy to believe one could walk round the back of players - even using the MAG Audio ribbons, which portray an exceptional depth of field. I know the Argo with Hera power supply can produce considerable depth, so it wasn't at fault here; however, the Chord clearly requires top-quality ancillaries.

### Beautifully Built

I have one quibble about the physical design; it is beautifully and superbly built - especially the one I had with its piano-gloss end cheeks - and it feels like one of those cars with the winged lady on the radiator. It has enough heat-sinking to run no more than luke-warm, but that same casting allows very little space for the two unbalanced phono sockets and quasi-balanced XLRs for the pre-amp input, as well as two pairs of speaker binding-posts. I gave up bare-wire connection and took my soldering-iron to the speaker cables and eight (biwire) banana plugs after ten minutes' fruitless effort.

A new owner can learn to live with that sort of difficulty; whether an owner could learn to live without the Chord as a true high-end amplifier - at Cowley prices instead of Crewe's - I doubt. Like the Michell Alecto, like the LFD range, the SPM 1200 has struck a chord in my heart all of its own. It's another intimation that the cousins across the pond aren't necessarily going to occupy the high ground in amplification for ever. Now - and without question - we have our own ●

**MEASURED PERFORMANCE**

The switched mode power supply of the Chord is electronically complex in comparison to the usual 'tranny plus a reservoir' arrangement. On paper, switched mode has some interesting potential advantages, but whilst the power supply of an amplifier is very important, it does not alone determine sound quality.

The Chord SPM 1200 ably demonstrates the potential benefits of this type of power supply. It's weighty at 13kgs (29lbs), but entirely liftable. Yet an output power of 250watts is provided into 8ohms and this rises to no less than 400watts into 4ohms. Yet with moderate dimensions of 42cms wide, 35.5cms deep and 14cms high the SPM1200 is compact enough to fit into a normal hi-fi rack with ease, in spite of its enormous output potential.

The disadvantages of a switched mode power supply are complexity, interference and reliability. They have to be built with care.

The SPM 1200 uses eight high current MOSFET output devices per channel to safely handle the power of which it is capable. With a tone burst into 2Ω it produced no less than 870watts under test.

The presence of crossover distortion was a concern, especially down in the mid-band. It produced an extended harmonic spectrum, albeit at a low level of 0.03% distortion (see the spectrum analysis). Performance worsened significantly at high frequencies though, distortion rising to a not insignificant 0.17% on one channel. I usually reckon on the phenomenon becoming audible at around this level.

Into a low four ohm load the figure jumped to 0.35%, at which level I would expect some sharpness or roughness to tinge the sound. John Franks, the designer, confirmed that, as I suspected, only limited feedback had been used. MOSFETs are amenable to the application of huge amounts of feedback, which they need in order to suppress their high intrinsic distortion. Whilst the Japanese leapt at this opportunity, instantly producing the world's best-measuring and worst-sounding amplifiers (clever, that), Chord have trodden cautiously. Trouble is, I know from experience that 0.2% distortion at 10kHz invariably results in a sharp sound.

In all other areas the SPM 1200 measured very well. Frequency response reaches from below 1Hz up to 71kHz, noise is low at -101dB (CCIR weighted) and separation adequately wide at 70dB. However, sensitivity is low at 1.5V for full output, so an active preamplifier with gain is needed, even for CD.

The SPM 1200 is an ultra high power amplifier of reasonable weight and compact dimensions. For me its most curious feature is not the switched mode power supply, but the unusual distortion characteristic, for it is this that is likely to affect sound quality most significantly.

I had to sneak a quick listen to the SPM 1200, having earlier savoured the delights of the Silver Night 300B, followed by the thoroughly excellent EAR 834 integrated valve

amplifier reviewed last month. An Audiolab C8000 preamplifier was used in front, plus a DPA PDM I Series 3 sync locked to a DPA T I transport; Heybrook Sextets were hung onto the other end, biwired with Furukawa cable.

I was struck quickly by some interesting features. The SPM 1200 has somewhat crystalline treble and, like most modern, high quality solid state amps, it has great precision and detailing in its sound. There was strong resolution of treble information, but further down textures were seemingly hardened and dried a little. The amplifier has very powerful, endlessly deep, yet fearfully tight bass. It would be easy to think the SPM 1200 had no bass at times, so lean and taut is it - then it will surprise you.

I was impressed by what I heard, but had a few minor reservations. Surprisingly, speaking to John Franks, he was disappointed I thought the SPM 1200 epitomised solid-state sound "but I like valve amps and feel the SPM 1200 has some of their best qualities" he said.

When I listened to the 1200, all our quality-compatible preamps were out, snaffled by two legged hi-fi gannets. This sort of amplifier demands the best: Eric used the Michell Iso/Argo, which are superb. I use a Deltec preamplifier (similarly lucid) and we also requested a Rose valve preamplifier especially for the 1200, suspecting they would form a symbiotic combination. The Audiolab 8000C preamplifier wasn't really a match for the SPM 1200. Unfortunately, whilst Eric heard the SPM 1200 with the Rose, I didn't get the chance before it disappeared off down the road. But my enduring memory - like Eric's - is of a very special power amplifier. **NK**



Compact dimensions restricts space for the terminals on the rear panel

**ROSE RV-23S PRE-AMP**

There are not many amplifiers which cast such a clear eye on their partnering pre-amplifiers, such that if they were human they would obviously have been using Optrex, but the Chord is one of them.

While I initially used the SPM 1200 with a Hera power-supplied Michell Argo, we acquired a valve pre-amplifier during the listening sessions. I knew of the Rose RV-23S only by repute; slotting it briefly into the system was in some ways a happy piece of serendipity. It had become clear using the Argo that the Chord required more than just a casual mating-dance to marry it to a pre-amp; while in money terms it's a decided bargain, it's also impossible to save on the ancillaries. An Argo with Hera and Iso will set

you back over another grand; the Rose, it occurred to us, was possibly a viable alternative at half the price.

What led us to try was Noel's experience with the Audiolab pre; even with the Argo, which has a relatively smooth, well-rounded tonal quality by comparison, the Chord could be provoked into a tang of hardness in the upper reaches and a coolness which detracted slightly from its immense dynamics and sure-footed clarity. Would a valve pre-amp soften some of the harder edges even more?

To a small degree, it did, turning transients a little softer, lightening the edge of the attack; the notably dry - but extremely lucid and detailed - bass became a little warmer and looser, though, remarkably, without any destructive effect on the Chord's timing. In this combination the Rose turned out to have a great many of the valve virtues - a softer focus without in the least diminishing detail, a considerable degree of air and space around and between performers and a silken texture - along with the firm grip of a solid-state design.

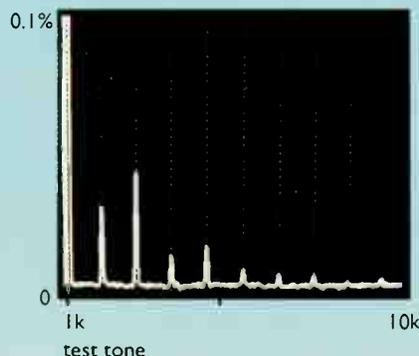
Perhaps it lacked the quite exceptional airiness and walk-in three dimensionality of the Argo, but partnered with the Chord it came close. Perhaps it was a trace of valve velvet underlying the crispness, but it also managed to just perceptibly deepen the Chord's soundstage, which was otherwise foreshortened by its degree of forwardness in the upper-mid which the Argo couldn't - or wouldn't - disguise.

It's an unlikely combination, but since John Franks told us he had been seeking some of the virtues of valves in his solid-state design, not an unruly or outre one. Such a combination is well-worth exploring; and the Rose was intriguing, so we'll be reviewing it next month. **EB**

**TEST RESULTS**

Power	250watts
CD/tuner/aux.	
Frequency response	1Hz-71kHz
Separation	70dB
Noise	-101dB
Distortion	0.03%
Sensitivity	1.5mV
dc offset	-47/-50mV

**DISTORTION**



Extended distortion harmonics in the mid-band from MOSFETs with low feedback.

**W**as it worth the wait? Somehow, Sugden's SDT-1 Compact Disc player seemed a long time coming. Originally intended for release at the same time as the SDA-1 digital-to-analogue convertor (DAC), the company's long search for a transport mechanism meant the convertor has led a lonely existence for the last few months.

After a hunt which took them around Europe and the Far East, Patrick and Tony Miller, who run the Yorkshire company, finally settled on Philips' new CDM-9 'CD Engine', so called because it offers considerable flexibility in partnering electronics. It is also claimed to have a long production life, which, though it figures in Philips' own CD950 player, makes it ideal for smaller manufacturers who don't want to see their pride and joy rendered obsolete as the line runs down in six months.

While I wondered whether choosing a mechanism for longevity would involve compromises in sound quality, the Millers were insistent that their CD player was going to have 'musicality' as its trademark and wasn't going to disgrace their increasingly lauded DAC. From the first listening session, their claims were borne out. It may sound paradoxical, but for a few days I thought it was wonderful; for a few hours I had doubts; then the rest of the time I thought it was one of the best players I'd come across - and I hold to that still.

It's not perfect, but it plays music with a full heart that is so often the mark of top-rank vinyl systems; but it doesn't sound like vinyl. Partially, what makes it uncommonly satisfying is that it is extraordinarily airy and spacious, with a clarity of ambience that is rare. Listening to Mary Black's 'Columbus', it was practically possible to work out

# AN ENGINE



**Sugden have produced one of the first British players to incorporate Philips' latest CDM-9 'CD Engine'. Eric Braithwaite finds the right side of the tracks.**

the exact wall an echo was bouncing back from. A recording on Hungaraton of the Play of Daniel had a 'churchy' ambience which was exactly right, not swimmy or over-reverberant, but clear and pure like the light through a stained-glass window. Tiny elements of a recording, like a soft shuffle of a restless player's feet, or a guitar player's momentary fluff not quite excised in editing, all appear without in the least distracting

from the flow of the music.

And how the music flows! I spent more and more time listening to recent recordings, particularly the latest batch of 20-bit masters from Sony Classical. These authentic-instrument recordings of Haydn's symphonies displayed their true timbre, especially in the woodwind, darker-toned strings and percussion. Plucked strings were splendidly vibrant and tight without overhang.

## MEASURED PERFORMANCE

The SDT-1 CD player uses Philips sixteen-bit technology, long abandoned by others in favour of Bitstream that gives lower distortion. Since the sharp or harsh quality of sound from CD has traditionally been attributed to digital distortion, this would appear to be a sensible action. It is certainly one that Philips have promoted, in order to try and shake off criticisms about CD sound quality.

Whilst Bitstream does give a smoother sound, the difference isn't as great as might be imagined or hoped for. Other mechanisms contribute significantly to the perceived sound of CD, recording quality and the presence of recorded distortion being just two.

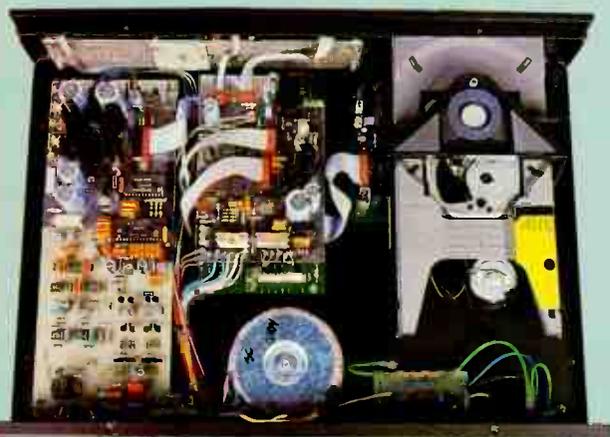
My experience of measuring and then listening to CD players suggests that the distortion sixteen-bit generates can be heard all the same: it tinges the upper mid-range in particular with a slight coarseness.

The Sugden player offers us an apparent paradox: it measures poorly but it sounds quite good. I had to listen to it

after measurement, just to see what correlations could be made. Frequency response has an upper treble lift, as the analysis shows. As expected, this was audible, bringing a tinselly brightness to the sound. It also helped emphasise the sharpness of distortion, making the player sound distinctly edgy with some discs.

However, the effect wasn't especially unpleasant, being ameliorated by more positive factors. Whether others will be able to hear the problems or be upset by them depends upon partnering equipment too. Tweeters that go no further than about 16kHz, or speakers with a generally dull sound will disguise the sharpness.

So the SDT-1 offers a typical sixteen-bit distortion performance, having extended harmonics that reach 20kHz, as the analysis shows, and measuring 0.07% in total - about three times higher than Bitstream. This apart, performance reached a good standard, with low noise, high channel separation and well suppressed spurious outputs above 21kHz. Output was a little high at 2.4V,



Under the lid of the Sugden SDT-1 CD player, Philips' 'CD Engine' can be seen at right.

# FOR ENJOYMENT



Like Malcolm and Noel, John Lee Hooker's 'Boom Boom' has become a firm favourite of mine: the Sugden seemed to revel in the texture of his voice and the strength of the bass notes, which were firm and round, without turning fruity. It was so easy to slip into simply listening to CD after CD that I had to remind myself to listen analytically - which is where my momentary doubts arose.

First, I like my images clear-cut. While the Sugden player was supreme at producing a tangible impression of live vocalists and instrumentalists quite divorced from the loudspeakers, when it came to locating orchestral sections, particularly first and second violins, they

were not as sharply delineated as I hoped for. But then, the Sugden was so adept at keeping up with the beat and the tempo, it kept me happy nonetheless.

What had me also pausing for thought was a degree of hardness of tone, particularly in violin tone, flute and female vocals; fortunately, within the overall richness and comprehensiveness of colour, it was acceptable.

Built to match the Sugden house-style, though curiously with cursive lettering on the fascia instead of Roman, which jars particularly when the CD is next to the same company's DAC, this Yorkshire player proved usefully adaptable. While it lacks any of the more spectacular

functions of similarly-priced Far Eastern players, it does offer the essential track selection and programming functions controlled from either small round buttons on the fascia or from a hand-held remote. The power-on switch is at the rear with the unit placed on stand-by from another small button at the front.

The rear plate also offers a BNC and co-ax switchable digital output. Adding Sugden's own SDA-1 convertor tightened the imagery, removed a little of the hardness and 'aired' the stage a fraction more. The real surprise was that the pairing was not a startling advance on the CD player used on its own; the Sugden stands up well among similarly-priced dedicated transports. I came to prefer it to the respected Arcam Delta 170.3 transport for its breadth of tonal colour and its pace.

It was this that dispelled my last reservations. If I was a little disappointed at first that adding an outboard DAC only made - relatively - a couple of hundred quids' worth of improvement, it wasn't long before it occurred to me to do the sums the other way around. If alone it wasn't shamed by a twelve-hundred pound pairing, then this new player is obviously worth a good deal more than its £850 asking price. At the risk of being accused of partiality, just because I was born in Yorkshire too - I can't help it! - I have to say Sugden's CD player just has to be near the top of any buyer's list. ●

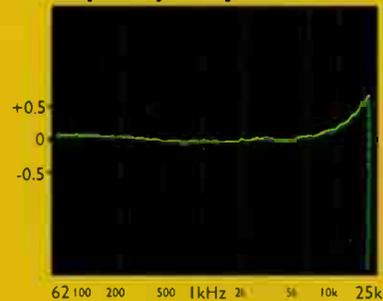
giving the Sugden a +1.6dB advantage in any A/B comparison against a player with a standard 2V output.

Being told beforehand that it sounded good, I had to use this player after measuring it, not only to satisfy my own curiosity, but also to hear the strengths about which I'd been told. I was honestly surprised to find that the SDT-1 is a very attractive sounding player. It has a richer tonality than usual, but it doesn't sound thick or constricted. Strong portrayal of the character of both vocalists and instruments, coupled with a good sense of clarity made for a brisk, sturdily bodied performance with plenty of reach-out-and-touch quality to images. I could clearly hear the measured problems I have described, but I can honestly say other, more cogent properties caught my attention in practice. All the same, I wouldn't recommend the SDT-1 is used in an unduly bright system. This is a player to be kept away from spitty metal dome tweeters in particular. It is also a player that should be auditioned, having some peculiarly attractive properties in good measure. **NK**

## TEST RESULTS

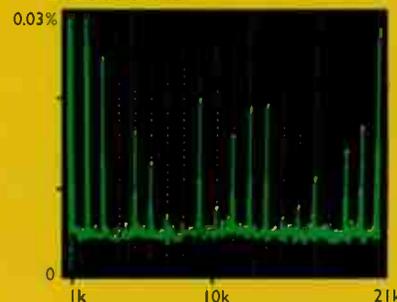
Frequency response	4Hz-21.3kHz	
Distortion	-6dB	0.005
	-30dB	0.07
	-60dB	0.6
	-90	57
	-90dB dithered	16
Separation	left	right
	1kHz	88
	10kHz	72
Noise		-112dB
	with emphasis	-113dB
Dynamic range	105dB	
Output	2.4V	

## Frequency Response



Rising treble.

## Distortion



Extended distortion.



# World



## TABLES AND TRAMPOLINS

Linn has recently added two suspension upgrades to the LP12. The first is a stiffer baseboard fitted as standard to all new LP12s, available as a retrofit upgrade for £45. The second, the Trampolin, consists of a new baseboard, but with four springy feet incorporated, which support the deck instead of the normal feet fitted at the corners of the plinth. This sells for a hefty £98. Linn are championing the Trampolin for use in most situations, claiming that it removes the need for dedicated equipment supports.

We have not tried to test Linn's claim that the arrival of the Trampolin means that we can all throw our turntables in the dustbin (although we are understandably sceptical). However, following extensive listening in our different systems over a period of months, I and two friends have independently reached the conclusion that the Trampolin is not the best option for an LP12 sited on some of the most popular equipment tables. The Trampolin may give some improvement when it is used to replace the old flimsier baseboard, but the new baseboard on its own is significantly better than the Trampolin. However, the most tuneful music is obtained by removing the baseboard completely. This letter is intended to act as a warning to other LP12 owners tempted to succumb to the current promotion of the Trampolin by Linn. A home dem is essential.

The Trampolin was tried out in five different systems:

1. LP12/Lingo/Ekos/Troika on Target table with Naim 32.5/Hi-cap/110 and Kans.
2. LP12/Lingo/Ekos/Troika on Audiotech table with Kaim/280/Spark and Kans.
3. LP12/Lingo/Ekos/Arkiv on Mana Reference table with Kaim/280/Spark and Kabers.
4. LP12/Lingo/Ekos/Troika/ on Audiotech table with Kaim/Isobarik Activ/three 280s and Isobariks.
5. LP12/Lingo/Ekos/Troika on Mana Phase 3 wall shelf with Kaim/Isobarik Activ/four 280s (1 Sparked) and Isobariks.

## Letter of The Month

The Trampolin was fitted to the turntables as firmly as possible. The original feet were used to secure the Trampolin at the four corners, instead of the washers supplied with the Trampolin, since this gave a tighter fit. By removing the Trampolin feet, the deck then rested on the original feet, enabling the comparison between the Trampolin and the new baseboard. Linn drill extra holes in the plinth and fit thin damping strips to hold the baseboard or Trampolin in place more rigidly. This modification was carried out on System 3 (at a Linn Clinic) but did not change our conclusions.

A third test was carried out using the standard corner feet but with no baseboard at all. (This is obviously a little dubious from the safety viewpoint, so be careful if young prying hands are about.)

In all systems there was total agreement on the best set up. No baseboard at all was preferred to the new baseboard only, which was better than the Trampolin itself. These conclusions were reached independently by all three of us. The differences were not subtle. In Linn terms, tunes were played better.

In hi-fi terms, the Trampolin initially sounded impressive, particularly on Rock music, where it gave a fuller, meatier sound. However, this was soon realised to be at the expense of detail and openness. Bass lines on the Trampolin wallowed and notes blurred into one another. Removing the Trampolin enabled more of the individual notes and how they were plucked to be distinguished. The overall sound was leaner, but more natural and tuneful. Further significant gains in the same areas were had by the complete removal of the baseboard.

Experiments carried out using the two Mana systems may partially explain our findings. The Troikas were lowered onto a stationary record and the volume was turned up as far as possible. With the Trampolins in

place bass feedback was clearly heard well below full volume! Clearly the Trampolin interacts badly with Mana supports. With the Trampolin feet removed, the volume could be turned to maximum. Hitting the table produced a thump (though not an excessively loud thump) through the speakers. With the baseboard removed the same action resulted in a much quieter thump. It seems that the perceived tunefulness of the music is related to the degree of acoustic isolation afforded by the LP12/baseboard combination on Mana supports.

Our conclusion is that the Trampolin is not the most musical option on Audiotech tables, Mana tables, Target tables and Mana wall shelves. A home dem of the Trampolin is essential before purchase. What would form an interesting review, and which we have yet to try, is a comparison of the LP12 baseboard options on different supports, ranging from the archetypal 'old sideboard' to a Mana Phase 5 table. Can we now throw our dedicated turntable supports away? Is the Trampolin really that good?

We suggest to anyone who wants to get the last ounce of performance from their LP12 that they try out some of our tests. After all, removing the baseboard is free!

**Kevin Harrison,  
Ashford Common,  
Middlesex.**

I had heard from some LP12 owners that the Trampolin is not as compatible with a Mana table as might be expected and is probably better viewed as an alternative to many tables on the market rather than complementary to them. LP12 owners already owning expensive supports will be grateful for Mr Harrison's test.

**EB**

## LINN REPLY

In all cases the solid baseboard sounds better than the old one. In some cases, the Trampolin will not operate to its full potential and advice should be sought from an authorised Linn retailer, however, in most cases it sounds better than the solid baseboard.

Using the same measurement techniques that have kept the LP12 as the best turntable in the world both the Trampolin and the solid baseboard outperform the previous version.

We at Linn believe both baseboards sound considerably better, especially the Trampolin, and any authorised Linn retailer would be delighted to demonstrate this to you and help you to make the best choice to suit your circumstances.

**WARNING!** As a matter of grave concern we strongly recommend that users do not consider the removal of the baseboard as an option as when connected to the mains the voltage levels of the printed circuit board are sufficient to prove fatal.

**Neil Gaden**

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## THE DARKER SIDE OF CD

About six months ago I finally succumbed to the temptations of the 'Dark Side'. Yes, I bought a CD player, and so far I am very pleased with it. However there are two points of interest that I should like to raise.

Firstly, if I insert a disc and then select 'Close' to shut the turntable drawer, the player (a Pioneer PD9700) automatically scans the disc and displays a total playing time. Interestingly, I have found that this displayed time rarely agrees with that listed on the CD information sheet. Has the player misread the disc, or is there something more sinister at work here?

Secondly, I am finding it difficult to judge whether a disc's poor sound is caused by a damaged disc or a poor recording. We are told that error correction inside the CD player can compensate for most error inducing phenomena. However, to date, I have returned two CDs.

The first exhibited what I shall dub an 'antidick', or a rhythmical silence as opposed to an LP's click. This was only audible on my electrostatic headphones and not on the shop's lamentably feeble CD player.

The second fault was an obvious crackle twenty minutes into the disc. I have been disappointed with the sound of one or two other discs, but I have been unable to draw any conclusions as to the source of the degradation.

My point is, could your excellent magazine encourage readers to send in their CD faults, so that the rest of us can draw up a glossary of "cause and effects" of poor sound? Now that it is generally accepted that CD's are not the perfect medium, we should be able to judge for ourselves whether a disc is damaged, without having to purchase one of the old Cambridge CD's with an error correction readout.

**J. B. Ledger,**  
Coulson,  
Surrey.

On the timing problem, it's not unusual for the readout on a player's display not to corre-

spond with the timings given on the CD itself or on the insert. I've come across some which are considerably out. There are two reasons for this, and neither are the fault of the Pioneer. First is simple human error. Track times as printed in the booklet will often not be taken from the CD, because it will probably have been written before the CDs come out of the factory. They will generally have been taken from the studio log - and sometimes have obviously been misread. The final master may well also have an extra second or two of silence added here and there which will mean there is a disparity. Some CD booklets actually do warn the buyer of possible discrepancies. There's nothing sinister about it, though if anyone does come across a CD which blatantly advertises, say "Over an hour of music" and turns out only to have fifty-five minutes on it, there's a case for the Trading Standards Office.

Some deliberate obfuscation over timing was sometimes introduced in the day of the seven-inch single. I think it was Phil Spector who mixed a single down to over four minutes when radio stations had a policy of not playing any that long. Rather than mix it down again so it would meet the required timing, he simply printed "3' 50" on the label - and the stations all played it without realising they'd been conned.

Now, hands up anyone out there who really thought clicks, pops and bangs had been banished along with the LP? I've heard them - though relatively infrequently - on CD. Buyers would be well advised to inspect their purchases for 'pinholes', tiny holes in the coating which show when the CD is held up to the light - or scratches, both of which can send some players' error correction awry.

The result may be either brief muting, causing silence, when the fault is such that no data interpolation can take place, or it may result in clicks. If readers do know of particular culprits, perhaps they could, indeed, let us and everyone else

know. One thing to be borne in mind is that one player's ability to correct errors is often different to another's. **EB**

## THE BOTTOM LINE?

Great magazine - I've bought every issue so far! It just got better, as well. Now, when I read it in the loo, I don't have to worry if I run out of toilet paper since you've included some in your back section (rear end!) of the magazine. Very thoughtful of you - nice one!

On another topic, I'd like to congratulate the inventors of CD for encouraging me to wander around car-boot sales picking up loads of old records - it's much more fun than wandering into your local homogenised Our Price where everything's laid out so neatly and boringly.

I also hate seeing "continued on page 36" - by the time I've found the page, I've forgotten what I was reading about.

**Paul Rowlands,**  
Bracknell,  
Berks.

Is this what is known as a back-handed compliment? (no Eric, it's a back-sided compliment! NK) We're glad to hear our magazine is well-used as well as well-read. I tend to collect my vinyl from the equal disorder of market stalls rather than car-boot sales, but there are amazing bargains to be had. A few years ago a then customer of mine delightfully told me of acquiring a complete mint set of the very valuable Elvis recordings on the Sun label at a car-boot sale for a derisory sum.

Sorry about the "continued on..." which we try to keep to a minimum. **EB**

## FADING AWAY

I read with great interest the views of Bryan Martin, 'True or Untrue' on pages 14 and 15 of your December issue.

Avid followers will remember the CD promise, a format that improved on virtually all aspects of the analogue system we all loved and enjoyed so much. The perfect medium, it was said, now so often seen as the impossible dream. Mr. Martin is quite probably right when he suggests "there is no such thing

as high-end CD". It would appear NK is saying he thinks so too. He cleverly brings out the one possible error in Mr. Martin's letter, emphasising and reinforcing the real truth, then further strengthening the point by bringing to our attention Decca Studio's view, that the CD format, "... shows distinct limitations and is - and always was - unsuitable for quality music reproduction."

Clearly then the public, Hi-Fi journalists and software manufacturers all agree, but what about the hardware manufacturers? Surely they wouldn't say anything against CD - they do!

A highly regarded Danish manufacturer's promotional leaflet for their CD player costing £3,495 reads, and I quote, "Comparison of any high-quality turntable with a Compact Disc Player reveals the musical superiority of analog. And even though there has been an incredible improvement in sound quality since the early CD players, the musical experience of CD still lacks the immediacy and realism of analog."

Now that's honesty for you. Plainly nobody is trying to fool anybody and it must mean as a result, those who still feel CD to be the best are only fooling themselves. My view is this: if there is any truth in the rumour that after ten years CD fades away, it may just be possible we could all regain our sanity and live happily ever after.

**Colin Whiteley,**  
Otley,  
West Yorkshire.

The debate won't die, will it? Anyone waiting with the hopeful expectation that CDs will fade away after ten years or so, like some kind of biodegradable carton, may be disappointed. The idea that they had a limited shelf-life seems to have been something of a chimera: now CD has been in existence for ten years, I've not heard of any that have deteriorated in that time.

There is little doubt that in terms of recording, digital mastering still has some way to go, hence the relatively recent concentration by both JVC and Sony on 20-bit recording, which Decca have said for many years was the standard required.

'High-end CD' has not really been achieved in software yet; in hardware, perhaps it's more difficult to judge. As I've said elsewhere, my view is that in the regions where - as a record producer recently put it to me -

Continued on page 38...

# The new Audiolab 8000T Tuner



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# Studio

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# Miniature

**An equally small studio-quality miniature, Rogers' new Studio 3 takes the place of the classic BBC LS3/5a monitor in their range. Eric Braithwaite finds out whether small is beautiful.**

At last year's Penta Show, visitors were trying to peer around the back of a small speaker on the Rogers stand. Though it was similar in size to the LS3/5a, the BBC-designed tiny monitor that the Rogers name has become almost synonymous with over the years - and which has sold more than forty thousand - it was obviously not quite the same. It carried a similar price-tag, £450, its drive units were hidden by a cloth grille and it was called the Studio 3.

Our review pair were beautifully finished, as you would expect at this price, in Rosewood veneer which costs £89 more than the Black Ash or Walnut versions. It extends all the way round the back, too, where four gold-plated Michell binding posts provide for bi-wiring.

If you were lucky enough to catch Andy Whittle's eye at the Show, you would soon have discovered the Studio 3 was his own baby: his first exclusive design after joining Rogers. Built to replace the BBC monitor in the Rogers range, the Studio 3 is not an LS3/5a clone, though like Harbeth's HL-P3 it's designed to meet a similar market. The LS3/5a was never cheap to make - it demanded an extremely complex crossover for one thing - and latterly has been to Rogers what the Mini once was to British Leyland: much loved, extremely popular, but not very profitable. Added to which, the supply of drive units - manufactured by KEF - suddenly dried up when that company went into receivership. Though KEF was rescued, Rogers decided the time was right to go ahead with their own miniature.

A BBC connection still exists, however. You may remember the LS3/5a had felt strips around the tweeter; it's not visible in the Studio 3, but the Rogers-adapted



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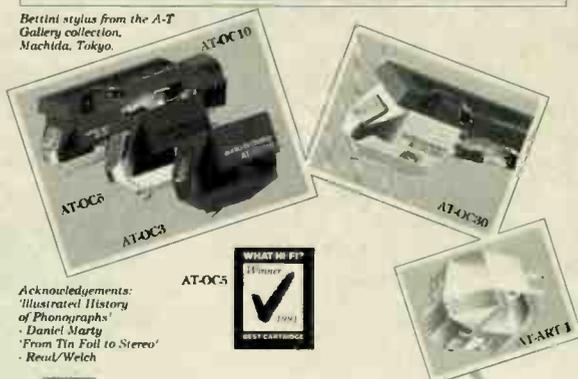
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## A Refining Of The PRINCIPLE



Bettini stylus from the A-T Gallery collection. Machida, Tokyo.



Acknowledgements:  
'Illustrated History of Phonographs'  
- Daniel Marly  
'From Tin Foil to Stereo'  
- Read/Welch

AT-OC5



little over 100 years ago Gianni Bettini became the world's first audiophile. As an Italian cavalry officer visiting New York in the late 1880's, he was intrigued by the newly introduced Edison wax cylinder 'phonogram' yet unsatisfied with its poor audio quality. Using his flair for things mechanical Lieutenant Bettini began to turn this business dictation machine into a device which would satisfy music lovers and to ensure the ultimate fidelity he opened his own recording studio on Fifth Avenue. There he made the first realistic recordings of famous contemporary opera singers and built up a fabulous collection of 'celebrity cylinders' including his holiness Pope Leo XIII. His 'micro-reproducer' phonograph was first in a line of successful models and today A-T salutes him as a true pioneer of high fidelity.

At Audio Technica we strive toward the same goal, using unrivalled micro-transducer 'know how' to reduce the weight of Bettini's original device to the mere few grams of our latest moving coil series. Below we proudly present our 'reference' specifications but add one small note of caution. At this level 'numbers' do not tell the whole story as component compatibility and musical taste come into play. We thus urge a personal audition at one of our hand selected A-T dealers to fully assess requirements.

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SEAS tweeter has a half-inch thick felt pad glued on to it at the back. Rogers make the 110mm polypropylene-coned bass unit; this has a high-flux, low-distortion magnet descended from that used in another BBC monitor design, the LS5/8, which Rogers continue to make. Among other benefits, Andy explained, was that this should enable the tiny Studio 3 to work hard in the tradition of studio monitors, where the driver will hit the end-stops before distortion sets in. Most domestic designs tell a listener 'too much volume' by distorting first.

The Studio 3s could certainly work deceptively hard. On the MAF four-column stands which Rogers supplied, near a solid rear wall and toed in so the axis crossed in front of the listening position, I had no problems powering them up with a Chord SPM 1200 and hearing some extremely lively and plausible bass from them. They might only be specified down to 80Hz, but in the right place and with the right gear behind them they produced very credible bass guitar, superbly resonant double bass and splendid drumming. The little '3 has that true monitor ability to discriminate between the thwack of stick on skin and follow it up immediately by the resonance of the body. It makes for a superb ability to keep time and follow the beat.

This new miniature isn't short in other departments either. In imaging, it is a very close relative of the LS3/5a; so precise can it be, that accurate positioning of these speakers is almost as crucial as that of ESL-63s. A tape measure, so that they can be placed equidistant from the listening seat, is an essential accessory.

So placed, the Studio 3 does what all ideal - but few real-life - loudspeakers do when you shut your eyes: it disappears.

Like the grin of the Cheshire Cat, a whole orchestra, a band, a singer, simply hang in space. With the Chord and Michell's Hera'd Argo in place, the sound-stage spread East and West as well as North and South in a way that nearly had visitors convinced I was cheating and the sound wasn't coming out of these boxes at all.

In true monitor-speaker style, too, these little boxes are remarkably revealing of both sources and recordings. Else-

*"remarkably revealing of both sources and recordings"*

where, I've mildly criticised the Chord SPM 1200 for lacking a full panoply of depth. Briefly, wondering if I wasn't going over the top driving them with five times their worth of power amp, I substituted a Quad 306. No problems with volume - it drove them to more than satisfactory domestic levels - but a guest commented approvingly on how the stage instantly deepened and moved further back. Then she remarked, slightly despondently, thinking of her own budget, on how much of the ultra-fine detail the Chord is so supreme at displaying had diminished also.

It was an object lesson in these loudspeakers' ability to display differences of degree with absolute fairness. However rich the fare, the Studio 3 never showed signs of satiety. It will take on all comers

and give them a fair hearing.

Nor will it diminish the quality of the music it's fed. Unlike the LS3/5a or its rival, Harbeth's HL-P3, Rogers' new miniature has a more up-front treble presentation, of diamond-facet brilliance. It's cheekier, less politely restrained. What it amounts to is an extra degree of vigour, especially on vocals and instrumentals which helps to take the players right away from the boxes into the room with a semblance of real human size.

There are a couple of quirks, however: while sustained flute or violin notes could hang in the air, some quick fingering had some higher notes gaining in attack while others lost a little speed. This was a trait of the Chord, but the Rogers tended to slightly emphasise it, as they did 'vinyl roar' from LP. In the latter case, it was hardly distracting: it was more intriguing during quiet passages listening to which LPs had more of it than others!

Some discrimination between the tonal colours of orchestral sections, again particularly among the violins, was slightly diminished compared to ESL-63s. Substituting single-column sand-filled Foundation stands for the MAF ones I felt smoothed the upper notes and rounded the sound, though at the cost of some of the breadth. I have to admit I am suspicious of hollow ringing steel columns like those of the MAF stands.

All these are trifles, though, compared to the Studio 3's real insight and vivacity. They may not burrow underground, but if you want Reggae that shifts slates of the roof, you wouldn't want anything this small anyway. For people short of space, but who want studio-type clarity and hi-fi liveliness, they could be just the answer. They won't outgrow source upgrades either - only grow into them ●

## MEASURED PERFORMANCE

As a loudspeaker hoping to be a credible speech monitor, a role its predecessor, the LS3/5a, was designed for, Rogers' new Studio 3 needed a balanced and smooth frequency response. Our second samples offered just such a performance, as the third-octave analysis here shows. I was a bit perturbed to find an early pair, which had sharp treble when I listened to them, had been whisked away before I got a chance to carry out measurements. I hope that the result published here is representative of production models.

As you can see, apart from a small, narrow spike at far right (16kHz) there is little sign of the sort of treble peaking that produces sharpness and spittiness. On the contrary, the tweeter looks remarkably smooth, which is a good sign. Even nowadays, expensive speakers can suffer from obviously sharp or ragged treble, metal dome tweeters offering no improvement in this area. It's an area of performance any good, small monitor should get right, since small size is no drawback. On the basis of our measurements here it would seem that Rogers have

engineered the sort of treble performance that might be hoped for from a high quality miniature.

At low frequencies the small bass/mid-range unit peaks up a little at 160Hz, but reaches down to 80Hz (-6dB), which is as expected for a small-cabinet loudspeaker that is designed to rely on a degree of wall reinforcement to augment lower bass.

Sensitivity was a little low at 84dB sound pressure level for one nominal watt (2.8V) of power input. In practice it means that the speaker needs a higher volume setting than many. However, because this was due to a high overall impedance of 12Ω, the Studio 3 does not need a high current amplifier. In fact, the impedance curve shows clearly that 7Ω is a minimum value, so amplifiers will be lightly loaded. So the Studio 3 is not a difficult load, so much as an insensitive one. As a result it needs an amplifier with a moderately good power rating if voltage clipping is to be avoided; I would suggest around 40watts minimum.

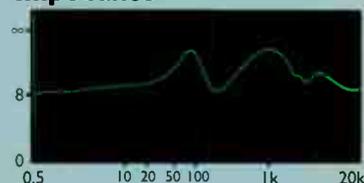
The Studio 3 measures well, reaching the sort of standards expected for a mini-monitor. Its smooth frequency response is, in particular, a strong point in its favour. **NK**

## Frequency Response



Bass peak at 160Hz

## Impedance



High overall impedance of 12 ohms

The Delta 290 is Arcam's first completely new amplifier for four years. Priced at £449.90, it is also the company's first fully remote controlled integrated model. Though it has a subdued appearance, typical of the previous Delta range, it is strikingly replete with knobs and buttons, more in Japanese style than British audiophile.

This is an amplifier designed for the Nineties. As supplied, it's a line level amplifier only (i.e. no LP stage), with six inputs, all selectable via separate 'Listen' and 'Record' controls on the front panel so the user can listen to one source while recording from either of the two tape outputs. Both tape inputs allow for monitoring. Inevitably, one position on the control is labelled 'AV' for a Nicam stereo TV or Video Recorder, since in this decade it appears we are expected to be viewers as much as listeners.

For the diehards, however, Arcam supply a plug-in disc module, switchable for either moving-magnet or moving-coil cartridges. Nothing comes free: this doesn't provide a seventh input because it turns the Auxiliary input into a line level output. Curious, but true - and potentially upsetting to people who leave a source plugged in there.

### Motorised

For the legless or the lazy the optional Arcam System Remote Control will operate a Mute function which is not available from the front panel. It also usefully controls the Listen selector and the volume control, both of which are motorised. Taking a leaf out of the *Oriental Guide To System Facilities*, owners of Arcam's other separates will find the multi-function Remote will manage the Delta 100 cassette deck, any Arcam CD player, the new Delta 280 FM tuner and the established Delta 150 Nicam Stereo tuner. An internal switch will allow the separates to

# ARCAM'S

**Arcam's new Delta 290 integrated amplifier can be operated remotely from the comfort of an armchair.**

**Noel Keywood sits back and listens.**



synchronise operation; with the Remote in CD mode, pressing Play, for example, will set the disc going and the amplifier will select CD without the intervention of a human finger. Clever stuff.

While the fascia is well-supplied with controls, including treble, bass and balance, these three can all be switched out of circuit using the 'Direct' button. Also useful is a Mono switch and a headphone socket, both increasingly rare these days as costs are cut back. Two buttons select

either of two pairs of speakers; both need to be 'off' for headphone listening. In common with the rear phono sockets, both sets of speaker terminals are gold-plated and can be used to bi-wire. Also around the back is a pair of phono sockets labelled 'Preamp Out'; having the dealer reset an internal switch allows the 290 to be used as a pre-amplifier. Arcam also suggest a cheap way of bi-amping bi-wired speakers, by combining two '290s using the Preamp Out of one into the Preamp In of another. One

### MEASURED PERFORMANCE

The Delta 290 is a powerful amplifier, able to provide high volumes from its plentiful 84watts output. Low impedance loudspeakers encourage even stronger delivery - no less than 132watts. Those that dip to 2Ω can get as much as 280watts, since this was the tone burst output into a low load.

Unlike other Arcam amplifiers though, including their first ever A60, the Delta 290 has crossover distortion, which resulted in 0.1% distortion at 10kHz, with extended harmonics as the analysis shows. I would expect some slight treble colouration - possibly coarseness - to result from this. The circuit showed variability in performance between

channels and with an increase in heatsink temperature, not characteristics I normally associate with Arcam amplifiers.

The CD, aux and tuner inputs are very sensitive, needing just 180mV to drive the amp to maximum output. Even low output cassette decks and tuners will match satisfactorily as a result. Separation was on the low side at 63dB, although this will not be audible. Frequency response was well tailored for CD, with good subsonic gain down to 4Hz, but high frequency roll off above 40kHz.

The optional disc input board has switched moving magnet (MM) and moving coil (MC) selection, plus separate inputs at rear. Unlike others, Arcam

provide a dedicated MC stage, with low noise, good sensitivity and an input impedance of 300Ω. Curiously, low frequency response of MC was curtailed at 63Hz, whilst on MM it reaches down to 17Hz. In fact, because MC cartridges have lower compliance than MMs, they do not generate so much warp information and can benefit from better bass extension. Arcam should extend MC to 17Hz and curtail MM at 63Hz, rather than the other way around.

The tone controls were excellent. They affect only spectrum extremes - just upper treble (above 2kHz at maximum) and lower bass (below 500Hz at maximum) - leaving the mid-band unaffected.

# ARMCHAIR AMPLIFIER



Series 3 sync locked to a T1 transport. However, partnered with an Arcam CD player, the 290 would certainly sound fuller bodied and less emphatic in the treble regions, which would be beneficial. So ideally, the 290 would be best partnered with an Arcam CD player.

Curiously, this amplifier sounded better with LP, where sweeter treble and a fuller bodied sound helped it no end. I used a Goldring 1042 (MM) and Elite (MC) in turn. As expected there was little hiss and, as the measured performance suggests, the MC stage had light bass. However, the disc stages were of sufficiently high quality to complement LP which, at its best, can still give excellent results, superior to those from CD in my view. This made the 290 veritably shine with LP, whereas with CD I found the amplifier a little underwhelming. It's an unusual result, an amplifier that sounds better with LP, but Arcam have given the 290 a fine LP input board which gives it an advantage when used with a good deck and cartridge. It possesses no such advantage with CD, and here the 290 is thoroughly competent, but unexceptional.

## A Wider Market

Perhaps looking for a wider market, Arcam have equipped the new remote controlled Delta 290 amplifier with every conceivable feature. All have been very well engineered, springing from their audiophile background. So although the '290 has tone controls for example, they are more effective than most. Similarly, the disc stages are particularly successful. Overall, sound quality was, I felt, most appropriate for Arcam loudspeakers and sources (i.e. CD players and DACs, the cassette deck and tuners), which it will complement successfully. Out of an all-Arcam context however, the 290 needs to be carefully matched if its innate character is to be best complemented ●

then drives the treble units, the other, as a power amplifier, driving the bass.

The Delta 290 is an amplifier with every conceivable feature, an interesting change from the traditional minimalist approach. Perhaps they are looking for what they believe is a wider audience, one accustomed to the bells, lights and whistles of High Street 'hi-fi' and suspicious of anything that offers less for more. The '290 has it all.

From Compact Disc the Delta 290

showed itself to be a competent, neutral sounding amplifier, albeit lacking in the final degree of lucidity and imaging. The only feature to break a seamless neutrality was, as expected, slight treble colouration. The '290 has a somewhat thin, tinselly sounding treble. In conjunction with tight bass, it made for a light presentation that, I found, didn't particularly complement CD in my system, the signal coming from a DPA PDM 1

The Delta 290 looks like an attempt to meet the gadget-laden, high power Japanese competition head on. It has a wide range of facilities and inputs, high power and remote control. The output stage has a little high frequency distortion, the impact of which is best gauged by listening tests. **NK**

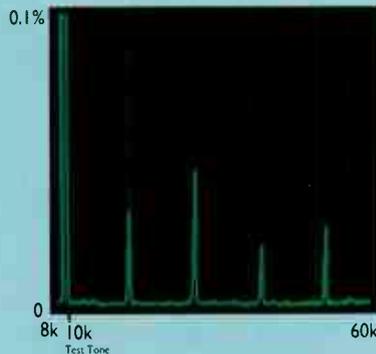
## TEST RESULTS

Power	84watts
CD/tuner/aux.	
Frequency response	4Hz-42kHz
Separation	63dB
Noise	-98dB
Distortion	0.04%

Sensitivity	180mV
dc offset	-1/-1mV
Disc (MM)	
Frequency response	17Hz-43kHz
Separation	63dB
Noise	-80dB
Distortion	0.04%
Sensitivity	3mV
Overload	150mV

Disc (MC)	
Frequency response	63Hz-45kHz
Separation	66dB
Noise	-71dB
Distortion	0.05%
Sensitivity	0.3mV
Overload	14mV

## Distortion



Extended high frequency distortion harmonics.

"Did you know", Peter our layout artist said, as all the 'phones rang simultaneously, a wedge of half completed layouts thumped onto my desk, the doorbell rang and the computer gleefully showed a bomb sign on the screen, "that the magazine is exactly two years old".

Really? He obviously wasn't aware that I didn't know and at the time, as we ran up to Christmas 1992, I was too busy to think about it. Magazine publishing is all about meeting tight schedules that never seem to be achievable until the moment you achieve them - and then you're worrying about the next one. With Christmas just a few drinks away, the front cover on its third shoot 'cos two products had suddenly become no-nos and the printers waiting to run the presses, thinking about our second birthday had to wait.

But perhaps Hi-Fi World has got something to talk about after two years. It is enjoyable as well as frantic and where others have failed, we have managed to get established and are slowly growing in every area. Uniquely in hi-fi, this magazine isn't part of any publishing empire. Quite the reverse; in a moment of enormous foolishness I started it as an alternative to all the magazines I had been writing for over the years, produced by the major publishers.

Like many others, I felt they were not doing enough - or anything in fact - to halt a steady slide in circulations. Were people really getting bored with listening to music? I thought not. Back in the early Seventies, when I was made Editor of Hi-Fi Answers, at the age of twenty four or thereabouts, circulations were in the 45,000-65,000 bracket; now they are half that. It was time to start a magazine and do better!

That was a piece a monumental naivety, only matched by that of my gloriously (over) confident bank

# Two years of World History

Two years of World history have

passed. We started

in the Ice Age - or

that's how winter

1991 felt - and the

odd Neanderthal

has been spotted in

dangerously close

proximity, but it

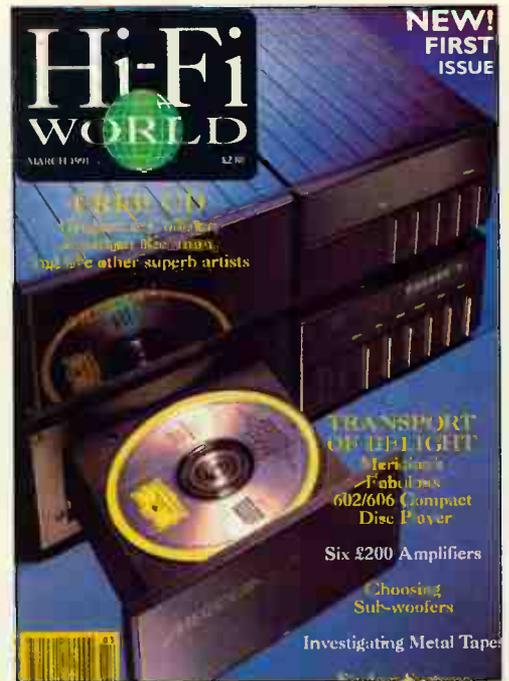
was only a

competitor. Here's

a brief history

describing two years of evolution.

Written by Noel Keywood, from - er - experience.



Eric Braithwaite, our Music Editor and Classical/Jazz expert. Eric has owned a variety of LP based systems, but currently relies upon Quad ESL-63 electrostatic loudspeakers, a Michell Gyrodeck and Sugden SDA-1 CD convertor. Amps and tuners change regularly.



manager who 'phoned me at the start of the recession, just when the Gulf War was about to commence, and darkness covered the land, to see whether I wanted all that money I had requested.

I could have said "No". I should have said "No"! "No" was the only sensible answer; that's why I said "Yes".

So we started Hi-Fi World. I fancied the name Hi-Fi Enthusiast, but a few friends commented that the word 'enthusiast' was too long, not everyone would be able to spell it 'cos there was more than one 's' (?) and it sounded too specialised. Angela around the corner, a lady who knows a thing or two (about fat bottoms and helicopters: she produced Treasure Hunt) thought World was the best choice - and so it was.

But what, many of you might want to know, was our connection with Hi-Fi

Review? A lot less than numerous readers seem to imagine. I worked purely, but eagerly for experience, as a freelance for 'Review and, as much as I admired the courage of its owner and Editor, in my view its editorial policy was too restrictive to be commercially viable.

As the recession bit, 'Review suffered. Its demise gave me the talents of a skilled layout artist, Philippa Steward, wife of Malcolm Steward the reviewer, plus a vacant slot at a prestigious distributor - Comag. It was then that the bank manager 'phoned me!

Believing that for all of science, there is a tide in the affairs of men, that no matter how daunting must be taken at the flood, I decided to go ahead, come what may. This wasn't an opportunity that would arise again.

So we got stuck in. Alan Sircorn and Danny Haikin came from Grahams Electrical, the hi-fi retailers in North London. I'd heard that one was interested in becoming a hi-fi journalist, but so was the other, so I took on both. Neither had written a word before, but so what, I thought,

they know their stuff - and this magazine is going to be written by real enthusiasts, not by bored jourmos looking for another £10,000 bit of flash to titivate their interest. They were real enthusiasts too. So was Richard Kelly, with whom I'd talked about this sort of project for so long beforehand.

Danny bravely and successfully took on advertising sales, as well as listening and writing. Alan took on photography, as well as listening and writing. I panicked and ran up and down the walls - as well as listening and writing. Philippa told us all what to do and how to do it; she was the only one who knew!



Our first issue was March 1991. It had to be on sale at the Bristol Hi-Fi Show. We'd booked a table in the entrance hall that would look embarrassingly barren without any magazines on it - and with the UK hi-fi industry looking on in pity. Thirty thousand magazines had just left the printers and were having CDs stuck on their covers on a remote airfield in Bedfordshire. We had to get four hundred down to Bristol, pronto.

It was Kelly and I who piloted our way up to the airfield on a bleak night, with a thick layer of snow on the ground. Kelly thought we should do a bit of yomping across the snow, seeing that the Range Rover had only done any off-roading when I drove down the pavements. I looked at a surreal expanse of flat, white snow stretching out to the horizon and hoped we wouldn't disappear into a concealed ditch. Being a townie, that place made Siberia look like a holiday resort to me. I wanted out - but not down a ditch, buried alive with four hundred magazines and a screaming Richard Kelly.

The Range Rover swayed and weaved down the motorway like a drunken supertanker. Kelly wrestled with the wheel whilst I prayed under the dashboard, pretending to be map reading. Forty ton trucks flew past with alacrity; we were having severe problems at 40mph with just one-quarter of a ton of magazines and

show equipment. Then I remembered that the weight goes between the axles, not behind the rear one, or the tail wags the dog - as we were finding out. All the goods were stacked onto a cold, dark hard shoulder somewhere in the middle of nowhere, somewhere I hope I'll never be again. Carefully rearranged inside, we got under way and gingerly built up speed until it became obvious that we wouldn't miss Last Orders in Bristol.

The hotel I had booked was centrally placed, close to the show venue, yet it was cheap. What's more, they had plenty of room. I was quietly congratulating myself on finding such a reasonable and convenient place.

But someone else had found this reasonable and convenient place too: the Department of Social Security, plus a few local gangs who used its two bars as meeting rooms. Malcolm Steward had the side of his car kicked in; Danny and Alan were stationed in a room next to a couple deter-

mined to get horizontal jogging into the next Olympics and Richard Kelly and I were in the 'penthouse', up endless flights of stairs, along twisting corridors and in the box room at the end. A tent on the roof of the Empire State would have been easier to get to. Although the show was a great success for us in the end, I never mention the Bristol Show in the office. That hotel made a lasting impression.

We slowly learnt how to produce a magazine from start to finish, with almost every task carried out in-house, including all the testing, listening and photography. In terms of operating structure, this is the main difference between 'World and the other mags. Large publishers have editorial offices, full of desks and filing cabinets and people. Then there's a production department, where their various magazines are designed and laid out and specified for film making and subsequent printing. In spite of

DTP (Desk Top Publishing) this is still a major task. There will be some sort of supporting photographic department, administration and, finally, advertising sales.

A hi-fi magazine, in my view, sits ill at ease in this sort of standardised publishing environment. Our structure comprises an editorial hub, which includes listening rooms and our own in-house test bench, plus a very important reference section of books, old and new. We have the ability to design and build on the spot, listen and test, libraries of information to refer to and - very importantly - a web of knowledgeable informants able to provide detailed information on everything from the phantom powering of a microphone to the mains powering of an 845 valve.

So 'World is really a bunch of hi-fi enthusiasts producing a magazine, to our specification - not to that dictated by a remote publisher. This gives us some enormous advantages - and some significant disadvantages. We don't have any benefits of scale, but we are cost effective. We don't have a big, efficient organisation, only a bunch of nine headless chickens running around all day in a state of suppressed panic.

We do have the great satisfaction of deciding exactly what we want to do, but in as far as possible it is in response to the requests of readers and enthusiasts in the trade. Having thousands of readers around the world (no fewer than 6,000 copies of each issue now go overseas and we receive letters from Bali to Bermuda, Sweden to South Africa) and an ever increasing torrent of mail in the UK, we cannot yet answer much personally, which is a regret. Yet the



magazine is slowly growing in size, amount of colour, breadth of editorial - but not in cover price.

I don't quite know how two years slipped by so quickly but I'm sure that the magazine will be even better in another two, providing Kelly's driving doesn't get me in the meantime.

**Penta Show 1991. At far left is Akila Lingham, who joined the magazine a month or so after it started and has run the accounts and mail order ever since - but hates being photographed! That's why Alan Sircom, Assistant Editor - and who helped start the magazine - is telling her not to dive under the counter whilst I get a shot and Richard Kelly (at right) looks on in amusement.**

**When a camera's produced, Akila goes to ground.**

**Trying to get a sensible photograph is always difficult when Kelly is around. Graham Tricker had a hard time trying to keep a straight face for the camera whilst Kelly pressed home his unreasonable offer for a Marantz 10B.**

...continued from page 29

"it costs ten thousand to gain one per cent improvement" it does cost to squeeze the best out of CD. Then, so it did - and does - with LP.

For what it's worth, I suspect a good deal of the growing dissatisfaction with CD is due to a high proportion of hastily recorded and inadequately mixed recordings, especially where Midis, drum machines, synthesisers and FX make up the bulk of the music. Often, the lowest resolution - which can be as poor as 8-bit - is the common denominator. **EB**

**SPEAKER TWEAKER**

I very much enjoyed your item on tweaking the Creek CLS10s, and wasn't it refreshing to read Alex Garner's response. Maybe you could persuade him to supply Tannoy TanTak capacitors for sale through your mail order accessories, or would that be expecting too much?

Replacing capacitors isn't the only way to improve budget loudspeakers. My Mordaunt-Short MS10s were dramatically improved by simply replacing the push-on tag connections with soldered joints and by sealing the drive units to the cabinet baffles with a thin bead of mastic.

We all know the LP is dead, don't we . . . ? In the last four weeks I have bought five LPs from my local Our Price, and guess what? Three of them were in stock. O.K., they were 'under the counter' and no doubt only in the shop for Christmas, but the point is, record companies still make records and record shops still sell them. Since I don't own a CD player, my attitude is "sell me vinyl or lose a sale". I intend to hold out as long as I can.

While on the subject of LPs, the Lingo versus Pink Linnk debate of a few years ago has been covered elsewhere, but what of Naim's Armageddon, Avondale's T.A.P.S. and Alphason's Atlas, all of which can be used with the LP12 Sondek? Might I suggest a comparison review or a feature to help all us LP12 owners, and - there are a lot of us - choose our 'last power supply'?

Here's a tip for your budget section. Hollow concrete blocks make very good, cheap, temporary speaker stands while you save up for a real pair.

**Martin Rose,  
High Wycombe,  
Bucks.**

Perhaps Tannoy may indeed let us have some TanTak'd capacitors to sell; in the

meantime I wholeheartedly agree that small tweaks like Mr Rose's are quite often beneficial, provided that the experimenter is reasonably competent and careful with both screwdriver and soldering iron. As always, readers should be reminded that alterations of any kind usually invalidate manufacturers' warranties; some may be very reluctant to take heavily-tweaked units back for repair should it become necessary.

The subject of power supplies for the LP12 is a difficult one; I know at least one Linn owner who prefers the Pink Linnk, but Linn themselves endorse no other than their own. Yet another one will be available later this year from new amplifier company Tesserac, just to add to the list. I have recently had a prototype configured to work with my Gyrodec and discovered it improved the sound quality very considerably. Another user compared a Gyrodec plus this power supply - which is expected to cost around £500 - very favourably with a SME 20. **EB**

I was taken aback and by Alex Garner's generous offer to service and repair Tannoy products, almost no matter what. Shows what an impact a bit of generosity and altruism can have these days, when most manufacturers seem more interested in how they can escape such obligations. Is this why Tannoy are doing well? **NK**

**MORE TWEAKS FOR THE CREEK**

The article on 'Maximising a Creek' was incomplete. Why go to the trouble of improving the crossover without adding a second set of terminals and bi-wiring? This can be done relatively easily and cost-effectively for another twelve pounds or so. Why not improve the quality of the internal wire while we are at it?

On another point, the IPL mini-monitor (the M3?) uses Morel drive units. I have built, then adapted to my own needs (nearly) an IPL M1 kit. For the cost - £130 - this is an excellent speaker that can embarrass some far more costly designs.

An interesting and different group survey could be one of DIY speakers, perhaps comparing ones from different price brackets.

**Alex Grady,  
Luton,  
Beds.**

We sought to keep the mod. as simple as possible. Any number of additional improvements are possible and, like you, we felt the project could be taken further. However, instead of bi-wiring we decided to go for the most complex and potentially fruitful - fully active operation. Our active Goodmans Maxim/Creek CLS10s will be featured in the next supplement, free with the April issue. The project is simple but incredibly effective; it is also extremely cheap. **NK**

**DIGITS AND DESIGNERS**

I feel much sympathy with Tony Andrews' letter in the November issue and N.K.'s piece in the December issue seems to indicate that he is not in total disagreement.

Granted, we are offered, by Celestion and others, the prospect of 'digital' speakers, but reading between the lines and discounting the hype, these units come across as little more than active or re-active graphic equalisers designed to overcome the shortcomings of imperfect speaker units. After all, in the final analysis no speaker is 'digital' - the electrical signal may (or may not) be processed in the digital domain, but the air-working elements are strictly analogue and surely must remain so as long as we are to use our ears to perceive the sonic representation of those signals.

I attended several loudspeaker demonstrations before I bought my Infinity Reference 20 Units with their soft dome tweeters. (They demanded over fifty hours of painful running-in, but the pain was well worthwhile - to my ear they beat all your metal domes out of sight.)

The demonstration left me with the impression (illusion?) that my fifty-year-old hearing may be unusually sensitive in the treble - I constantly wished that I could turn down the volume on the tweeter units as my ears were perceiving so much spitch, spit, shriek, shout and treble huskiness, that in my experience, bears no relation to real-life sounds! Even with some loudspeakers in the £600/£700 price range I was left with the impression that the metal domes are the worst offenders - especially the German Hecos!

However, the detailed measurements conducted by NK and others prove my perception of too high a tweeter volume to be incorrect. Perhaps we are then led towards the conclusion that many tweeters produce high levels of unpleasant distortion harmonics (which agrees with

the main thrust of Tony Andrews' argument that we see less than 1% distortion in most hi-fi components until we arrive at the loudspeakers when, all too often, everything goes to hell. (I often suspect that the practice of CD player manufacturers turning down the HF response before 20,000Hz may be a reaction to the failure of speaker manufacturers to handle the upper treble signals.)

I have noticed, though, that some mass-produced cheapo tweeters fitted to TV sets (no, you really mustn't laugh) and midi systems perform to very high standards of fidelity at strictly limited sound pressure levels.

I feel some sympathy with the drive-unit designer required to engineer a tweeter capable of faithfully reproducing the faintest whisper and at the same time being strong enough to withstand 100watts or more from an inordinate headbanger at a drunken pot-party.

Perhaps designers might achieve better fidelity if units were more delicately designed to operate best at moderate SPLs but with some form of electronic protection (compression?) being progressively introduced at higher volumes. In other words, a sort of super-fi for listeners happy to accept moderate sound levels. After all, we must remember that room effects reduce the level of detail fidelity at high volumes, which may well mask (dirty word) high-volume compression. of the tweeter signal.

Loudspeaker designers currently seem to engineer for all market sectors in their price band - from moderates to head-bangers - rather than the concept of horses for courses.

I agree with N. K. We need much more imagination from loudspeaker manufacturers and far less of mostly overplayed 'digital' donkey-kongs that we constantly see from the marketing people who probably don't know one speaker from another.

**Rod Smyth,  
Porthmadog,  
Gwynedd,  
Wales.**

As you say, flat response loudspeakers commonly do sound a little bright. Peaky speakers commonly sound bright too, often unpleasantly so. And most metal domes are the pits, even though their respective manufacturers will insist they have solved the problem of metal domes.

Like you, I'm slightly irritated by the misleading term 'digital

loudspeaker' when in fact common-or-garden analogue drivers are in use. We have been trying to find out more about Philips true digital loudspeaker, but apparently it has problems and Philips Laboratories don't want to say anything about it. **NK**

**DOWN TO EARTH**

A couple of points inspired by the January issue, page 55, Noel's mention of a garden-sunk "proper earth connected to the mains earth." I recall a letter some time ago saying that this is not a good practice as it causes problems at the power station. I would suggest anyone considering a ground earth should check with the Electricity Board first.

Secondly, the cartridge review on page 46. Something which seems to have been overlooked of late is the compliance of the cartridge/stylus. This is important as it should be related to the effective mass of the tone-arm to achieve a combined arm/cartridge resonance of around 11Hz. Thus, a high compliance cartridge should be used in a low mass arm and vice-versa. (Arm effective mass is not mentioned much either, lately.)

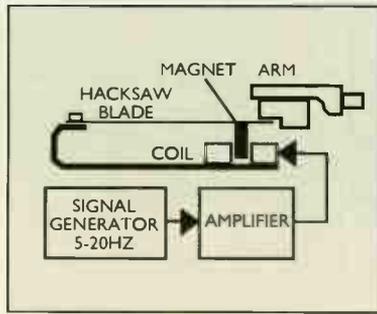
This is to avoid too low a resonance (a warped record will exhibit warp-wow around 5Hz.) or too high a resonance (bearing rumble, unlikely these days, but still possible, occurs around 15Hz). So if these specifications could be included in future reviews I think it would help us all; plus a more in-depth article dealing with arm/cartridge matching.

**Mr B. Maynard,  
Erith,  
Kent.**

Since the domestic earth from the distribution board is usually attached to a copper water pipe, in the belief that this will eventually go back into the ground, the use of an independent copper plate earth is little different in principle, but more efficient and reliable and, therefore, safer. The last time we asked the electricity board a question, an evasive Press Officer said they could offer no comment, presumably for fear of making a legally binding commitment! If anyone knows why, in normal everyday circumstances, a traditional plate earth is less safe than resorting to the nearest copper pipe, please let us know.

Ideally, cartridge compliance and arm mass figures should be given, but even in the heyday of

the LP, only a few reviewers ever did so, simply because of the difficulties involved. Arm mass needs a special jig. I built a 'resonator' for this purpose, comprising a springy hacksaw blade with a tubular magnet glued to it, beneath one end. It was surrounded by a coil. With the arm attached by a magnet, using a Goldring G800 cartridge sans stylus, this would resonate the arm mass against the compliance of the springy hacksaw blade at a certain frequency. The equivalent weight placed on the end of the blade to achieve the same resonant frequency (transferred to a graph in the end) represented the effective mass of the arm. It was Heath Robinson - but it worked!



An arm resonator, needed to measure effective mass.

Cartridge dynamic compliance (different from static compliance) could then be derived from this mass figure by finding the frequency of arm/cartridge resonance, using a gliding tone disc.

These obscure measurements are awkward and time consuming, which is why they are not made any more. The technology of the LP is, in any case, now seen as Neanderthal and irrelevant to those weaned on CD. One reviewer recently asked us why we bothered with "wriggling rocks around in grooves". I still find precious stones attractive, so we'll probably look at them more closely soon. **NK**

**SINGLE-ENDED STATEMENT**

Mr J. W. Davison's response in the December issue to my comment on single-ended driver stages in Hi-Fi World's August magazine contains a few inaccurate statements.

It is perfectly possible to build either a single-ended or push-pull power amplifier with no driver stage at all. If you go back to 1930s circuit topology, it was quite common to have the output bottles driven from a transformer. Obviously, this has one or two major drawbacks,

the main one being non-existent sensitivity: as much as 100 volts input signal needed to get any output from some designs.

Pre and post-war England was full of innovative engineers. Many different circuits were produced and printed in magazines such as Wireless World. For anybody interested in finding out about valve amplifier design, it is worth hunting out aged copies of W.W. magazine up to the 1960s.

In his article, Mr Davison mentions three different amplifier designs: Mullard, Quad and Cocking. An over-simplified description of these and the function of a phase splitter is in order.

For a push-pull amplifier to work correctly, each side of the output stage must be perfectly balanced, and presented with two input signals at the input grids of the output valves, one 180 degrees out of phase to the other. (See Richard Brice's article in Hi-Fi World, June '92.) To perform the 'miracle' requires perfect AC and DC balance throughout the amplifier's push-pull sections. Therefore the two signals at the output of the phase splitter will not be 180 degrees out of phase to each other. This is manifested by coupling capacitors and feedback.

The Mullard push-pull circuits used a pentode directly-coupled to a cathode-coupled phase splitter driving the output valves - altogether three active devices driving the output tubes, not one and a half - in the Mullard 5-10 design an EF86 pentode and an ECC83 double triode. This design is pretty good, the phase splitter using two devices produces only a slight phase imbalance across all audio frequencies.

In Peter Walker's QUAD II amplifier Mr Davison is near enough accurate in his description - a driver stage using two EF86 pentodes. The circuit is based on the standard 'Paraphase' circuit, not Mr Cocking's paraphase circuit. W. T. Cocking's version crossed both 'cathode-coupled' and paraphase types. The variable resistor Mr Davison mentions is part of the standard Paraphase circuit. Mr Cocking used a variable resistor in the anode circuit to balance the output.

I'm sorry to say that paraphase circuits are just about the worst. Cocking or not, the outputs at frequency extremes are cocked up (sorry!), as much as forty degrees out. Other

disadvantages, especially with Quad IIs, is they need a high input signal of a few volts.

No matter how many valves are used, if you are operating push-pull, you need a phase-splitter. With single-ended, you don't.

Mr Davison seems to have missed this point. Counting a double valve (such as 6SN7s or ECC83s) as a single unit is no basis for an argument. If it was, I could build you a single-ended amp only using half a valve per channel!

Anyone seeking out a book on valve amplifier design should try to find a copy of 'Amplifiers: The Why and How of Good Amplification' co-written by a certain Mr G. A. Briggs and Major H. H. Gamer. Published in 1952, it explains most of the different circuits and phase splitters - although not Mr Cocking's.

**Haden Boardman,  
Audio Classics.**

Drat! We don't have that one. I'll have to dig deeper at British Vintage Wireless Society meets.

And if the Japanese got it right with the Garrard 301, have they also got it right with the Ongaku? My brief listening impressions suggested they had. Single-ended amplifiers may well have something special to offer. The hold-up at present is the insensitivity of the modern loudspeaker. High quality designs capable of delivering good volume from 30watts maximum are needed. The horn isn't the answer; it's impractical.

Asked about this, KEF's Andrew Jones said that by losing the 50Hz-100Hz octave (i.e. low bass) loudspeaker sensitivity could be raised by about +9dB. If lightweight drivers were developed too, possibly using alloy cones and small, ultra-light, low power voice coils, then 95dB-98dB could be obtained. This is up to the efficiency of a horn, but from a small, wall mounting loudspeaker (wall mounting would restore the lost bass). The use of KEF's conjugate load matching would give a flat impedance characteristic, ensuring flat frequency response from high output impedance, low feedback triode amplifiers. With a new type of loudspeaker like this we would be better equipped to return to using simple, single-ended valve amps and the improvements in sound quality would, I suspect, be quite significant. **NK ●**



# A Morel Story

**Drive unit manufacturer Morel has launched a complete loudspeaker.**

**Eric Braithwaite listens to the Bassmasters.**

**M**orel have come out into the marketplace. They've advanced from supplying drive units - which they have been doing for eighteen years - to become a fully fledged loudspeaker manufacturer. The result: the £1200 Bassmaster 602. It looks very different to the normal breed. For one thing, the speaker sits on its stand horizontally; for another it's a three-way design. Nothing too unusual about that, except that there are two tweeters and one bass/mid-range unit. Before you cry "what!" and dismiss the 602s out of hand, I can tell you it works, despite all the odds.

How it's built to work, I can't tell you. Morel are being a little secretive about the tricks they've played inside the relatively small box. 'Bassmaster'

is certainly not a flight of fancy on the part of the publicity department.

These speakers produce an extraordinary sensation of strong, clean, firm, low bass from a box only 400mm wide, 250mm high and 225mm deep. It's even more surprising when you realise that this is coming from a 160mm diameter driver. With the Bassmasters in my home, on Foundation stands (Morel's own, which cost around £149 weren't ready for me), I and my visitors found ourselves delighted by both their detail and tonal truthfulness - and its extent, both upwards and downwards.

Mind you, the gentler and milder-mannered the power amplifier the better, because they can turn uncompromising in the treble. An

LFD hooked up at first had one visitor sitting back open mouthed, muttering two-syllable unprintable words. It took a while for him to formulate them into admiring phrases like "wow, that's an amazing sound; they're so clear!" They were also - we decided - very 'Studio Monitor' in sound; a bit more clinically and brightly dissecting than can sometimes be lived with. Switching to a Quad 606 softened the lower bass, but warmed up the emotion in the music as well, we agreed. I sent him away at two o'clock in the morning to become rational and more informative. After which, I played a few recordings to my neighbours...

I suddenly realised the following morning, when I put on another CD, that I'd been listening in the early

hours at a far higher volume than normal. Drive units that don't distort at high volume tend to have you edging the volume control further round the clock than you think.

A series of listening sessions and a procession of visitors over the weekend gained more applause. Vivaldi's Mandolin Concerto had the instruments defined forward, back and widthways with the kind of precision that only monitors, electrostatics or the top Celestions can usually emit. Even the harpsichord, often submerged by the string instruments through moving-coil speakers, was clearly discernible just as it should be live.

It's nearly always organ music that defeats all but the toughest loudspeakers. The CBSO/Fremaux recording of Saint-Saens' Organ Symphony is liable to fall flat unless the speakers can grasp those big organ pipes. The Bassmasters did, and the recording bloomed from passable

into stunning.

Power up with power Rock, and the Morels had no problems with the bass lines, either. Equally tuneful as with other forms of music, and in almost visible registration with the rest of the players, the other strengths of the Bassmasters came through too. These are mainly an ability to purvey an atmosphere made up of air and space and a walk-in-wardrobe depth.

Taking five for a moment and relaxing a little with a jazz quartet, I found the balance closer to the huge Genelec studio monitors I'd heard that band through originally than I would have believed possible from a pair of loudspeak-



**Top**  
The Bassmaster is also available without a grille, the drive units protected by bars. Morel supply a heavy dedicated stand constructed of thick steel plates and MDF pillars, seen here.



ers this size. I knew where the mics had been placed - but I didn't have to concentrate very hard at all to work it out from the 602's recovery of detail.

Not that these will batter the ears like an Axhorn or a PA stack. It's just that they produce an equivalent sensation on a smaller scale more suited to the living room. It's the overall precision, tightness, focus and tonal accuracy that my friends and I delighted in. They are not inexpensive, but they are solid and seriously well-made. One of my regular guests - on something of a tight financial rein at the moment - offered probably the best assessment in terms of their sonic value versus their price. "How much are they?" - thoughtful pause - "yes, I'd buy them". If I were to fall out of love with electrostatics, so would I ●

**Centre**  
Gold-plated binding posts allow for bi-wiring. The speakers are 'handed' so the rear panel carries instructions on placement. Also visible are the two foam-filled ports.

**MEASURED PERFORMANCE**

The Bassmasters have steadily rising treble, well maintained in level right up to 16kHz. This will give them the clinical and bright sound that Eric heard, due to strong treble energy output. It is very much a studio monitor characteristic, one that is honest, but can at times produce a somewhat remorseless presentation.

A wide bass peak is centred around 100Hz, giving strong bass output extending down to 40Hz (-6dB). The description Bassmaster is justified by this characteristic; it is indicative of a slightly underdamped design that should give plenty of enthusiastic bass.

A peculiar peak exists at 600Hz and it is likely to colour speech and vocals a little.

When plotting the impedance curve it was surprising to see how smooth it turned out to be. Even though Morel have used three units, they have coped well with the complex job of matching them together and keeping the impedance mainly a resistive one.

Over the audio frequency range the Bassmasters measure as a 9.7ohm load, which is quite close to the 8ohm nominal value, making the speaker more sensitive than a lot of UK designs. There are dips down to 6ohms or so, which will draw more current at low frequencies, so any accompanying amplifier should have some current delivery ability.

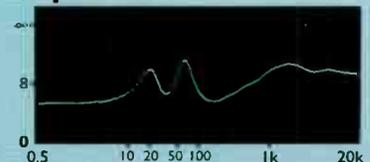
Measured at 1m with a nominal input of one watt (2.8V) the speakers produce 85dB of sound pressure level, a normal value, neither high nor low.**DB**

**Frequency Response**



A wide bass peak centred on 100Hz should give strong bass output.

**Impedance**



At 9.7 ohms, the load is close to the 8 ohm nominal value.

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**B**y curious but happy chance I've recently heard two or three (depending upon your view point) exceptional amplifiers.

If I was to put figures on this occurrence, I would say only about one in forty amps (2.5%) I listen to is worth remembering, and even good ones are, perhaps, only about 20% (I've got the arbitrary-statistics bug, even though I haven't spoken to Martin Colloms recently!) better than the norm. Suddenly hearing three amplifiers that confidently breach these limits is a surprise and reminds me that the apparent uniformity of sound we are offered these days is not some sort of final truth, the inevitable outcome of a 'perfect' measured performance, as reactionary engineers would like to have us all believe. It's just that solid state amplifiers in particular really are now much alike under the surface; I just happen to have come across a few fine and interesting exceptions recently.

### Really Rather Good

Even though Eric kept saying "It's really rather good . . . all my friends liked it" I can't understand why I walked past the EAR 834 integrated valve amplifier for about a week before suddenly realising that it was there and that I should listen to it. Perhaps it was because although I firmly believe valve amplifiers ultimately have the ability to sound better than solid state designs, in practice they often don't and I find myself listening to good solid state ones. Valve amps are less uniform and often more blemished in certain subjective areas; they also exercise less control over loudspeakers, are more affected by them and offer only low power output. All of which makes a valve amp a difficult tool for a reviewer who is constantly changing things around and must be able to say, hand on heart, that everything was matched.

All the same, valve amps have undeniable sonic strengths which, once savoured, are difficult to forget. It's the lack of graininess in the treble, the clarity and spaciousness of the mid-band and the generally liquid sound that flows naturally and easily that are a delight. Really good valve amplifiers welcome you to the

experience of listening to music; they don't challenge, threaten or assault a listener; they don't make you feel fatigued, overwhelmed or ill at ease. You'll want to get into the lounge and put a record on. And let me assure you that a good valve amplifier can measure, in areas that matter, as well as a solid state amplifier; it isn't psycho-acoustic artifice as some cynical observers lacking the experience of both measuring and listening are too quick to argue.

The EAR 834 we reviewed last month had me spell bound. It is one of EAR's best amplifiers and it is gorgeous to listen to, offering the best of both



## Reflections from Noel Keywood

# kaleidoscope

worlds. It has enough power to go loud and it has a powerful sound too, with a large, muscular bass (an EAR trait) and strong, clear treble with a nice bright sheen, but not one that is in any way unpleasant - it's bright but sweet. The 834 has an utterly superb mid-band though, pure valve in clarity and dimensionality. With this amplifier I had John Lee Hooker in the room, complete with surrounding bar room atmosphere, from his latest album 'Boom Boom'. In this area, the 834 was about 40% ahead of the norm and I was spending 50% more time in the lounge!

It's the sort of performance I could live with; the 834 hasn't been removed permanently for anything, even though two other amplifiers have jostled their way into my attention meanwhile, and both have been attention-grabbers. Although the 834 will go soon, it has reminded my jaded ear and jangled brain of what it was that made me start swapping amps in the first place. It's got the sound I've been looking for. It isn't perfect - in fact the 834 has a bit of tonal 'colour' in its slightly emphasised bass and treble, but it is unquestionably beautiful in its presentation. I can hardly remember when music sounded so good -

perhaps it was from my first ever amplifier, a Mullard 3watt single-ended that I built in my teens.

The 6L6 valves (a large envelope EL34) of the 834 and the Mullard circuits (more of which later) are all from the Fifties/Sixties period. I've long wanted to listen to a simple triode amplifier using Thirties technology, to test the theory that circuit simplicity has a lot to do with the quality of sound from valves. If this is so, then a really simple, basic amplifier with a measured performance satisfactory for music reproduction should be ideal. In the Silver Night 300Bs tested this month, my wish was granted.

The Silver Night 300Bs didn't conclusively prove that triode amplifiers lacking feedback are better. As Eric says, the Silver Nights have limitations, but they also have some fascinating strengths. I'm still incredibly impressed by them - perhaps too much so. The fact that despite their almost absurd simplicity they sound natural and smooth, and can reveal such a range of tonal colour in recordings, is intriguing. These amplifiers are for listeners who want smoothness, textural richness and easy, relaxed listening, to perhaps light classical music. You wouldn't put on Ramones Leave Home, something the

EAR 834 can handle, but you would - most emphatically would - revel in Monteverdi's Vespro Della Beata Virgine. The Silver Nights look absolutely glorious as well of course. Everyone agreed that when lit, their large, curvaceous 300B valves, with a bright orange filament and an electric blue glow are nothing less than magnificent.

And then, in total contrast, we had the Chord SPM 1200 solid state amplifier, with its switch-mode power supply. We knew little about this unit, but in the short time it was with us, both Eric and I were duly impressed - Eric more so than I. My observations about

its dry, clinical sound may have been influenced by the Audiolab C8000 preamplifier I used with it. Eric used a Michell Iso/Argo combination and thought the SPM1200 breathed nicely. By the time I had mustered together my own Deltec preamps and the Rose valve preamplifier, both of which are more suited to an amplifier of the Chord's abilities - it had gone!

Trouble with all these good products is that their manufacturers keep selling them; the last I saw of 'ours' was in the back of a delivery van as it sped off down the road. All the same, the Chord, with its endless bass and fearsome sense of control really was quite an amazing amplifier. We've got it marked down as 'an amplifier to listen to again'. Anyone in the market for two grands' worth of solid-state dynamite should listen to it, but be warned that only the very best ancillaries will reveal its true potential.

### Deeply Impressive

All three amplifiers - the EAR 834, the Silver Night 300Bs and the Chord SPM 1200 - were novel and, in their own ways, deeply impressive. What they show is that, in spite of what measurement would suggest, the perfect amplifier hasn't yet been developed ●

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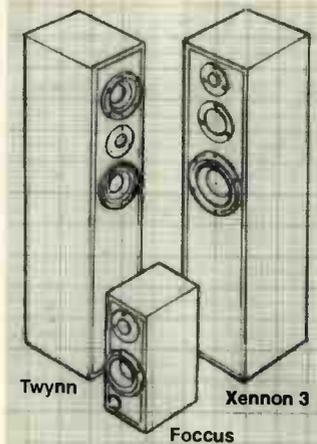
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Philips' Digital Compact Cassette system has been in the shops since November and already magazines covering the home and semi-professional studio market (the so-called prosumer) are carrying features and reviews of these new players. I believe it will not be long before DCC players are found in recording studios as mastering machines. There are a number of reasons why this seems a likely development.

### Replacing R-DAT

Firstly, if DCC replaces Sony's R-DAT in the home market, DAT machines will tend towards the top-end professional user and include timecode and editor control to justify price tags in the thousands rather than hundreds of pounds. This will cause smaller studios to choose DCC over DAT machines on cost alone.

Secondly, consumer market penetration of DAT machines is poor and, at best, unlikely to improve. In future, the bands and artists who want to hear the results of their latest session at home will be far more likely to own a DCC machine than a DAT player. Initially, copies will be made on DCC with the final master kept on DAT but this will change. DCC sounds so much better than old-style cassette that bands and artists won't believe it's necessary to keep the extra unplayable and expensive DAT master and eventually dispense with it.

### User Friendliness

Thirdly, and only time will tell if this will be the case, if compatibility between DCC players proves better than it is between DAT players, and if tape costs fall in favour of DCC cassette, DCC will get used for its 'user-friendliness'. I must confess that, whilst I have enthusiastically supported DAT, from my own experience I have several times had to remix tracks produced in my own studio because of compatibility problems between my DAT machine, the record company's and the duplicating house!

But the truth is, DCC is

not repackaged R-DAT, its technical success and its considerable sound quality depends on elaborate engineering and cunning psychoacoustic trickery. In fact, it's not stretching the truth too much to say that DCC is the first real digital audio format. Other digital audio developments have ridden on the back of video technology. The CD rose from the ashes of Philips' Laserdisc. DAT machines use the spinning-head tape



of the people all of the time, but you cannot fool all of the people all of the time", but it would have been a very appropriate comment if he had been! That the incredible information reduction utilised in DCC should fool any of the people any of the time demonstrates what a remarkable engineering achievement it represents. Nevertheless, the unpleasant truth is, all reduction methods do produce audible changes in quality in a proportion of

# recorded message

Left by Richard Brice

recording technique originally developed for B- and C-Format, one-inch video machines and later used in U-Matic and domestic videotape recorders.

It is to their credit that, in developing the Digital Compact Cassette, Philips have chosen not to follow so many other manufacturers down the route of modified video technology but instead to go for a digital version of their twenty-year old Compact Cassette. Inside a DCC machine, there's no head-wrap, no spinning head and few moving precision parts.

Until DCC, it has taken a medium suitable for recording the complex signal of a colour television picture to store the sheer amount of information needed for a high quality digital audio signal. Philips' remarkable technological breakthrough is accomplished by, quite simply, throwing away most of the digital audio data. The technique is called bit-rate reduction or data-compression and Philips have developed their own method for DCC called PASC.

Of course, the PASC system does not throw away just any audio data, just that

which it considers is inaudible at any one instant in time. The PASC bit-rate reduction method takes advantage of a psycho-acoustic phenomenon called 'masking'; put simply, masking is the reason we strain to listen to a conversation on a busy street and why we cannot hear a clock ticking when the TV set is turned on. Loud sounds mask quiet ones. DCC bit-rate reduction works in two stages. First it 'decides' at which point the ear and brain cease to be able to attend to low-level sounds because of louder sounds in the psychoacoustic 'foreground'. Having made that decision it throws away the data describing the inaudibly quiet sounds.

### Hearing Compression

But is it possible to hear the effects of this data-rate compression? The papers presented at the Audio Engineering Society's 10th Conference last September demonstrate that the answer is yes, some people can, some of the time. Abraham Lincoln was not talking about bit-rate reduction when he observed, "You can fool all of the people some of the time, and some

'difficult' programme material.

In the harsh commercial environment of mass-produced home entertainment it is reasonable to take a pragmatic view. But my worry is that, whilst the rubric that inevitable engineering compromises must fool most of the people most of the time is cogent enough when considering domestic and portable hi-fi, it is not when it concerns the use of this equipment in recording studios for producing master recordings.

### Breaking the Rule

If, as I believe, DCC cassettes do come to be used for mastering, studios will be breaking the oldest rule of sound recording and transmission which is that the quality 'bottle-neck' must always be turned towards the listener. If the man on the Clapham omnibus has a system flat to 10kHz, the recording chain should be flat to 20kHz. If the woman on the street has 16 bit audio at home, studios should aim to have 20 bit. Any different and the situation is similar to watching a 70mm film print in the West End which has been re-shot on a 16mm negative! ●

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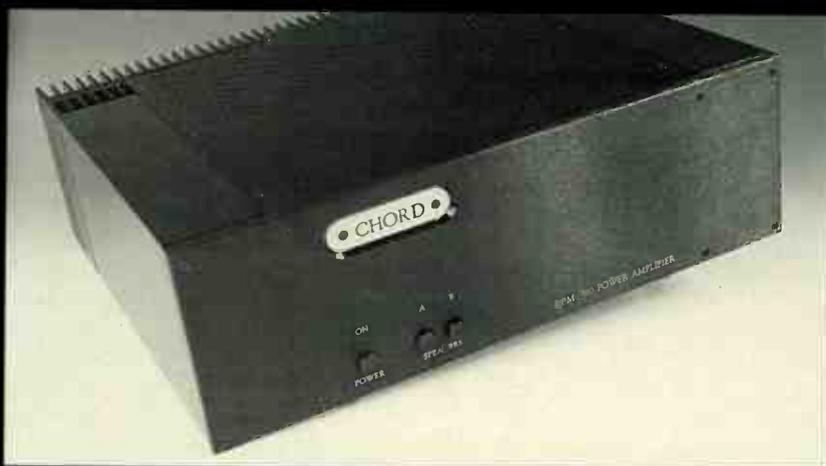
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What is the world of music coming to?

I'm sure you've heard this kind of comment many times along with other phrases such as "pop music today isn't as good as when I was a teenager". Normally I would just ignore this kind of comment but recently it has become more valid than ever with respect to the charts.

These are the kind of lines that would be heard from someone in their thirties and upwards. Those who remember the Beatles and the Stones for example. But I've only just finished my teenage years and I'm worried. Maybe working in publishing has unduly aged me. Possibly working with Noel and Eric has matured my music tastes. Whatever the reason, I cannot understand or believe that anyone would listen to the majority of the music in today's charts for pleasure.

### End of the Charts?

I recently had the unfortunate experience of sitting through The Chart Show. The top 40 had masterpieces like music from Nintendos' Mario Brothers game in a top slot. Do people really listen to this? It's amazing that they buy the music from a games machine to listen to. Perhaps they can't afford the extortionate price of these machines, so they buy the single instead just to convince the neighbours that they have one.

The only explanation I can offer for the amount of rubbish that occupies the Top 40 singles slots is the now small number of sales that are necessary to gain a place in the ranking. It is almost certainly due to CD that vinyl singles do not sell in vast quantities any more. Many people, myself included, when hearing a track that they like will go out and buy the album on CD.

This is not because they have endless money - because they don't. A CD with ten tracks on it for £12 simply offers much better value for money than a single at £3. Additionally, people that would buy chart singles or new releases will have CD midi systems. This is not a dig at them, but mass market music does tend to be played

on mass market systems. One is intended for the other and vice versa. Perhaps this explains why most CDs of bands in the charts are of poor recording quality.

The question arises: are the singles charts representative of who is the favourite or top selling artist, in the album sales? I suspect that Mike Oldfield's Tubular Bells II will far out-sell the current number one single, even though I personally don't like it because of its overdamped, sterile sound and total lack of atmosphere.

The sad thing about this is that advertising is now better



Dominic Baker

# dB on the level

at selling a new album than a chart single, which used to do the job. Tubular Bells II has been heavily advertised on television for the run up to Christmas, possibly so that Mike Oldfield can pay for a return ticket on Concorde to visit Macy's for his annual shopping spree.

Several of my friends have bought Tubular Bells II on impulse, just to see what it's like. Most of them have very little idea what is currently in the charts - which is lucky because they might otherwise be put off music altogether. I have taken great pleasure from informing them about Mike Oldfield's past masterpieces. Tubular Bells pales into insignificance when considering the genius behind the Blue Peter theme tune that he once wrote. This has the effect of quickly turning most of them off the album and I expect that several of their fathers will be getting a certain Mike Oldfield CD for Christmas.

There are many new promising bands out there, as well as a few older ones that continue to produce good music. The rubbish in the charts does give the impression that the quality of rock/pop music is going rapidly

down hill. But the truth is that it is the charts that are going down hill. So how do you find these promising bands amongst the rubbish that clutters up the singles charts.

A quick look through the album charts shows that greats like REM, Simple Minds, Suzanne Vega and many others are rarely seen in the singles charts. I often scan these, rather than the singles, because generally they contain a much better selection of good music that I may be interested in. They certainly do seem to be much more representative of what people are currently buying.

Another place to find good music is record reviews. They are my favourite source of information about what to buy next. The trick is to find a record reviewer who has a similar taste to you. Once this has been done he or she will provide you with a wealth of excellent music to spend your pennies on.

Compact Disc hasn't just killed off the singles charts either. It has brought what people believe to be serious hi-fi into the home at bargain basement prices. In fact, what is now termed 'hi-fi', courtesy of CD which adds the stamp of apparent quality, is in truth

little more than yesterday's radiogram. The ever ingenious Japanese have merely repackaged downmarket electronics, added CD and - presto - come up with 'hi-fi' for £600 or so.

Eventually it will all go the same way as the car market where more and more new cars look the same. Soon all new hi-fi's will sound the same. They will join the television market and most people will rent them as an object, a mere commodity that sits in the corner next to the box, rather than a means to an emotional end.

So it appears that the

charts, CD's and hi-fi are all about to meet a sad end due to the business interests of the large controlling corporations. In many ways I wish that I'd stuck with vinyl. I could have built up the ultimate vinyl playing system and a massive collection of well looked after records for next to nothing as everyone else was selling out to CD. These collections were in many cases in mint condition and second hand vinyl sells for about £2 an album in bulk.

Or perhaps it is not as bad as it seems and confirmed audiophiles will be able to support the industry for many years to come. Maybe one day hi-fi will even be top on the list of buying priorities once again and televisions will rot in the corner.

The next decade is going to be a shaky one for hi-fi as it comes up against more and more forms of home entertainment. It has already been joined by Audio-Video and Games machines and I have no doubt that several more competitors will emerge in the years to come. Maybe in the near future the Top 40 singles or albums will be replaced by Nintendo games. I hope this fate doesn't await music itself. ●



# A Change of Style

**Nakamichi have suddenly revamped the styling of their inexpensive cassette decks.**

**Noel Keywood looks for the other changes.**

When Nakamichi recently replaced their three least expensive recorders, it came as a surprise. It isn't often they introduce new models, yet the outgoing recorders, Cassette Decks 1, 1.5 and 2, were comparatively new, being introduced in 1991. They had a life of little over one year.

The new DR range, comprising DR-1, 2 and 3, slid into the UK market unannounced. The importers, Nakamichi UK, part of B&W Loudspeakers based in Worthing, Sussex, blamed their Press Person: "he's scuba diving" they told us. However, I found all three new decks are, in performance, little changed from their predecessors. The biggest change has been in styling - where apparently those that went before were not well received. Also, price has remained steady with the DR-1 and 2, but has gone down £50 with

the budget DR-3, to £300. For this report we tested the DR-3 and the mid-priced DR-2 costing £500.

Traditionally, the least expensive Nakamichi recorder fitted with their own unique components has offered best value. You get all the benefits of owning a Nakamichi at the lowest price. In the new range this role is occupied by the DR-2. It is a three-head deck with off-tape monitoring, and Nakamichi's high performance independent heads. Instead of a simple single-capstan transport, it has their own dual-capstan design. All the DR-2 lacks is user adjustable head azimuth, a horrendously complex mechanism that tilts the head to match recorded azimuth, giving the last ounce of treble from badly recorded tapes. This facility, fitted to the DR-1, costs a lot extra, taking the DR-1 price to £700, but it has limited benefits.

Below the DR-2 lies the 'budget' DR-3.

It is a standard-pattern cassette deck (two-head, single capstan), designed and adjusted with Nakamichi knowledge and care. As such, it has its attractions, but they are neither so great nor as distinctive as those of the DR-2.

Visually, little separates these decks. They share the same basic housing, comprising a conventional chassis with folded steel cover and flat extruded fascia - in black of course. It is a welcome return to the sober, more professional look of past Nakamichis.

The consensus seems to be in favour of the new, which retains the basic stylistic elements always used by Nakamichi, such as sloping controls, a very large cassette door and cassette back-lighting. Now, however, the surroundings are more barren; fewer details add embellishment.

So both recorders look a little more stark, yet remain recognisably Nakamichi.

They measure 430mm wide, 110mm high and 320mm deep and feel weighty compared to rivals, at 5.4kgs. I liked their fluorescent orange display panels and back-lit cassette compartments that allow a user to see the tape easily but, infuriatingly, Nakamichi still retain manual tape selection. It's an absurd inconvenience that cannot be sensibly justified (their top recorder, the CR-7, has auto tape selection), but that's life - and Nakamichi.

Both decks have bias tuning that works - just - with metal tape. Both have Dolby B and C and neither has Dolby HX PRO, 'cos Nakamichi refuse to use it. They say it isn't necessary because their heads are so good, but this is questionable on the DR-3, with its Sendust combination that struggled to get treble energy onto tape. It certainly would have benefitted from the use of HX PRO.

### Facilities

Other facilities are few and simple. The DR-2 has a track review system that'll play the first few seconds of each track, before moving on. This can be used as a search system; when the mechanism stops at a track, pressing Play cancels the search routine. Both decks will move into record whilst playing (punch-in recording), but also have high resolution four-digit tape counters which helps align a tape for a precise recording start.

The three-head DR-2 has a tape monitor button of course, so a recording can be heard off-tape whilst it is being made. This is a great aid to setting record level and bias, since changes can be heard and judged immediately.

Nakamichi have always fitted high quality record-level displays and they continue to do so on these new models. Peak record level (0VU) has been set at Dolby flux, which means that my IEC based test figures for overload (MOL315 and SAT10k) must have 2dB added to correlate with the actual display markings. For example, TDK MA-XG takes +8dB record level at 315Hz (MOL315) which on the DR-2 display causes the +10 sector to light up. That's maximum in fact meaning that, as on earlier machines, when a high performance metal tape is used musical peaks can be taken right up to maximum on the display. Some slight degradation will be heard, but then, this is an enormous recording level.

The Sendust head of the DR-3 is altogether less capable, so although the same display panel has been fitted, music peaks can be taken no further than +5 or thereabouts with metals.

Both these recorders feel a little less smooth and sophisticated than predecessors. Whilst they don't clank and crash as solenoids pull in and out, a slightly hollow and hard metallic clonk accompanies some actions. Fast reeling creates little commotion from the tape, yet it isn't so muffled as before. The power button remains by the door-open button, a source of annoyance for many users, but it is now shielded so the machine won't

suddenly die when the door is opened.

The sudden range revision executed by Nakamichi has had little impact upon usability. The importers say that an improved capstan motor has been fitted and I heard recently that the old one was prone to failure. There has been little change in performance however. These decks might look a little more sparse, or 'professional' but they remain easy to use and almost as gratifying.

### Sound Quality

Going for sheer recorded level on the DR-2, I turned bias up to maximum and put in a TDK MA-XG dual layer metal tape. A squal of jangling guitars and staccato drum bursts from Steve Earle showed that allowing peaks to hit +10 - maximum on the record display - puts quality under strain. A certain diffuse permeating treble and transients were 'slowed', yet the recording just held together, even by critical standards. With Dolby out, hiss was barely audible. This was pushing cassette to the limit, as only a good Nakamichi can do.

Generally, I prefer to record with Dolby B and pull level back a bit, allowing peaks to hit +8dB or so. Bearing in mind that Dolby ceases to operate above 0VU, a goodly proportion of the signal remains untouched, but hiss, which becomes more apparent at lower levels, is usefully suppressed. Under these conditions, MA-XG sounded less strained and more coherent.

Changing to Maxell Vertex and using less bias, I found the sound became smoother and sweeter; this is an excellent metal for those chasing quality rather than level. The DR-2 does add some fullness to lower frequencies, which can at times introduce a noticeable bloom, but otherwise it produced superb recordings with Vertex. Images were clear and stable, hiss minimal and the sound smooth and relaxed. The critical would note, however, a slightly modified tonal balance with extra richness added and - subtly - just a trace of temporal vagueness from drift. The tight timing of Compact Disc highlights this minor blemish, a common one in cassette decks.

As always, I couldn't obtain what I felt

to be a satisfactory recording with chrome tapes. Recording level had to be pulled back to avoid muddle and soft, almost muted treble with TDK SA. BASF Chrome II was a little better, maintaining treble quality more effectively.

Moving to TDK AR ferric tape only reinforced my current dislike of chromes. It immediately sounded relaxed and open at low frequencies and across the mid-band, giving a wonderfully smooth and easy, yet satisfactorily clear recording. Although upper treble didn't sound as bright and well defined as that from a metal tape, the problems were less obvious and degrading than those of chromes. With the DR-2 I would use either premium grade ferrics or jump straight to metals, TDK AR ferric tape or Maxell Vertex metal tape offering fine results.

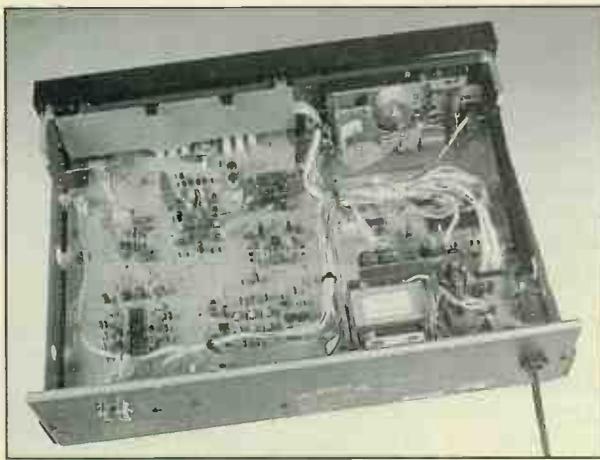
Prerecordeds played well, as expected. It was only with strong bass lines, from Tina Turner cassettes for example, that the DR-2 had noticeable emphasis in the bass, yet it came across as full bodied rather than overblown. And that's how I would sum-up the DR-2 with prerecordeds: clear and strong, finding treble where most would have thought there was none, bass of a solidity rare with tapes and a general level of image construction and stability above the rest.

My experiences with the DR-3 were more frustrating. Struggling to get the same results, I spent hours recording and re-recording. High level recording on metals produced splashy transients and dullness; even peaking at +5 I wasn't too happy about obvious loss of precision. Pulling record level right down to +3 gave a tonally smooth and generally respectable recording on Maxell MX, which works best with the DR-3, but even with Dolby B hiss was obvious.

Of all the chromes I tried, BASF Chrome Super II gave about the best results. It is very quiet and takes treble energy well. Peaking at around 0dB and no more gave decent recordings, if not ones of any great definition in transient delivery. As always, I passed on to ferrics rapidly. TDK AR was less successful than expected; it sounded dull due to treble saturation. Best results came from TDK

► **The DR-2 three head deck with Nakamichi's own dual capstan mechanism and independent heads.**





The DR-3 has the more standard two-head, single capstan transport arrangement, but is still definitely a Nakamichi inside.

SA-X and Maxell XL-IS. Using Dolby B they could be pushed to +3 or so without losing focus when trying to reproduce the cutting edge of guitars and percussion, yet without hiss becoming too intrusive. Like so many cassette decks not too

capable with metals, the DR-3 was happiest when carefully adjusted for a top grade ferric. Then it gave results that reached a surprisingly high standard.

Prerecordeds obviously had less bass and more treble to them, after the DR-2. Some even sounded sharp and bright, yet I found that bass quality was tight and a little less vague than that of earlier machines.

Ashkenazy playing Chopin Nocturnes put

a spotlight on speed stability and never once did I hear any jerking or hesitation. Notes dying slowly did so steadily, making the DR-3 sound confident and capable about what it was doing. Although not as full bodied in its sound as the DR-2,

Nakamichi's budget deck still displayed a higher level of capability than rivals when it came to playing prerecordeds, an acid test of a manufacturer's ability.

**Conclusion**

Brought to market quickly as a reaction to criticisms about their predecessors styling, the new DR range recorders are a little less smooth and silky in operation, as well as sparser in appearance. However, Nakamichi remain obdurate in retaining certain characteristic 'features' of theirs - good and bad - so these new models differ little from earlier ones; they're no culture shock.

Performance has changed little. The DR-3 is undistinguished in what it does. Needing a better head, the £300 price tag difficult to justify. It's a rude truth that rivals like NAD can offer equal or better value. The DR-2 is in an altogether different category though. It is a superb recorder, very much a Nakamichi with all that implies and certainly worth £500. ●

**NAKAMICHI DR-3 MEASURED PERFORMANCE**

The DR-3 is a simple two-head deck, with a single capstan transport. That's the standard pattern as cassette decks go; even budget machines adhere to it. Nakamichi claim to bring their expertise to the subject and imply, of course, that it makes all the difference. I'm afraid to say the difference isn't as great as one might hope.

Take, for example, head overload levels. Under test the DR-3 got +2dB onto metal tape in the mid-band (MOL315) and +0.5dB at high frequencies (SAT10kHz). This is no better than the norm. Happily, the bias adjuster worked with metal tape, producing little - but enough - response variation to 'flatten' TDK MA and even MA-XG, TDK's premium grade metal. The deck will give a very even tonal balance as a result, but it cannot be recorded to anything like the level the DR-2 is capable of achieving, at least with metal tape.

The picture was little different with ferric and chrome tapes. Equalisation was sufficiently well tailored to yield a flat frequency response with both types, bias adjustment range being more than adequate to cope with some of the more extreme formulations available, like BASF Chrome Super II and TDK AR-X. However, maximum recording levels were nothing special.

So the DR-3 matches all three tape types well and offers variable bias for tape tuning purposes. It will provide recordings of excellent basic tonal balance, albeit of limited dynamic range. Luckily, hiss was low at -76dB with Dolby C, and -56dB without Dolby - normal values. Sensitivity (gain in the record amps) was also well set, giving accurate Dolby tracking.

I was surprised to see even more high frequency lift in the replay equalisation than that of the DR-2. It rises by +3dB at 20kHz, enough to ensure that even dull prerecorded tapes have much of their life and sparkle restored. However, there are prerecordeds

that have been pre-equalised to have rising treble energy to counteract the losses that exist in most tape players. With these a deck like the DR-3 will then sound over bright. However, in my experience, the treble lift of Nakamichi's improves clarity in most cases, and it certainly improves Dolby tracking. The DR-3 doesn't have the strong bass lift of the DR-2, but all the same there is a peak below 20Hz and this will add some weight to the bass.

Unfortunately, I only got these results after adjusting our review sample. As delivered, level at 10kHz was -2dB down. The head azimuth adjustment screw had been tampered with, its varnish seal broken. Movement was rather too easy to resist vibration. Obviously, this raises a number of questions. Had the machine had been unsuccessfully aligned by the importers, or by another party (review samples tend to get around)? Since most of the large Japanese companies like to "make sure review samples are representative of production", as they put it, or even fly review stock in from Japan, the only unusual thing here is that I was able - and did - detect the process.

The transport worked almost as well as that of the dual capstan DR-2. The analysis best shows that there was a little more basic speed drift (width of peak), a little less higher rate wow and a little flutter. However, this result was obtained using an expensive Maxell Vertex metal tape. Single capstan transports are more tape dependent than duals, so cheaper tapes are likely to give worse results, according to the goodness of their housings.

The DR-3 has no major flaws, but it also has less obvious merit than three-head Nakamichis. However, Being just fault free and in good basic alignment is enough to make any cassette deck recommendable, since most are quite obviously blemished in one way or another. In this respect the DR-3 scores over its rivals, always assuming that shop samples come with head azimuth in proper alignment. NK

**REPLAY (prerecorded tapes)**

Frequency response (-2dB)	30Hz-17kHz
Speed accuracy	+0.6%
Hiss (70uS, Dolby out)	-60dB

**RECORDING (blank tapes)**

Frequency response (IEC Primary Refs.)	
ferric (IECI)	20Hz-20kHz
chrome (IECII)	20Hz-19kHz
metal (IECIV)	20Hz-19kHz
Separation (1kHz)	48dB
Distortion (315H)	0.3%
Hiss (70uS, Dolby out)	-56dB
Speed variations (DIN total)	0.08%
Flutter energy (3-3.13kHz)	-29dB
MOL/SAT (IEC Refs)	315/10k
IEC I (ferric)	3.5dB/-8dB
IECII (chrome)	0dB/-5dB
IECIV (metal)	2dB/+0.5dB

**Frequency Response**



Fig.1 Flat response with metal tape.

**Speed Stability**

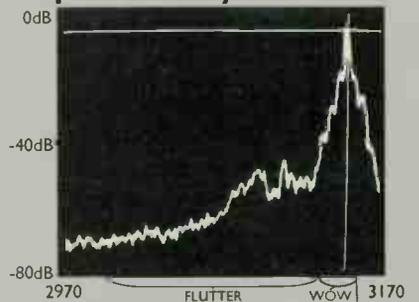


Fig.2 Little flutter, some drift.

**NAKAMICHI DR-2  
MEASURED PERFORMANCE**

Nakamichis come uniquely well set up and honed for their task. Accuracy of set up, as much as correctness of basic design gives the DR-2 a treble response in its replay chain that extends right up to 20kHz, without droop. The independent replay head had correct azimuth according to the IEC94 test tape (itself a standard).

Additionally, replay equalisation, a function of basic design, must be correct - and it was. As a result, the DR-2 will match and play commercially prerecorded tapes effectively. Slight upward lift in treble is characteristic of all Nakamichis and in practice does a lot to maintain Dolby tracking accuracy. Switching in Dolby B with a prerecorded doesn't (or shouldn't with a good recording) lead to significant dulling of the sound as a result.

It's not only commercially prerecorded tapes that benefit, but recordings from other cassette decks providing, that is, they are set up properly as well. And the recordings the DR-2 makes, which might for example be transferred to a car player, will have good potential compatibility.

The replay frequency response also shows some bass lift. Although not strictly accurate, this gives prerecordeds extra bass 'weight', as well as compensating for a low frequency roll-off in the record chain of the DR-2, probably due to the independent record head. The boost is strong, raising level at 30Hz by +4dB. In conjunction with the slight treble lift, this gives the DR-2 a clearer and more emphatic delivery than usual from prerecorded tapes, something Nakamichis are known for.

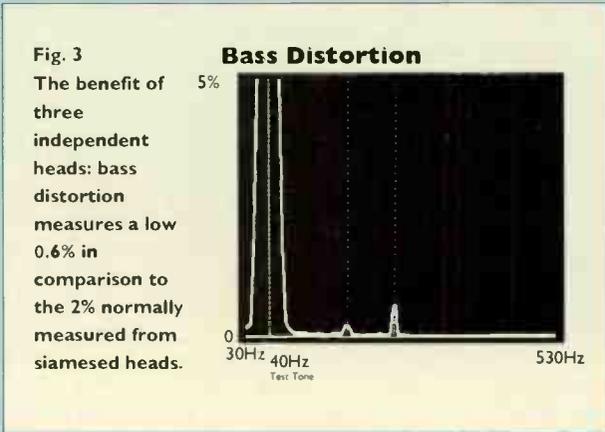
The replay chain was quiet and hum free. Prerecorded tapes will run at the right speed too, after allowing for the fact that all Japanese recorders run 0.6% fast or so with the IEC test tape, due to tape-standard differences between Europe and Japan. Replay-only speed stability was good, with little wow (0.05%) and flutter (0.08%).

Some minor changes appear to have been made to recording characteristics. Recording frequency response with standard (IEC Primary Reference Tapes) ferric tape and chrome tapes was flatter than before and, by any standards, very flat. As Nakamichi claim, their heads easily achieve a smooth, stable response right up to 20kHz, even from modern high quality ferric tapes (e.g. TDK AR, Maxell XL-IS).

I was surprised, in light of this, that metal tape should still have low and high frequency humps. And even more curiously, bias adjustment produced very little change in the high frequency peak. Traditionally, Nakamichi have given their decks a substantial degree of

metal bias variation; the DR-2 is as limited in its ability to tune errant metal tapes as most competitors. Median bias at zero on the adjuster was right for Maxell MX-S but I was surprised to find that the latest TDK MA metal couldn't be 'flattened'

Those with a deep pocket may want to use TDK MA-XG dual-layer metal, since it offers the highest possible recording levels. I got no less than +8.5dB in the mid-band (MOL315) with this (bias at maximum), the record level indicators reading maximum, or +10. I know from experience that Nakamichi's own heads will give a good recording if musical



peaks are taken up even to this incredibly high level, although some slight bass and treble degradation will be noticed. In use I normally peak metal tape at around +8.

It's amusing to give one of these recordings to a friend, without comment. They usually 'phone back within hours complaining that the recording was so loud it nearly destroyed their loudspeakers and that there's a lot of distortion. There is - but it comes from head overload in their cassette deck!

The dual-capstan transport worked well, but although it has negligible levels of flutter, there was a little capstan wow at 6Hz and some low rate drift. The analysis (Fig 2) shows this as, respectively, shoulders either side of the peak at right and a slight widening of the peak. The transport's dc servo-motor doesn't shine, but otherwise the transport, with its unique pad-lifter that reduces scrape flutter, works very well.

Eliminating flutter makes for a cleaner sound. Drift and capstan wow adds a little temporal vagueness (or watery pitch), plus a slight modulation of tone which detracts a little from purity. These degradations are very slight though.

If Dolby C is used, hiss sinks to -76dB (CCIR weighted), giving a dynamic range of 84dB with TDK MA-XG. That's a pretty astonishing value and in practice it can be appreciated: recordings are totally hiss free. Even without Dolby, for optimum quality, hiss from a good metal tape is slight.

Even ferric and chrome tapes can be taken up to +6 or so on the record level indicator (+3.5dB MOL315). Although Nakamichi do not use Dolby HX PRO, the DR-2 still gets very high treble levels down

onto tape. In fact, it is slightly better in this area than most decks with Dolby HX PRO, due solely to the performance of its independent heads. These heads also suffer far less bass distortion (from magnetic saturation) than others, giving 0.6% against 2% for siamesed heads. This is audible as tighter, cleaner sounding bass (Fig.3).

Measured performance of the DR-2 remains much like that of its predecessors. Since it uses the same basic transport and heads, this is hardly surprising; the DR-2 is no revolution in technology or performance. However, it still displays all the strengths that make a Nakamichi what it is, a deck more carefully designed, built and adjusted for optimum performance from cassette. And in some important areas, such as recording level, that performance remains exceptional. NK

**REPLAY** (prerecorded tapes)  
Frequency response (-2dB) 50Hz-20kHz  
Speed accuracy +0.6%  
Hiss (70uS, Dolby out) -61dB

**RECORDING** (blank tapes)  
Frequency response (IEC Primary Refs.)  
ferric (IECI) 20Hz-20kHz  
chrome (IECII) 20Hz-20kHz  
metal (IECIV) 20Hz-20kHz  
Separation (1kHz) 50dB  
Distortion (315H) 0.3%  
Hiss (70uS, Dolby out) -56dB  
Speed variations (DIN total) 0.08%  
Flutter energy (3-3.13kHz) -32dB  
MOL/SAT (IEC Refs) 315/10k  
IEC I (ferric) 3.5dB/-4dB  
IECII (chrome) 3.5dB/-5dB  
IECIV (metal) 6dB/-0.5dB

**Frequency Response**

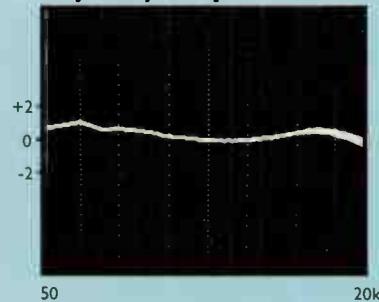


Fig.1 Bass and treble lift with metal tape.

**Speed Stability**

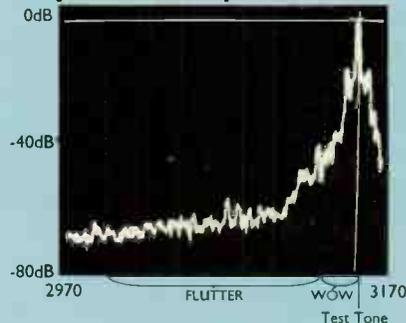


Fig.2 Negligible flutter; some capstan wow.



# A Tuner with a Message

**Pioneer's budget F-301RDS tuner is one of the first to make full use of the Radio Data System. It will even display messages as well as station names.**

**Noel Keyword reads on.**

Pioneer tell us that their new F-301RDS tuner is one of the first in the country to make full use of Britain's new Radio Data System. It is also one of the least expensive, costing just £170. For this you get a stereo VHF/FM push-button tuner also with Medium Wave, but not Long Wave.

In a nutshell, RDS is a means by which useful information is transmitted from radio stations in accompaniment to normal programmes. The info isn't audible though; it takes the form of messages to users, plus useful data upon which the tuner can automatically act in an 'intelligent' manner. The most obvious is station name. As the wavebands fill up in Britain with new stations, this will become increasingly important. I know I'm confused about newcomers; it's reassuring to see messages like CLASSIC and JAZZ come up on Pioneer's blue dot matrix display. But there's a lot more.

Unlike synthesiser tuners to date, the F-301's display panel does not give priority to displaying station frequency. Station name comes in big letters, with frequency or time and date - according to choice - being

*"Ask it to find News whilst you are listening to Rock and off it goes."*

shown in a smaller display underneath. The time function is interesting. Since it is transmitted by the radio station, it changes when the clocks go forward or back, so the tuner can act as a master clock for the house. We saw no date information, presumably because it wasn't being transmitted; the BBC's GLR doesn't even transmit time info yet I found.

In fact, confusion commonly arises with RDS about just what is available and what can be received. It has enormous potential, being able to offer special Traffic Announcements, alternative station frequencies for automatic retuning, programme identification and what have you. But what you get depends upon what is being transmitted and what the tuner is capable of interpreting and acting upon. The traffic and retuning info is for car radios; the F-301 RDS won't retune for you even though the BBC says that hi-fi tuners will retune for best signal.

### Displaying the Data

As far as I could tell from close scrutiny of the handbook and much discussion around here of just what it was getting at (example: 'In RT mode, when no PS data is transmitted from a broadcast station, "NO DATA" is displayed. When no RT data is transmitted "NO RADIO TEXT DATA" is displayed. When no PTY data is transmitted, it is skipped'), the F-301 is fairly passive. It doesn't act on RDS data but it will display it, including the station name, text messages - which may be 'phone numbers for a 'phone-in programme - time, frequency and, interestingly, programme type.

This last RDS category is going to keep us all amused over the coming years. The mirth started for us directly we got sight of Pioneer's PS-PTY-RT-CT-RF-ATT-AUTO-MONO gobbledegook handbook. Amongst more abbreviations than the entire consumer electronics industry has managed to dream up in the

last thirty years (congratulations to the European Broadcasting Union who dreamt up RDS) we found a list of fifteen PTYs (Programme Types - you didn't know?). NEWS is about "reportage and actuality" (live events?). POP is "commercial music of current popular appeal" but ROCK then gets defined as "contemporary modern music, usually written and performed by young musicians", which is flattering to the Rolling Stones.

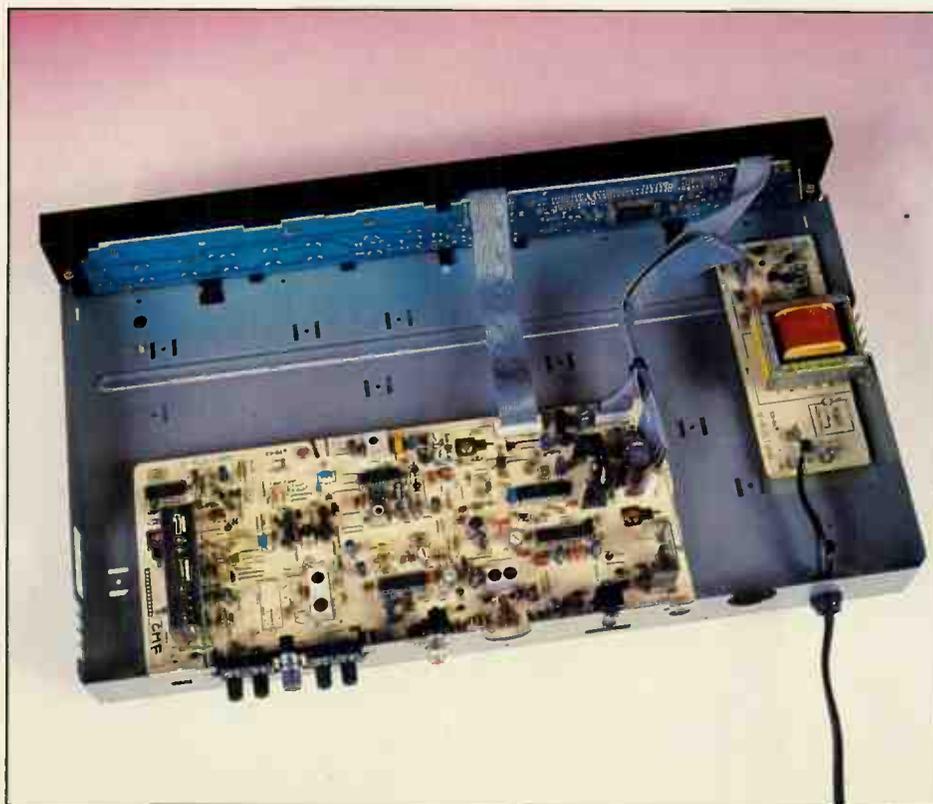
The EBU has adopted the mildly deprecatory definition MOR (Middle of the Road), which Pioneer define as "easy listening, often vocal and usually of short duration" - all of which POP isn't we must presume. There's Light Classical and Serious Classical and since the former is defined as including choral works, we have to presume that Monteverdi's Vespers, for example, is "light". Whilst Rock gets a look in, Jazz and Blues don't. They're confined to the general category of OTHER TYPES. I'm getting confused: when John Lee Hooker or The Rolling Stones come on, will RDS label them OTHER TYPES?

The only active RDS feature installed within the F-301 was station search by programme type (PTY). This was fiddly to use; you have to go through an arcane control sequence. Should you be listening to Rock and

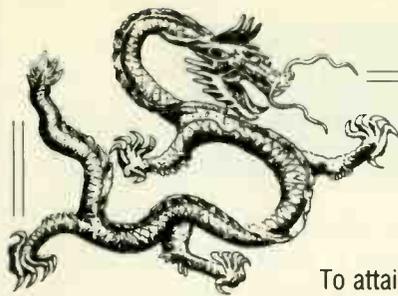
want to locate all other Rock stations, for example, the tuner will not; it just finds the station you are on, meaning nothing happens! It will only find an alternative programme type, not another of the same type. Ask it to find News whilst you are listening to Rock and off it goes.

Then it stops - at a piece of interference. This was another snag, one that Pioneer disingenuously attempt to conceal. The handbook says: "Because of the high sensitivity of this unit, it may stop at very weak stations, or at city noise". This isn't true. Auto-tuning stops at a signal threshold determined by the manufacturer and, in this case, Pioneer have chosen a very low threshold because, like all other Japanese manufacturers, they have configured the system to work with an inadequate aerial. Put the tuner onto a good aerial, one that delivers enough signal to produce full quieting (minimum hiss) and the tune system fails to operate properly, not because the tuner is sensitive, as Pioneer claim (our measurements showed it isn't) but because it has been improperly adjusted.

This problem, and that of signal strength meters that read maximum with a hopelessly weak signal, is common to Japanese tuners. For anyone with a good aerial, like us, the F-301 will not auto-tune at all - and



◀ Silicon chips have shrunk tuner electronics to fit on the small board shown. The tuner front end sits in a screening can at far left.



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switching in the RF Attenuator makes no difference. If auto-tuning becomes an important part of RDS, Pioneer, like their rivals, will have to rethink all this.

Initially, we all marvelled at the apparent magic of messages being flashed to us from the radio stations. These are known as RT, or Radio Text, and can be up to 64 characters long. They come as quite a surprise, scrolling right to left across the dot matrix display screen; it makes the tuner look like a refugee from Piccadilly Circus.

There's plenty more to RDS, I see from our Beeb blurb. Various control signals can be transmitted to affect the receiver; even the programme being transmitted, like The Archers, can be identified, but why this doesn't happen regularly by scrolling RT I don't know. The Beeb merely sent out the visual equivalent of jingles whilst I used the tuner.

The F-301 has thirty six station memories, available through twelve buttons that toggle to hold three stations apiece. Other features are those considered essential and common to budget tuners, namely mono selection with inter-station noise muting off and manual/auto tune.

Sound quality I have to say was much as expected. There was some emphasis upon higher frequencies, giving the F-301 a bright-ish tonal

balance, with an element of coarseness to its treble. This is not uncommon with budget synthesiser tuners. Weak bass lacking in depth helped tilt the balance further. There was reasonably good apparent analysis, but this is an attribute of a bright presentation. Hiss was not discernible with the strong signal we provided to the tuner, but radio stations deliber-

*"we all marvelled at the apparent magic of messages being flashed to us from the radio stations"*

ately leave few silences in which it can be heard, with occasional exceptions on Radio 3, where the extended silence has all but become an art form. RDS maintains station identity at these times, so even if there is a crashing silence, the presence of the transmission is still indicated.

The fact that the F-301 measures well ensures that it displays no major sonic flaws, but its sound lacks the smoothness and warmth, albeit a tailored one, of the Denon TU-260L for example. It reminds me much of the Pioneer

F-229L I reviewed some time ago, even though the F-301 has an MPX filter.

Swapping to our Leak Troughline - which also measures well I need to add - showed that the Pioneer was producing a pinched sound, with performers and instruments congregated around centre-stage. There was quite a lot of coarseness and hash too. It wasn't an especially balanced or amenable presentation, but at the price - and put through a soft sounding budget system - it would be acceptable to the uncritical.

The F-301 isn't going to get any prizes for sound quality - the competition is stronger in this area - but it is basically competent as a tuner and it offers quite a lot in terms of perceived gizmology. I found RDS reassuring. However, in the simple form adopted by Pioneer for the F-301, as well as the limited use made of it by the radio stations

at present, this feature is not very essential. Were the RT code to offer something useful and unique, like song title and artist, which the music biz should supply to the radio stations, then I would find it much more attractive. Hearing a good performance and missing a brief or garbled mention of the artist is a needless frustration RDS can and will, hopefully, banish - for its own sake as well as that of listeners. Then a budget RDS tuner like the F-301 would be far more attractive ●

**MEASURED PERFORMANCE**

Although the F-301 is basically a budget tuner, with RDS as an addition, it performs respectably I found. But then, Pioneer do have a good reputation for their tuners and they've maintained it well over the years I've been testing them.

What were the weak areas, you might be wondering? The F-301 is a little less sensitive than some budget rivals, notably the Denon TU-260L, which is very sensitive by any standard. Whilst the Denon needs just 16µV for hissy stereo (-50dB hiss), the Pioneer needs 50µV. As a result it demands a better aerial, especially if hiss is to be minimised (full quieting), then 1.6mV is needed. With this strength of aerial signal, or more, hiss sinks to a minimum of -72dB, low enough to be all but inaudible behind compressed programmes in which silences are a sin.

Although insensitive, the F-301 is selective, applying 80dB of rejection to alternate channels. This is plenty enough to prevent powerful stations interfering with weak ones close by.

The audio side measured well. In spite of high selectivity, distortion was low at around 0.1% - even at full modulation. The spectrum analysis of

distortion shows that it was second harmonic in nature and therefore of minimal subjective impact. Channel separation was a little lower than usual, but good enough at 30dB.

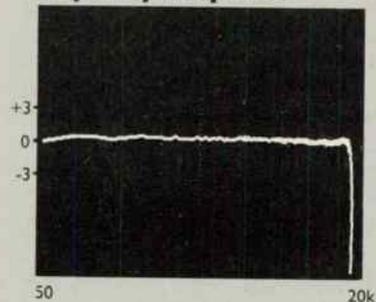
The frequency response analysis clearly shows a flat characteristic, audio bandwidth measuring 28Hz-16kHz within 1dB limits. In spite of multiplex filtering there was some 38kHz sub-carrier on the output (-47dB), so cassette decks with MPX filters are advised.

The F-301 has a good audio performance. It suffers only from being a little insensitive, and from having some 38kHz subcarrier on its output which might upset Dolby systems when recording. **NK**

**TEST RESULTS**

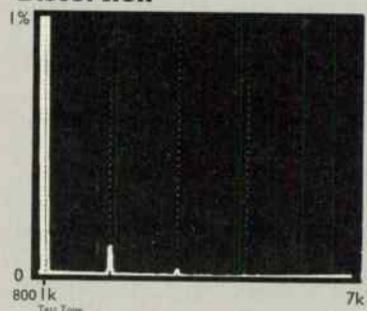
Frequency response	28Hz-16kHz
Stereo separation	30dB
Distortion (50% mod.)	0.08%
Hiss (CCIR)	-72dB
Signal for minimum hiss	1.6mV
Selectivity (at 0.4MHz)	80dB
Sensitivity	
mono	4µV
stereo	50µV
signal strength meter -	none

**Frequency Response**



Flat frequency response to 16kHz

**Distortion**



A little second harmonic distortion at 0.08% (50% mod.)

Anyone familiar with Mission loudspeakers will understand what I mean when I say that the 763is are no exception to their in-house sound: slightly bright and forward, with firm bass lines and a gutsy performance. As a result, they sound impressive on first audition.

With the 763i you get a lot of box for the money. They are floorstanding loudspeakers of quite large proportions, measuring 800x250x283mm, yet are sold at a bargain price of just £299. A set of sharp-looking (and sharp-feeling if you happen to pinch your finger between them and the floor, as I did) spikes are provided to ensure a stable link is formed between the speaker and the floor.

The tweeter used in the 763i is Mission's 19mm ferrofluid cooled fabric dome model which has a dished face plate around the dome. This serves to improve efficiency and directivity. The bass unit is a 210mm precision injection-moulded polypropylene unit, which is very neatly made. It is reflex loaded by a large port, which, being on the front baffle, allows them to be mounted close to a wall. I could not help feeling that there should be something in between the small fabric dome tweeter and the large polypropylene bass unit, the tweeter looks so small and the bass unit so large.

These units are wired via a six-element crossover to the 4mm bi-wiring posts located high up, on the rear of the loudspeaker. The same drivers are also used in the new 762i, by the way, which is a medium sized loudspeaker designed to be stand mounted and looks like a 763i with the bottom cut off. The 762i retails for £199 but with a good pair of stands the price comes closer to that of the 763i, making the latter better value in my opinion.

### A Sound Feel

The cabinet of the 763i is well constructed from braced 19mm high density particle board, with a 25mm MDF front baffle. It gives the speakers a solid feel, and owners confidence in quality. The front baffle, in true Mission style, has designer GTi stripes running down one side of it. Fortunately, for those of you whose taste is a little more conservative, there is a grille which completely covers this style statement.

The first impression on wiring the Missions up is that they deliver a powerful and dynamic sound. The bass is not especially deep, but none the less it is firm and punchy. These speakers give the impression of being capable of very high sound pressure levels. The treble is quite bright, but not harsh, and it is free from shakes or rattles.

On further listening the treble

# Mission Money-Box

**Mission's new floorstanding 763i loudspeakers offer a lot of box for not a lot of money, Dominic Baker discovers.**

reveals itself to be lacking in detail or high frequency resolution. The 'tiss tiss tiss' quality I soon found annoying, being one of those things that once you are aware of, can't easily be forgotten. In addition there appears to be a chunk of the sound missing between this one-note treble and midrange vocals.

### Treble Trouble

Re-positioning the loudspeaker improved the situation slightly, but I could not achieve a satisfactorily clean or well focused treble. Perhaps the tweeter is too small to keep up with the high levels that the bass unit is capable of and is being worked too hard. This would push it into breakup and may explain the ill-definition. Whatever the reason, it was not quite right.

The soundstage the Missions produced seemed to vary depending upon their position relative to the room. The best soundstage was produced with the loudspeakers a foot or so from a rear wall and firing directly down the length of the room. Unfortunately, the treble was a bit splashy in this position so then they needed toeing in just slightly to clean it up satisfactorily. This offered the best compromise. The treble was then fairly clean and free from the worst of its problems, the soundstage was deep and wide and the various constituents of the band could be placed roughly in relation to each other. This was good enough for the Missions to rate reasonably well in comparison to the competition, especially considering their low price and large size.

In the past we have suggested that some loudspeakers may be found to be too intense in their delivery of information, all but overwhelming a

listener. The 763is are the antithesis of this, being powerful and dynamic - but not especially informative. The overall sound is quite impressive and could easily be liked on first hearing, but on closer inspection it is a bit vague, with instruments tending to blur together.

The bass has certainly improved over the 763, which the "i" version replaces. It is much fuller and seems to roll off more gradually giving the impression that the Missions are not about to run out of extension. The large bass driver is fast and punchy which gives the 763i impact.

The Mission does manage to steer clear from becoming one of the masses. For an inexpensive floorstander, the bass was surprisingly good, being able to handle the strong punch of a bass guitar or the powerful rolling bass from an orchestra at a considerable volume level. They were a little unsubtle with some lighter pieces, favouring full scale Rock.

### Impatient

The 763i is certainly a lot better than I remember the standard 763; it sounds a lot more balanced, with a fuller bass and a deeper soundstage. Despite their weaknesses, namely splashy treble and a lack of finesse, these speakers still manage to hold their head high in other areas. They are dynamic, fast and energetic in a way that will suit Rock/Pop music down to the ground. Having said this, when you do feel like some slow or more moody music, they tend to spoil it slightly with an over enthusiastic, almost impatient attitude. All the same, for £299 you get a lot of loudspeaker and if the sound suits your individual and musical tastes then you may find these floorstanders offer great value for money. ●

## MEASURED PERFORMANCE

The new 763i shares the same new bass cone and tweeter found in its smaller stand-mounting brother, the 762i which is also a new release.

Frequency response has a two-hump characteristic, with the bass/mid-range peaking at 1.25kHz and the treble unit delivering strong output around 8kHz. There is a significant dip around 4kHz, almost certainly due to mismatching at the crossover point. This accounts for the divorced sound of each driver; speakers need to have a smoother response to integrate well subjectively. The peak of the treble unit will lend a treble sharpness to the sound.

Although the frequency response is not particularly even, it stays well within 3dB limits from 125Hz upwards, so at the price the 763i remains respectable in its engineering.

Under normal listening conditions the 763is will have a more extended bass response than that shown due to wall and floor reinforcement.

The impedance curve is fairly normal, peaking at 35ohms around bass unit and port resonance at low frequencies and falling down as low as 5ohms at high frequencies. Across most of the audio range, slopes are gentle, so reactance is low. The steep climbs and falls in the bass regions indicate that the load is reactive here, as always. The high overall impedance of 11.4ohms would suggest that the 763is are going to be an insensitive loudspeaker. However, at one nominal watt input (2.8V) they produced a high 89dB sound pressure level output.

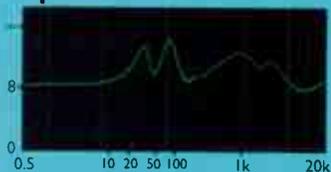
As a result, Mission's 763is will be easily driven by most modern amplifiers. I would recommend something in the 30-60W region as being more than adequate for the purpose. **DB**

### Frequency Response



Peaky response.

### Impedance



Overall impedance of 11 ohms.



**SPEED, NOT DEPTH**

In many ways I'm sure I'm one of your luckier readers. Good job, wife, child, own home and £2000 to spend on upgrading my sounds.

There are constraints though and now I need your advice on what to do. The constraints are as follows:

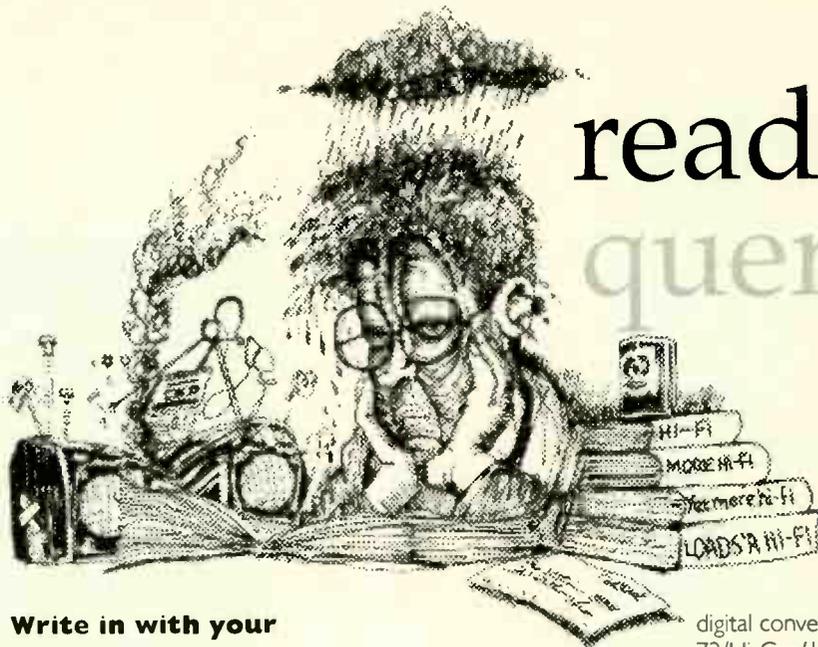
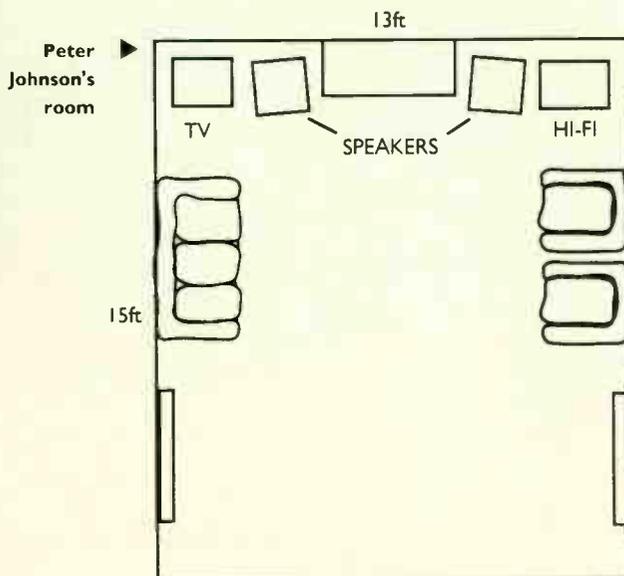
- a) My living/listening room is 15ft x 13ft with the speakers positioned 7ft apart in alcoves outside a brick fireplace.
- b) My wife thinks that all hi-fi should be invisible.
- c) The electronics need to be stacked on top of each other in a pine cabinet.

My present equipment is as follows: Denon DCD-920, Arcam BB3, Linn Intek, Rega Elas, plus decent interconnects. The sound is deficient, to my ear, in detail, excitement, tonal balance and speed. My tastes are anything melodic, soulful or driving. Jazz, Opera and electronic sampled repetitive crap are excluded! I usually play at low volume, but would like to be able to play loud too.

This brings me to the crux of the matter: I only have good hearing in one ear. Certain aspects of sound reproduction cut little ice with me. I want to hear all the frequencies at speed. Spatial information is important but terms like soundstage, focus and depth mean little to my ear.

For your information, my deafness cannot be corrected and adjusting volume or balance on quality headphones just leaves me dizzy. What should I do? Watch TV?

**Peter Johnson, Doncaster.**



readers' queries

**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.**

In our view much of your system is tilted toward sounding laid back, to put it politely. Whilst, say, an Ela might be a good foil to bright and dynamic sounding items feeding it, smoothing the sound out, putting this speaker after an Arcam Black Box 3 - known for its smooth

but laid back delivery - is unwise for the reason you have discovered. Even the Intek isn't the world's best of movers and shakers.

Our advice would be to replace the loudspeakers first. The diagram of your room and its dimensions suggest you want a loudspeaker that will work close to a rear wall, which cuts out many possibilities. Very speedy is a Linn Kan II, a miniature that will work close to a rear wall and match well with the Intek. You will get high, but not very high, volume out of it, since our tests show the Intek produces just 45watts (8ohms). It has a very good regulation though, giving double this power into a low load, so a KEF Reference 101/2 would get around 90watts from the Intek. It's a wall stander too, but although faster-sounding than the bigger Reference 'speakers, it is still smooth and refined, as well as being detailed. For a bit more bass extension, try the 102/2. I like both these speakers for their sense of balance, accuracy and refinement, but Rock fans might find them a bit mellow. And with the BB3 still in the system, you might still feel more speed and sheen is needed.

An alternative would be the Ruark Talisman. This is a speedy sounding floorstander that is within your price range. **NK**

**MORE FOCUS**

My system consists of a Meridian 200 transport/203

digital convertor for CD, Naim 72/Hi-Cap/140 through Epos ES11s on dedicated stands. Although the system produces a fairly listenable sound I feel it is a bit soft and laid back sounding. I am therefore looking to improve upon instrumental focus and separation, while hopefully enjoying a more upbeat, involving and musical sound.

Budget is up to £3000. Any suggestions as to possible solutions would be most welcome.

**S. Maclean, Ross-shire, Scotland.**

Both the Meridian 203 convertor and the Epos ES11s could be accused of being a bit laid back perhaps, although there is dispute about this in the office! The ES11s in particular are much respected, but I personally feel you might be finding them a trifle 'soft' and easy in their delivery if, as I suspect, you are the sort who prefers a sound that is hard and fast. If possible, try listening to the new Tannoy 605LEs. They are very fast, well defined, detailed and dynamic, although not especially smooth. Don't worry about the price drop; these speakers easily compete with models costing up to £1000 - that's just the way of things in the topsy-turvy speaker market. If it is money you want to spend, then seeing that you are close(ish) to Tannoy, who are in Glasgow, their new D700 'Definition' loudspeaker may be interesting when it is introduced early in 1993. I'm recommending Tannoy, by the

way, because generally their speakers are lively and offer the sort of sound you want, but they are also very well researched and engineered, and you should have no trouble in auditioning them. Also consider the KEF Q90. It's fast and punchy too.

To their eternal shame, Tannoy couldn't tell us Southerners where Ross-shire was, so we assume it is the Ross part of Ross and Cromarty, making Inverness close by. The Tannoy dealer there is Telly on the Blink (tel: 0463-233175). In Aberdeen it is Holburn Hi-Fi (Tel: 0224-585713) and John Lewis (Tel: 0224-625000).

Very come-at-you digital convertors are DPA Digital's I

components such as CD-I and DCC, which I hope to add later on.

I've been considering the Audiolab 8000A amp. Pioneer CT-91a cassette deck, Rotel RCD-965BX CD player and a Harman Kardon TU9400 tuner. I'm thinking about Tannoy 609, Rogers LS2a/2, Linn Helix II, JRT ADI micro, Epos ESI I and Royd Sintra loudspeakers. I will also require a couple of small boxes for the Dolby Pro-Logic. Am I on the right track? If so, what speakers would you recommend?

**David Peebler,  
London W1.**

Ah! Be careful here. If your previous cassette recorder was slightly out on head

to a few before making any decisions. The Tannoy 609s are good, punchy Rock speakers, whilst the Rogers LS2a/2s are more laid back and better suited to Classical. It's unlikely you'll like both equally. The Epos ESI I seems, however, to meet with wide approval, so you could more safely get it without demo. Although with Tottenham Court Road just a few minutes walk away, you're better off than most people to attend hi-fi demonstrations. Try a pair of Celestion Is as the rear speakers; they're superb and cost only £99 at the time of writing. **NK**

### HOT SOUND DOWN UNDER

Please could you help me. My system comprises a Meridian 200 Deltran'd to a Deltec PDM 2 convertor, which feeds a Deltec 50S preamp into two Deltec 50S power amps and Lowther Accolade 4 loudspeakers. I use Black Slink and S19 cables.

While the CD player was away being Deltran'd and the 50S preamp was having a tweak performed by Deltec (gain reduction to lessen hiss through the ultra-sensitive Lowthers), I used a home made passive preamp with a cassette deck and tuner. Like this, I found the sound stage quite fantastic, with the impression that sound was coming 3ft from outside the speakers, and which included incredible depth.

Having received the CD and preamp I found to my dismay that the sound stage has shrunk in all proportions; it now comes within the space of the loudspeakers. What preamps could I use to maintain this huge sound stage? I have considered the Tube Technology Prophet, Roksan, Concordant Excelsior, conrad johnson PF1, the Sonic Frontiers SLS2 or the Argo pre and separate power from Michell Engineering. I am willing to spend up to £1500. I know

that Deltec amps are capable of an incredible sound stage, what's your highest recommendation?

I am also considering upgrading the loudspeakers to the Impulse H2. Also, could you explain the pros and cons of active and passive preamps; which is better?

The overall sound is very good. However, I find the top notes of piano, sax and vocal sometimes make me cringe - just for a second. Perhaps a valve amp would do the trick, using third harmonic distortion to soften the highs. But can a valve amp have the same clarity and timbre, without spending thousands?

I think the speakers are not for the system, they seem to go almost one octave too high. Other speakers I have liked are the ribbon Apogees, but they needed a lot of volume to get the bass working. I prefer to listen at low volumes. Or how about the Quad ESL-63s?

I'm looking for a sound that's engaging, a sound that floats out at you, but is not driven at you. My current system is definitely not engaging or really emotional.

I cannot get all your mags out here in the Aussie bush. Is it possible to send a reply by Kangaroo, or to my sister in



For a 'fast' sound, try the Tannoy 605LE.

somewhat repeatedly recommend. In your price range a PDM 1 Series 3 sync locked to the transport would be suitable. The transport can be Deltran'd by DPA (tel: 02220-795621) to provide the necessary sync facility. **NK**

### TAPE TO CD

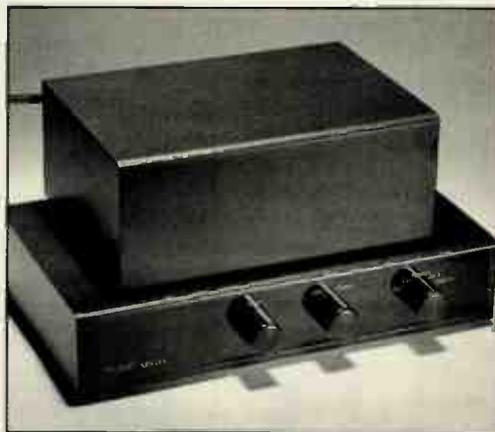
I have been a closet audiophile since growing up with my father's top-of-the-line system, but have not yet gone past a portable component system with dual cassette. Hence I have amassed a 1000+ music cassette library. I am finally ready to spend around £2000 on an amp, CD player, cassette deck, tuner and speakers.

Power is not a primary concern as my current listening room is 20ft x 14ft with fussy neighbours. I do, however, want the best quality sound from my tape collection as I begin the crossover to CD. The amp must aptly handle a Dolby Pro-Logic decoder and other digital

azimuth alignment, all those 1000 recordings could sound incredibly dull on any new deck (even prerecorded) can have the wrong recorded azimuth). For you, replay quality is surely going to be important. I would suggest you get a deck with Play Trim, like the NAD 6340 or a Yamaha KX-650. Both will compensate for treble loss due to azimuth and replay equalisation differences. Alternatively, you could look at a Nakamichi Cassette Deck 1, costing £600 and fitted with user adjustable replay head azimuth, but it is a bit out of your price range.

Or why not forget CD and conventional cassette and go straight to DCC? It will play your old cassettes well and you'll be able to buy prerecorded tapes that sound almost as good as CDs.

The speakers you list vary wildly in their character, so beware. You'll need to listen



Positively spacious: the Michell Argo pre-amp.

Avon? I'm not an Aussie by the way; I've just emigrated. Phew, it's hot here. What I'd do for a walk in the cold drizzle!

**C. Lamb,  
Thora Valley,  
Bellingen,  
New South Wales,  
Australia.**

Are you sure the heat isn't getting to you? I am very suspicious about the sound

Continued on page 62...

An accountant by profession and Jazz collector by preference, Jan Diakow lives in one of those West London flats carved out of enormous Victorian houses. High ceilinged, with wide panelled doors, it's the sort of place where you half expect the ghosts of butlers and maids to roam. Unexpectedly, his flat is also home to a different kind of remnant of the past, brought well into the Nineties.

The primary source is for playing an enormous collection of Jazz and Blues records - including the entire Blue Note catalogue, lovingly put together since 1979: it is a Garrard



## Reader's System

**After a long search, accountant Jan Diakow has discovered an ideal system for his vinyl Jazz collection. He accounts for his taste for a re-built Garrard 401 and a mixture of new and old valve equipment to Eric Braithwaite.**

401 with an SME V arm and Van den Hul MC10 cartridge. Amplification is a Croft Super Micro A - modernism again - feeding a pair of Leak TL12s. Cassette, for giving friends the opportunity to hear some of the great rarities of that collection, and for off-air taping from a Creek tuner, is a Nakamichi RS-202, the auto-reverse deck that physically spins the cassette around like a ballet dancer doing a pirouette. Compact Disc doesn't figure; it's too hard, too cold against those superb Fifties and Sixties vinyl recordings, Jan said.

"I've got the advantage of not being involved in hi-fi," he said; "ask me anything about a Coltrane record, at any period, I'll tell you - but hi-fi's not something that really interests me." So how did a classic retro-cum-modern system come about?

"I started re-building my Jazz collection about 1979, and it got to the stage where my wife said 'Look, you've got to get something decent to play it on'. At the time I had an old Thorens. I made the mistake of going to a certain London dealer; I ended up with a complete Linn system."

Was this a mistake?

"It took months to get it right - it was really solid in the end, but it never seemed to have body, or the bass I wanted. Everybody's such a big talker in the hi-fi industry; just look at X and Y's literature - they claim they own the world! Then The Comflake Shop gave me an A/B test with a Roksan - I had a Naim (a big one, I can't remember what it was) and Linn Kans; it was all right."

"Then a friend - we had a mutual interest in Jazz - brought me a valve amplifier, a Radford - and suddenly the sound was what I wanted. It was a revelation. I'd worked at Imhof's in the Sixties, and that reminded me of

the sound I'd heard in their dem rooms." Momentarily, we strayed as Jan's friend Dave - "the one who knows about hi-fi" - delved into various "raves from the grave" - including the problems of building a new circuit board for the Radford after watching the original disintegrate, and of trying to change all the resistors for Holcos.

Eyeing the Croft pre-amp, I wondered if it had been tweaked too. Certainly it had - Holco resistors and Sfernice pots replacing the standard components. It's a pity, but the tale of building a loudspeaker which combined 15" JBL units and a Kelly ribbon tweeter will have to wait for another time. All this had obviously been infectious.

### Pining for Valves

In the meantime, as the borrowed Radford underwent a lengthy restoration process, Jan was pining for the valve sound. "I was short of money, so we shopped around and bought the first Croft pre-amp; Dave did things with that; I've no idea..." The answer: "For some reason they put insufficiently high voltages on the cathode follower, which heats up and makes rustling noises. I changed those, got rid of the noise, put in new volume pots..."

"Why it should have, I don't know, but it gave more separation, and a cleaner sound," said the owner.

"... then we changed the pots to Sfernice."

"That made an enormous difference," Jan remarked.

"... and changed the caps to Sidereals, and the valves. It sounds like a different pre-amp," added the accountant.

"I like the Croft sound, but that's the weak link in the system at the

Chosen for the sounds of Jazz: DCM Timewindows, imported from the U.S.A. by Absolute Sounds in the Eighties when the price was around £700.



moment. Then I started to build up money again. When I came back into Jazz, I made myself the same promise about hi-fi as well - that I wouldn't say I liked anything if I didn't, however fashionable. I've kept that promise."

We turned to the loudspeakers, an imported breed I'd only occasionally heard of. "When we did a test against quite a few other pairs, even though the others were probably more accurate, these just brought the music to life. So we had that part of it, the arm was from the old days, Dave was re-building his Radford, but he had these Leaks. With a bit of reluctance he agreed to sell them to me."

"I wasn't sure they'd handle the bass he wanted," Dave added, "but, even at twelve watts, they did, surprisingly."

The sound Jan was after was quite specific. "Firm, where you can hear the wood of a double-bass. That's important to me." And, I said, difficult to achieve. "So I began to understand; why can't it be done on a fifty-pound

time involved, but this was that price originally; I can't complain, I've had it for a few years now." We were side-tracked into talking about the merits of the Sumiko Blue Point, among others: "That's what there's a call for, a cartridge around two hundred or less that performs brilliantly."

However, back to the history of Jan's system; failing to track down a Garrard 301 - which he remembered from the Sixties - he settled for a 401 which has been re-built by Martin Bastin in Wolverhampton. "We went up there and had a delightful day. He's a genius. We came back, played it - and it was definitely what I wanted." There's been a certain



Right: The heart of the system; Croft valve pre-amplifier, Creek tuner, Nakamichi cassette deck and Leak power amplifiers below.



Centre: A classic Garrard 401 turntable, re-built by enthusiast Martin Bastin complete with SME V arm and Van den Hul cartridge.

player? Anyway, I couldn't believe it when the Leaks came round. Then there was the opportunity to buy the Croft Micro Super A - but I wish now I'd bought a Concordant. I liked that."

There's even a story behind the head-amp for the moving-coil cartridge that is hidden behind the Croft. It uses a pair of Tim de Paravicini transformers originally destined elsewhere, until the customer changed his mind. "It's better by miles than the others I heard."

Both the SME V and the Van den Hul had been kept from the first system; the cartridge has been re-tipped. "I'm told there are much better cartridges, but I like the sound of this. It cost me a hundred and fifty quid just to have it re-tipped. It's one thing that annoys me, the price of cartridges. I understand the amount of

amount of tweaking, with RS Data Cable and WBT-type plugs between pre and power amplifier. "Not so long ago you used to run speakers with a bit of lamp cable. As a layman what surprises me is the difference these small changes make. It's like magic to me. All the time we're getting nearer to the sound I want."

"The old stuff is way better. Somebody showed me a Zarathustra; we played a Lee Morgan record. On the Roksan it sounded good, but on the Zarathustra the air and space around the instruments was so much greater it wasn't true; that was an education. But it's expensive, beyond my league; what I've got here, for far less money than I paid for my original system, is a different ball-game - oh, ten times better. I have the space around the instruments, the depth,

the clarity, the 'realness' - I want to hear real wood when it's wood, where you hear the sustain, where you hear the bow against the violin, all those things. There's an Eric Dolphy record, a brilliant recording, where you can hear him wagging the keys, the pads, and the water on the pads - if you're a horn player you'd know what you're listening to. I never thought I'd have that."

It's certainly all there. While I've heard unregenerated Garrards, I've never heard one in full flow with a top-ranking SME. Despite the Croft preamp and the speakers being a little out-classed, the wealth of detail,

the sheer 'liveness' of saxophones, the energy of crumming and the superb physicality of vocalists - let alone an apparently full-sized double bass out there on the rug before the speakers - was remarkable.

### Liveness and Energy

I eyed Jan's Jazz and Soul collection with a distinctly envious eye. "I suppose it's on four hours a day," he said, with evident enjoyment. I was disappointed at having to leave: that thousand-strong collection of Jazz on Blue Note could have kept me wallowing in the rich atmosphere for weeks. "Watch this space; it could be even better in a couple of years," said the man who had claimed to have no interest in hi-fi, but had ended up with an extraordinary mix of old and new, perfectly tailored to his music ●

Note: more on Martin Bastin & 401s next month.

Continued from page 59

stage being wide from cassette and tuner, yet narrower from CD. I strongly suspect you had the channels connected out of phase with your own set up, since this

They provide astonishing imaging, even by panel speaker standards and I'm pretty sure, from your description, that they will provide the sound you are looking for. But being a very distinctive sounding speaker,



An easy, engaging presentation from Sugden's SDA-1 convertor.

gives a wide, ethereal sound, but also one that is somewhat vague.

I've heard many, many preamps in my time and few have been any good. Many people in audio have noted how preamps can be subtle in their degradations, yet crucial in their emotional impact. The two preamps I rate are the Deltec you own, and the Michell Argo. The Deltec is light and ultra-clear; the Argo is positively spacy. I strongly suspect that you'll progress backwards if you are not careful.

If you are already suffering from the heat - and boy do I know how hot Aussie can be - is a valve amp an appropriate choice? Try and recreate that extra wide stage you liked so much and find out why it existed. You could possibly use a passive preamp in front of the Deltec power amps, but I doubt if this would be any better. As I said, changing preamps will not offer a solution.

The Deltec PDM 2 is one of the best convertors I have ever heard, but it does drive the sound at you. A Sugden SDA-1 has an easier and very engaging presentation. For low level listening, Quad electrostatic loudspeakers are superb, because they do not suffer the stiction and level dependent non-linearities of box-and-cone loudspeakers.

I'd urge you to try and listen to them first.

It's just rained for the last two weeks, almost without break. Are you sure you'd like the drizzle? I was thinking of emigrating. **NK**

#### LOOKING FOR NIRVANA

Help! Where do I go from here in my ascent of the ladder to audio Nirvana? Present system: Meridian 200 CD transport/Micromega Duo BS DAC, Beard CA35/P35 MkII valve amps, Ruark Talisman loudspeakers. Cables are all Audioquest: Digilink Pro, Quartz interconnects, Midnight speaker cable (bi-wired). All equipment is housed in a timber open-framed tower unit which can't be changed but I've experimented with various feet for individual components and obtained a satisfactory result.

Listening room is a problem due to size - 13' long, 8' wide, 7'6" high - the only place for the speakers is at one end about 1'6" from the rear and 1' from the side walls. Floor is solid and carpeted, furnishings are a 50/50 mix of hard and soft but minimal.

How does the music sound? Great, but I want more of the same! My taste is broad, from medieval to light rock but not metal, house, rap etc.

Accepting that I will never achieve a realistic soundstage

with anything other than small-scale works due to room restrictions, I'll opt for sound quality (at fairly high levels) as the priority. I'm very happy with the valve sound that I have, but heat output is already a problem, so I'm considering the following upgrade path: keep the Meridian 200, replace Micromega DAC with either Deltec PDM One Mk3 plus Deltran or Audio Synthesis DSM Ultra Analog, replace Beard pre/power with Concordant Exquisite (or maybe a Croft?) pre-amp and Musical Fidelity A370.2 power amp.

I feel that 'bookshelf' loudspeakers are appropriate so Sonus Faber Electas or ProAc Response One S on Slate Audio stands (with a Richard Lord subwoofer?) may be suitable. Am I on the right track or have I lost a wagon somewhere down the line?

Budget is open-ended and so are my aspirations, but keep things sensible. Wadia/Audio Research/Extremas would be lovely but unfortunately I don't own Westminster! I await your comments and suggestions with a half-full chequebook.

**David Church,**  
Enfield,  
Middlesex.

At the moment your CD Transport and DAC are not exactly complementary. Replacing the DAC with a PDM One Mk3 plus Deltran or the Audio Synthesis DSM Ultra Analog may improve the sound but I would consider it to be more of a step sideways.

A far more sensible and beneficial approach would be to go for either the combination of DPA Digital's T1 transport and the PDM One Series 3, or the Micromega Duo transport with either the new Duo BS convertor or the Duo Pro.

If you choose the DPA set up, which is sync locked, the transport and DAC work best when the electrical, coaxial connector is used and the whole CD player combination is fed from either one or more of DPA's RF noise filters.

The Micromega combination also requires some attention to detail. The transport must sit on a heavy slab of slate or something similar to enable any vibration to be sunk away from the

mechanism. Again it is mainly fussy so RF filters and high quality mains cable are essential.

Both combinations will benefit from good interconnects and I would recommend DPA's Black Slink for use with the PDM One and either Audioquest or Furukawa for the Micromega. As an electrical digital interconnect I would recommend trying Campaign Audio Design's Silurian cable which is a modest £45 for a 1m length.

As far as we are concerned, the high end bargain of the year has to be the Michell Argo and Alecto pre/power. I am struggling to find something else to recommend as an alternative because the Michell is so competent. However you may like to try the DPA 50S pre/power with the DPA front end which will provide a slightly faster and lighter balance.

Your room really is small but there are still a few very high quality loudspeakers that you should try with the above source/amplifier combinations. Perhaps the best compact loudspeaker for your room would be the Ensemble PAIs or better still, if funds allow, the PAI Reference. Both of these should provide a superb soundstage even given the modest size of your room and a massively detailed performance.

If both of these don't agree with either your wallet or taste then try the Harbeth HL-P3s. These are basically derived from the BBC LS3/5a but build further on their strengths and deal with some of their weaknesses.

Whatever you decide, make sure that you audition all of the choices carefully in a relaxed atmosphere, preferably in your own listening room, as this is a lot of money to spend and you don't want to get it wrong. **DB**

#### STARTER FOR GOLD

I recently acquired a Radlett modified Leak Stereo 20 Gold to go with the rest of my system, which comprises Alphason Sonata, Xenon MCS turntable/arm, Goldring Eroica L cartridge, Rotel 955AX CD player and a pair of Heybrook HB1s which have been modified to Series II specification, together with an Arcam A60 amplifier. The equipment

is sited on two Target tables and some solid pillar stands for the speakers. The latter are connected with Linn K20 cable.

I am looking to replace my speakers and wondered whether a pair of Rogers LS3/5as or Quad Electrostatics (if I can find any) would be effective when driven by my low power Leaks. I understand the LS3/5a design is inefficient, but doesn't present a formidable load (11ohms?). As I don't listen to music very loud I thought they would make a good match.

Would a Croft Micro A be a good preamp match for the Leak? Could you suggest alternatives?

Would an off-board DAC improve my Rotel?

I recently moved to a new home. Unfortunately, in packing my Alphason turntable, I managed to bend the arm lift upwards somewhat. This happened when I attached the transport board to the subchassis to stop the latter floating. I forgot to first remove the arm. Although I cannot detect any audible deterioration in sound quality I wonder whether I should have it checked none the less.

Lastly, I have an offboard Alcaeus power supply for the Sonata. Bearing in mind the rest of my equipment, would an upgrade to an Atlas be worthwhile?

**Mike Dennis,**  
**Horsham**  
**Sussex.**

As they say, to begin at the beginning, the original Quad Electrostatics will perform well with the Leak. Richard Kelly, one of our contributors, uses the combination. Since you don't listen to music very loud, so should the LS3/5as. Both benefit from using the different taps at the rear of the Leak, though Richard Kelly and I found when experimenting one evening that though the sound and staging alters somewhat, it is hard to make a once-and-for-all recommendation. We couldn't finally make up our minds.

If you wish to peruse the second-hand market, both the ESLs and LS3/5as are frequently advertised, the former from around £250, the latter from around £180. Also sometimes to be found in the classifieds are the Gale GS301

which one of our readers has commented on as a good match for a Stereo 20, providing high volumes aren't required.

While the Croft would also perform, I would also advise an audition of one of the Concordant range and another valve pre-amplifier which I had heard briefly at the time of writing. This is the Rose RV-23S, which struck me as very detailed and clean, as well as being well-built. They would be a considerable improvement on the pre-out section of the A60.



What loudspeakers would suit a re-built Leak?

How did you manage to bend the arm-lift? Having had one myself, I suspect you may have applied more force than you think. However, since, as I recall, on this model the arm-rest also rises, as it were, I think that the bearings are unlikely to have been stressed. If you re-balance the counterweight (removing the thread-and-weight bias contraption - under a strong light, preferably, since the thread is so thin and near-invisible) so the arm floats with zero tracking force you should gain an idea. Providing your turntable is level, the arm should stay horizontal wherever it's put, and touching it with a thin piece of notepaper should set it gently swinging laterally and vertically with it taking a little time to come to rest. If it seems sticky, or needs more than a feather-light touch to move it, then have it checked.

Finally, I have become a convinced proponent of good turntable power supplies. The better they are, the better the whole turntable sounds, even

though, as one designer said to me "all they do is turn the motor at the right speed." All the same, the better the cartridge, the more defined is the improvement, so I would be tempted to upgrade the cartridge first - the Lyra Lydian or Sumiko Blue Point should beckon.

Finally, an outboard DAC. Here, I suspect, the answer is probably "No", bearing in mind that most DACs are priced at around £500, and the effect of adding one on to a player rather than a transport can be unpredictable.

Unless you are planning on buying a transport in the future, I would suggest you tread cautiously, auditioning first the QED Digit with your Rotel. If this doesn't make a marked improvement, then I would suspect the higher-priced models won't either.

**EB**

#### AUDIO CONVERT

A few months ago I read an advert in a British Hi-Fi magazine of a company which offers a conversion service on Audio Innovations 500 amplifiers, making them work in triode mode. I also remember that it said there Audio Innovations would approve this conversion, so that it doesn't affect the guarantee. My problem now is that I would like to contact this company to get more information (delivery period, price, etc.) but can't find the ad. Can you tell me their name and address?

Please don't care about German hi-fi magazines in any way (Noel Keywood's Kaleidoscope, November issue). After ten years with hi-fi as a main

hobby, the only magazine left I read is a British one which arrives in German shops with a delay of four weeks and is more than twice as expensive than any German mag. It's Hi-Fi World, because hi-fi is taken seriously as music reproduction.

Have you heard of Sicomin 'Kevlon' valve rings (distributed here by Audioplan)? Of all tweaks I've tried so far, the only one which led to no discussions, just open mouths.

Still looking for the ultimate jazz-rock record? For me it's Fowler Brothers' Breakfast for Dinosaurs (Fossil Records, USA, FBR 1002). Excuse me for doing 'missionary' work, but since 1988 I really haven't heard any better music of this style.

**Markus Lier,**  
**Bochum,**  
**Germany.**

The modification to the Audio Innovations 500 is performed in the UK by the company itself, Audio Components Ltd. in Weymouth. Readers will be interested to hear that the changes, which are not actually a true triode output stage replacement, but make the pentode simulate a triode, can be done to new units on purchase. Older units can be modified for a cost of £45 (in Britain) including carriage and VAT. The German distributor, who should be able to perform the modification of Audio Innovations amplifiers is, ironically enough, Audioplan in Ecke Kolpingstr. 7502 Malsch, Tel. (local) 497-2461751. In case of difficulty Audio Components' address is:

**Audio Components Ltd.,**  
**Albany Court,**  
**Albany Road,**  
**Granby Industrial Estate,**  
**Weymouth,**  
**Dorset,**  
**United Kingdom,**  
**DT4 9TH.**

Though I haven't heard the Sicomin valve rings myself, I have heard very good reports of them; Breakfast for Dinosaurs I haven't heard of. Maybe I'm living in the Pleistocene Age. I shall consult Simon Hopkins. **EB**

Continued on page 64...

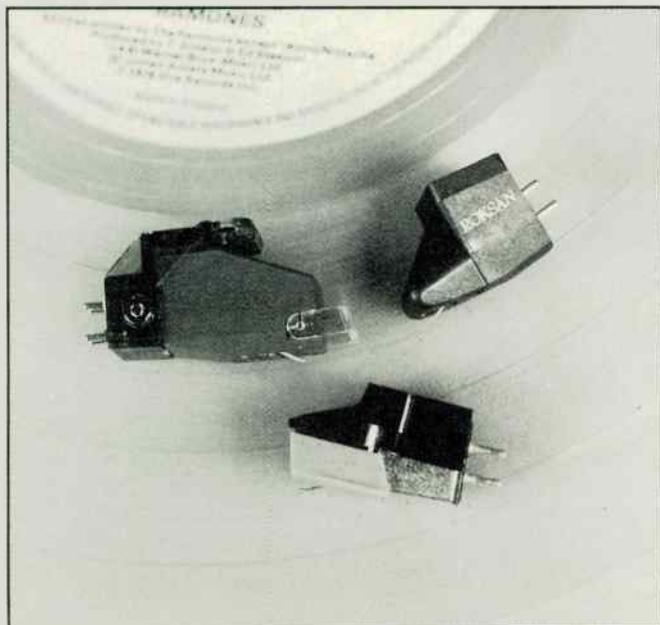
# REPLACING THE K9

**A popular record deck combination of a few years ago was the Linn LP12 turntable, with Linn arm - often an Ittok - and a Linn K9 cartridge. Now, as all those K9s start to need replacement, we are getting numerous requests for alternatives. What do you replace a K9 with?**

## Question

*"My system consists of Linn LP12 Ittok, K9 cartridge, Audiolab 8000A (recent) and TDL Studio 1 'speakers. The sound is pretty good, with plenty of bass, which I like, but it is a bit lacking in excitement and involvement. This is most noticeable on the phono input. Can you recommend a more exciting cartridge, as I like the facilities of the Audiolab and the bass of the TDLs?"*

*N. Odgers,  
Falmouth,  
Cornwall.*



Thinking of changing a K9? Which cartridge would you choose?

The Linn K9 moving magnet cartridge is very similar to the Audio Technica AT95E (see Fig 1 for frequency response). To be quite frank, neither are our favourite cartridges. Properly loaded (just 120pF capacitance or so) they sound somewhat hard across the mid-band, splashy and coarse in their treble and a little anaemic in bass output. However, tracking is excellent and distortion fairly low. Like Mr Odgers though, many readers are dissatisfied and want something better. What choices are there?

'Phoning around brought forth the news that Nagaoka and Glanz cartridges are soon to depart from this mortal coil. That leaves us Goldring, Ortofon, Audio Technica and some lesser players, like Sumiko and Roksan, all offering alternatives. Let's consider what they have to offer.

Ortofon's 500 Series moving magnets generally offer a brighter sound and it seems from our mail that most K9'ers are not looking to move in this direction. I'll assume that all those who are happy with their K9s will either upgrade to a K18 or get a new stylus assembly for the cartridge they've got. Personally, I feel those wanting to stay with Linn but are well oiled could well consider the new moving coils. Although I'm no fan of the K9 and its brethren, I have always loved the Linn moving coils, but the price step up is enormous of course.

And a preamp for the MCs? Linn amplifiers, not unsurprisingly, have good moving coil stages. Otherwise, the Michell Iso head amp matches in all respects, including sound quality. Another fine cartridge preamp with MC sensitivity,

plus equalisation, was made by Deltac (now DPA), but this has been discontinued. Some samples may still be available.

A commonly recommended alternative for the K9 is the Roksan Corus Black (£120) moving magnet cartridge. It is a modified Goldring. Loaded with 200-300pF maximum this unit gives a frequency response (Fig 2) much like that of the K9. In use I find it has a similar basic character, sounding light and yet detailed and clear, unlike ordinary Goldrings, which have a fuller-bodied sound. However, the Corus Black is a sweeter sounding cartridge than the K9, with purer treble and slightly more emphatic bass. It sounds more refined and tests show that it tracks very well and possesses low distortion, so it is competent all-round. The Corus Black is a good step up, but not one that will produce a culture shock.

### Sumiko

The other cartridge that gets repeatedly mentioned as good in its own right and an appropriate replacement for the K9 is the Sumiko Blue Point (£99.95), reviewed in the October 1992 issue. I measured and listened to a second sample for the sake of answering this query; what I found was interesting. As the frequency response (Fig 3) shows, the Blue Point is also similar to the K9 in that there is little upper mid-range droop, plus a small treble peak. The former trait usually makes a cartridge sound forward and somewhat bright; the trick is to ensure that it doesn't also sound hard or unpleasant.

This is one area where the Blue Point scores: it has some of the qualities of a moving coil, sounding clear and lucid



Roksan' Chorus Black, one possible upgrade for a K9.

across the mid-band, but not hard. I thought that its upper treble was a bit laid back and diffuse, seemingly eclipsed by upper mid-band information. That's no bad thing however. Bass seemed on the so-so side too, being none too prominent, at least with the SME309 plus Systemdek IIXE I used, feeding a Deltec preamp stage. I can see why the Blue Point is a recommended K9 replacement; it really does offer a similar basic tonal balance but it is a good step up in quality terms, offering some of the transparency of a moving coil cartridge.

"But it is a moving coil!" some of you might be spluttering. Whilst the answer is of course "Yes" (it's a high output MC), I am loathe to use the description, with its associations of quality, for a high output moving coil designed to act as a moving magnet design, feeding an MM input. The reason is that most don't sound anything like a good conventional MC, often

sounding worse than a good MM, but without the tracking ability.

The Blue Point is an exception. Tests showed that it has superb tracking ability and that, having a low-ish impedance generator system, it also has the advantage of being load insensitive. This means the cartridge will sound the same whether it is feeding 100pF of input capacitance or 400pF, values I applied in frequency response tests. This makes it very insensitive to operating conditions, enhancing compatibility.

Also, low generator impedance reduces preamplifier input noise, so although output is a little lower than that of a typical MM, amplifier hiss is also lower, increasing dynamic range.

I ought to point out that, good as it is, the Blue Point does have some peculiarities. It's been designed for P-Mount use (heaven knows

why!), making it long in the body and a tight fit in most UK minimalist headshells. Like all MCs it does not have a user removable stylus; bend it and you have to send the entire cartridge back to the importers. Finally, in spite of learned dissertations upon stylus rake angle and vertical tracking angle (American obsessions) in the owner's leaflet, Sumiko have mounted the Blue Point on an insubstantial plastic bracket. If this cartridge had better location it would probably have clearer and more positive bass, like the magnesium-bodied Arcam P77 Mg or the Poca-bodded Goldring/Roksan cartridges.

All the same, I spent many happy hours trawling through lots of old records with the Blue Point. It got some good but difficult records right, like John Fogerty's 'Centrefield', which can sound unpleasantly bright, but which with the Sumiko just sounded crystal clear and thoroughly enjoyable. Fogerty's wry lyric, alluding to Watergate, that "the

Sumiko Blue Point; another K9 replacement.



### Frequency Response

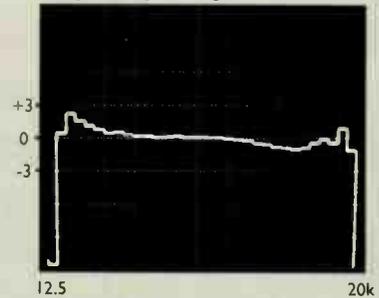


Fig 1 - The AT-95E is very similar to the Linn K9 and could be used as a replacement. Both have well maintained upper mid-range output, seen at right in the trace.

### Frequency Response

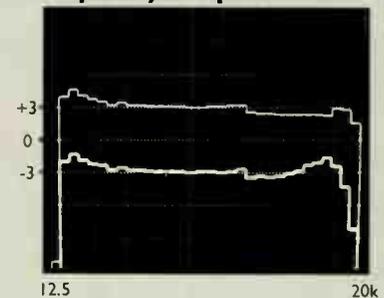


Fig 2 - The Roksan Chorus Black has a frequency response and tonal balance much like that of the K9, especially when loaded with 200pF input capacitance (lower trace). The upper trace is with signal lead capacitance only (150pF).

### Frequency Response

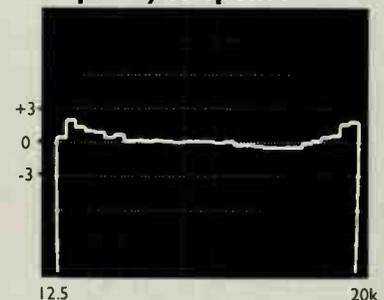


Fig 3 - The Sumiko Blue Point has well maintained upper mid-range output, shown here, plus a slight treble lift (at right).

light at the end of the tunnel was nothing but a burglar's torch" snapped through clearly. It is meant to, and this is where a good cartridge scores: it should convey musical intent, and the Blue Point does so. It is an excellent upgrade for the K9 and, generally, a superb cartridge with a raft of unusual strengths. **NK ●**

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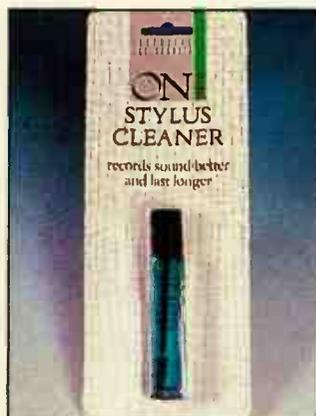
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accessory offers



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Record storage cubes



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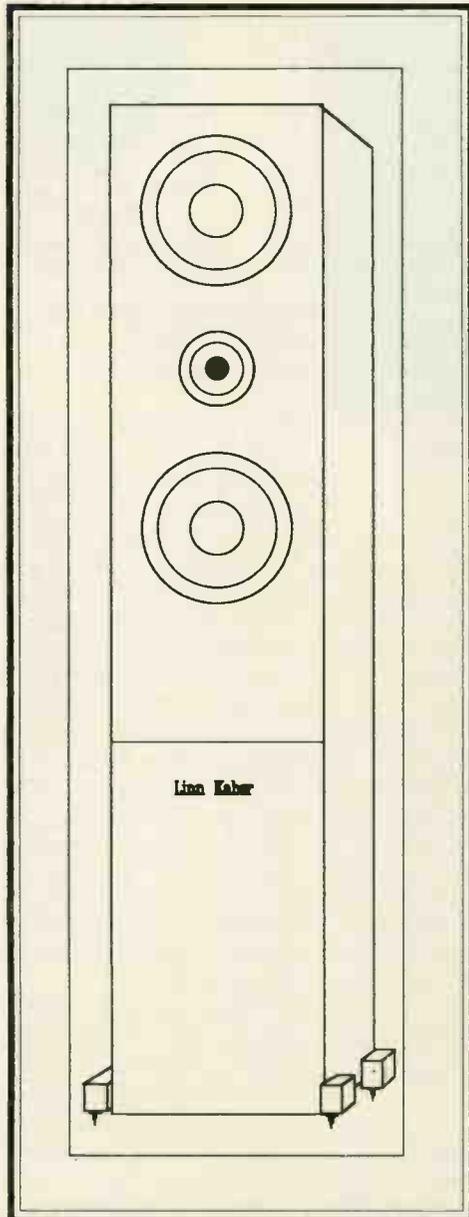
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# The Music Was

Edited by  
Eric Braithwaite

## INDEX

### RECORD REVIEWS

#### ROCK & POP ..... 72

Theresa Bolter

Giovanni Dadomo

Malcolm Steward

#### JAZZ

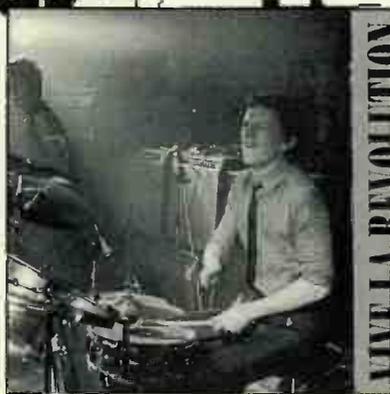
Simon Hopkins ..... 76

CLASSICAL ..... 81

Peter Herring

#### RECORD MAIL ORDER

..... 83



### JOHNNY THUNDERS Have Faith FAN CLUB 109

● The late Johnny Thunders (exeunt under mysterious circumstances in a New Orleans hotel room early last year) was one of the legendary hearts of Rock n'Roll. A shamelessly self-confessed heroin addict, his live performances plumbed the ridiculous and soared to the sublime. As the lead guitarist of the lately legendary New York Dolls and in his topsy-turvy solo career, Thunders was an errant vocalist, specialising in distinct New York snottiness (witness especially his own collection of covers, Copycats, alongside fellow Mean Streets whiner Patti Palladin) and a wild and dirty guitar player ranking alongside Link Ray or even Bo Diddley as one of the most imaginative naifs of his generation.

Thunders' post-Dolls work, erratic as it was, did not lack its golden moments: his band The Heartbreakers (minus founder-member Richard Hell) taught London's punk aristocracy how to play, and his solo album *So Alone* (1978) remains a benchmark example of crazed decadence. This live selection, recorded in Tokyo in 1988, shows Thunders at his best and worst, from old stand-bys such as the classic R n'R instrumental 'Pipeline' to the confessional Heartbreakers ditty 'Too Much Junkie Business'. Best of all perhaps, the perennial favourite 'You Can't Put Your Arms Around A Memory', the classic ballad written with another warped legend, The Only Ones' Peter Perret. **GD**

### LEONARD COHEN



### THE FUTURE

### LEONARD COHEN

#### The Future

COLUMBIA CK 53226

● Forget about Morrissey and Nick Cave, old Len Cohen's been speaking for the peed-off bedsit singles generation since circa 1966. They say you can't teach an old dog new tricks, but this old dog's been barking up the right tree for over a quarter of a century and he's been back on form since the *I'm Your Man* album of a couple of years back, not to mention the resurgence of interest brought about by Jennifer Wames's excellent album of covers *Famous Blue Raincoat* of a couple of years before. Like a lot of persistent old-timers, Cohen's also been the subject of a Various Artists tribute compilation - also entitled *I'm Your Man*, funnily enough, and featuring such luminaries as the Pixies and - natch - the ever-persistent REM.

Cohen's perennial concerns are again present on this new long-player - Fascism, warped sex and his distinctive blend of modern Romanticism; I mean, who else could get away with a line like "Give me crack and anal sex"?

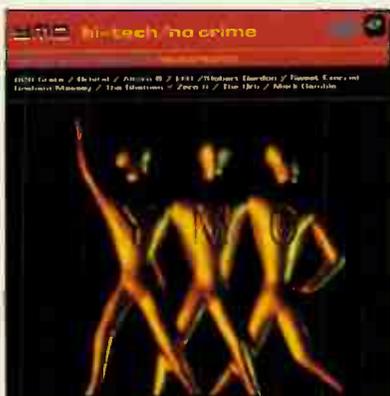
The aforementioned Ms Wame is a prime secondary vocalist on this new collection, while guitarist Dean Parks illuminates even Cohen's darkest broodings (i.e. 'Democracy', the sour-sweet 'Waiting For The Miracle'). Cohen even takes time out for a rare cover version with Irving Berlin's 'Always', which he imbues with a typical sense of darkness and dismay. And don't miss out on 'Closing Time', as grimly fiendish a chortle as ever hit vinyl. New songs for the old ceremony, like Kenny said before, but such style, what admirable panache. Listen and grow. **GD**



**DIE KRUPPS  
A Tribute To Metallica**

● Tribute albums have become a minor industry over the past couple of years, with everyone from The Beatles (the grossly uneven 'Sgt. Pepper Knew My Father') to cult figures - Syd Barrett, Roky Erikson - and minor figures such as Dylan, Neil Young and Leonard Cohen (q.v.) getting the treatment. On the face of it, Metallica are hardly prime subjects for such an accolade, for all their pompish virtues.

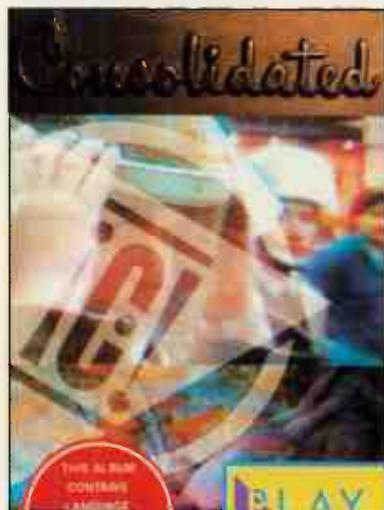
How this particular disc came about is that Deutsche Electro experts Die Krupps did a cover of the band's 'One' on the album of the same name, largely as a result of collaborations with local Thrash band Accuser. Now comes a darkly brooding interpretation of a quintet of Metallica items lead by the mastery guidance of vocalist/synthmeister Jurgen Engler. It's a bizarre blend of Metal and Electro but it works. Check the satisfying 'Nothing Else Matters' for starters. A mind-jangling experience. **GD**



**YELLOW MAGIC ORCHESTRA  
Hi Tech No Crime  
INTERNAL TRU CDI**

● Call it a mixture of techno-fear and xenophobia, but Japan's Yellow Magic Orchestra never really got the acclaim they deserved. That is, outside of Ryuchi Sakamoto's participation in the movie Merry Christmas Mr Lawrence

alongside YMO fan David Bowie, both as a player and provider of the sublimely moving theme music. This obviously hasn't prevented the Techno avant-garde/cognoscenti from being hip to their influence, as this selection bears ample witness. It's a bag of remixes with virtually every major current name taking a turn at the mixing desk, i.e. The Shamen livening up the aptly-titled 'Firecracker', Orbital joining the band in 'Behind the Mask', 808 State helping re-illuminate the opening 'Light in the Darkness' (two versions already!), 'Tong Roo' - delightful - c/o The Orb and Altam 8 re-vibing 'Multiplies'. And that's just about the half of it. This sounds as (re-)refreshing as it did first time out; better late than never, but this is definitely music which - like Ridley Scott's Blade Runner perhaps - just keeps on a-coming. **GD**



**CONSOLIDATED  
Play More Music  
NETWORK D30865 1992**

● In an era of increasing conservatism, rising neo-Fascism and erosion of civil liberties (e.g. abortion rights and the return of death sentences) American trio Consolidated bring a message of hope through the most immediate and accessible medium of rap. Their message is directed at a society guided by misplaced ethics and ignorance; everyone and everything is under scrutiny including Consolidated themselves.

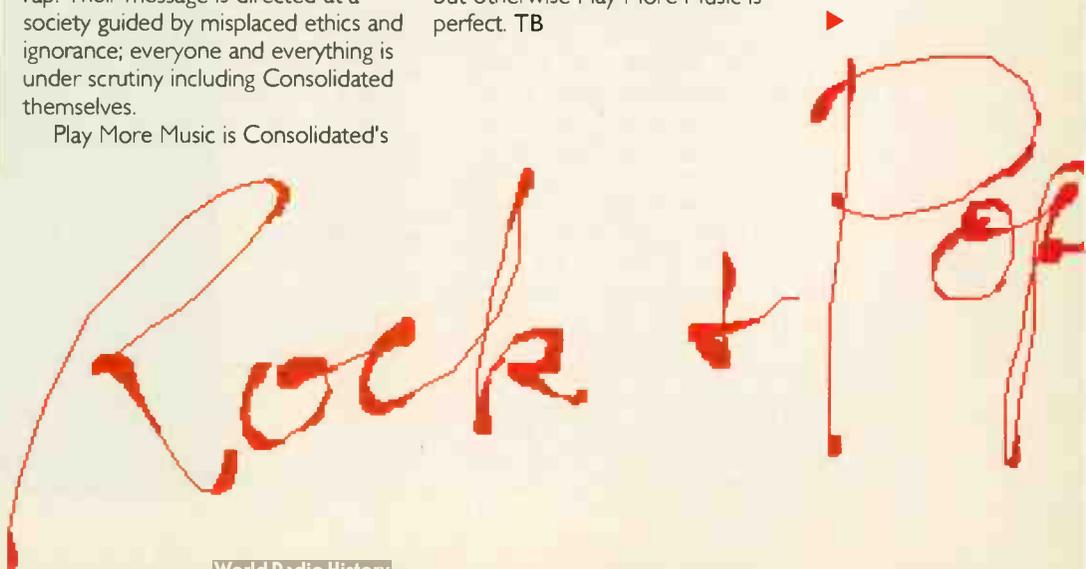
Play More Music is Consolidated's

fourth effort since their inception in 1989, and the thematic concerns combined with hard-hitting music results in an extraordinary album. The unifying message of Play More Music is oppression and the importance of knowledge, broadening of perspectives, tolerance and above all, understanding. But what saves this from becoming what might otherwise been a nauseatingly liberal 'right on' album is the totally groovy music and occasional humour.

Nothing escapes the critical eyes of Mark Pistel, Adam Sherburne and Philip Stier, and virtually every issue involving oppression, inequality and suffering for minorities is on Consolidated's agenda. Opening track 'Tool and Die' is pro-gun control, an issue of vital importance in the U.S., and an argument which is made convincing through images of gun-toting crazies slaying innocent bystanders, a recurring nightmare. Equal rights for Gays is another issue embraced in 'Accept me for what I am', Women's Rights advocated in 'Abortion Rights', and 'The Men's Movement' is a piece about the ritual of slamming and the male violence which alienates women at concerts.

In 1990 Consolidated took their message on tour in North America and Europe, incorporating open debates with their audience into their live shows. Parts of these debates are sprinkled throughout the album as Consolidated allow themselves, their integrity and their motives to be questioned - right on! - and thereby addressing the issues of 'message music' and the way celebrities use the spotlight to champion causes. And 'Veggie Beat Manifesto' would make any meat eater think seriously about what's on their plate.

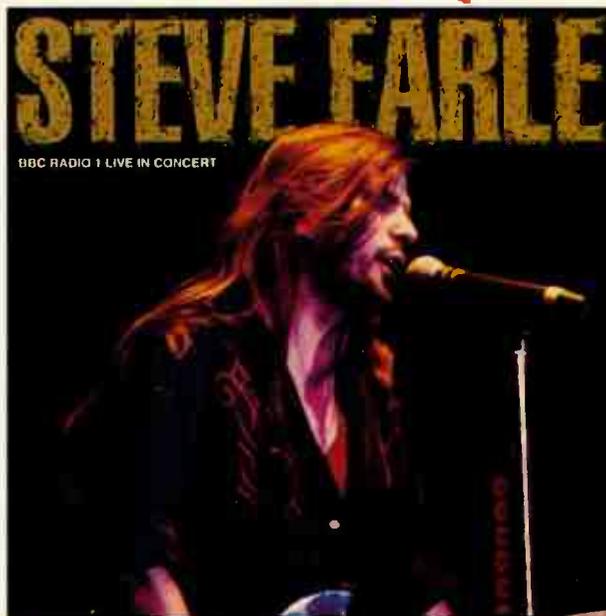
Consolidated are not just about anger, what sets them apart from the average rappers is that their songs do provide answers. It's not all serious or gloomy, however; 'You Suck' (on equality in bed - the words are unprintable!) is very funny. Twenty-seven tracks is maybe a little too long, but otherwise Play More Music is perfect. **TB**



# Rock & Pop.

**This month sees several releases of older music that provide a refreshing change from newer 'commercial' material.**

*Malcolm Steward*



**STEVE EARLE**  
**BBC Radio 1 Live in Concert**  
**WINDSONG WINCD 020**

● If anybody was responsible for convincing me that it was worth listening to country music, Steve Earle has to take the blame - albeit indirectly. Years back I heard Webb Wilder perform 'The Devil's Right Hand', which he remarked upon as being a particularly fine song when he credited it to Steve Earle. I went out and bought Earle's *Guitar Town* album the next day.

However, I'd missed hearing the composer's own version of the song until this BBC recording of a 1988 concert at the Town and Country arrived on my desk. This tale of a nineteenth century juvenile delinquent and another twelve songs - along with Earle's banter with his audience - demonstrate that there can be more to country music than the maudlin-good-ol'-boy-and-his-geetar stereotype. This is country music with strongly forged links to mainstream rock; *Country With Attitude*. Check out tracks like 'Snake Oil' and 'Johnny Come Lately' (the studio version of which featured The Pogues) - you sure as hell won't hear Kenny Rogers and his band play like that!

The sleeve notes to this release describe Earle as "a poet of the common man, whose stories of working class America have led to frequent comparisons with Bruce Springsteen" - a statement that is

pretentious, unfortunate, and potentially off-putting. I'm not a great admirer of Springsteen (although I'll admit to owning a copy of *Nebraska*) and certainly wouldn't rush to buy anything by someone who was compared to him. Earle might not be Bruce's commercial equal but I know whose songs I prefer.

This live recording would make an excellent introduction for someone unfamiliar with Earle to a performer who has a lot more to offer than his country-music associations suggest.

**CHARLES BROWN**  
**Someone To Love**  
**BULLSEYE BLUES**  
**NETCD 9514**

● I was delighted to have discovered ex-Chuck Berry sideman, Johnnie Johnson last year. This year I was pleased to find another exciting piano-playing R'n'B veteran, Charles Brown.

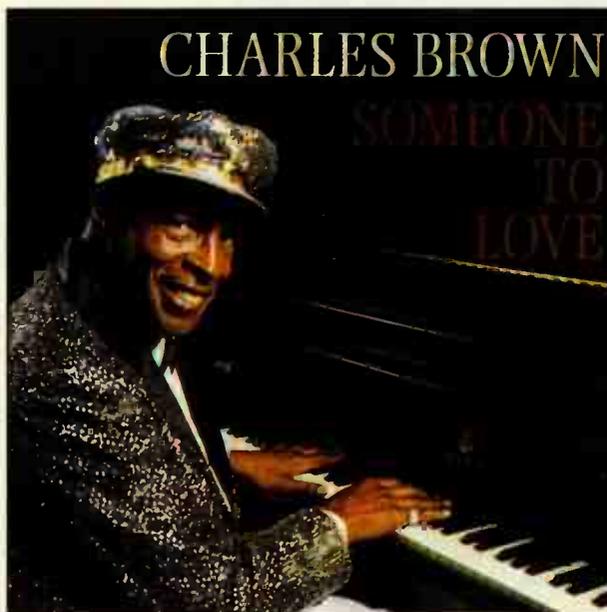
Like Johnson, Brown is greatly admired by his

fellow musicians. Bonnie Raitt makes a couple of appearances on this album, duetting on the title track and playing slide on 'Every Little Bit Hurts'. And the second song on the disc, the ambling jazzy ballad 'I Wonder How She Knows' was written specially for Brown by Elvis Costello.

There's nothing flamboyant about Brown's piano playing but it's remarkably effective. Both the leader and his band sound as though they were well schooled in the disciplines of economical arrangements. Nobody plays too much and each note is made to count. It lends their music a relaxed spacious feel that's also sumptuous and rich. 'Not So Far' is a classic example of how this approach works: its relaxed tempo and wide-open arrangement invite the listener to walk into the music and leisurely savour each of the player's contributions. Even when the tempo shifts up a gear for the jump-style 'Be Sharp You'll See' (musical joke, in case you hadn't noticed!), where Brown lets his band members take advantage of the spotlight, there's enough room to drive a bus between the lines. This comes as a refreshing change from kitchen sink arrangements where players are struggling to make their mark on a song.

For me, the high spot of this nine-track disc is the ascetic, stripped-down treatment given to 'Every Little Bit Hurts', where Brown's voice is accompanied solely by his piano punctuated occasionally by Bonnie Raitt's plaintive slide interjections. It's a treat for minimalist ears.

The album is the perfect way to enjoy a move into the slow lane. I defy anyone to feel less than blissed out after one listen to 'I Don't Want To Get Adjusted'. Charles Brown deserves to be rewarded for discovering the musical answer to executive stress.



**THE ZASU PITTS  
MEMORIAL ORCHESTRA  
The Pitts Bear Down**  
KALEIDOSCOPE F-23

● Neil Ramsden runs a record store in Keighley, Yorkshire. He's a committed vinyl addict with a facility for a) sourcing unusual and desirable recordings from the most unlikely places, and b) finding vinyl pressings of records that you thought weren't available in that form. The proprietor of The Den has supplied me with some valuable additions to my record collection - including an out of press vinyl copy of Little Feat's *Waiting For Columbus* live double album, discovered in a Californian warehouse - and this 1985 release is yet another.

This live recording of the Zasu Pitts

band is a celebration of R'n'B, the fourteen-piece group performing standards like 'Da Doo Ron Ron', 'Heatwave', 'Respect Yourself', 'Mustang Sally' and others from the various pens of writers like Holland-Dozier-Holland, Allen Toussaint, Lieber-Stoller, and Del Shannon. Yeah, this is unashamedly good-time music played with vim, vigour and veracity. It's retro stuff but it's good retro stuff, performed with creditable reverence towards the authentic articles. Liner note students looking for cookey guests will delight in finding avant-garde guitarist Henry Kaiser credited above *The Fabulous Sluts au Go-Go* (Tasteful Gyration).

So having established its musical bona fides, let's talk about the recording. This LP and cassette-only

release (and is it a pleasure to be able to write that!) simply cooks. The recording and production is as clean as the proverbial whistle. The drum kit sounds like a drum kit, the horn section blasts through the mix like a train whistle, and the voices sound as close to those of real people who haven't swallowed aural exciters as you can get. This vinyl relic actually sounds like a real band playing real instruments and having a real good time doing it. Even if you're not familiar with or attuned to the music of this era you can still savour the glorious, naturally warm sound of this album. If you thought vinyl had had its day, check this one out. Can't find a copy? Phone the affable Mr. Ramsden (0535 606086), and say that Hi-Fi World sent you!

**RECORD OF THE MONTH**

**LANI GROVES &  
DARLENE LOVE  
Bringing It Home**  
SHANACHIE 9003

● The more I hear from the Shanachie label, the more I realise that this company is one of a small number of record companies that gives a damn about the music it releases. *Bringing It Home* isn't the sort of disc that excites corporate bean counters, but record buyers who want music of quality and substance will lap it up.

Darlene Love is a highly regarded and respected session singer from the Phil Spector stable and the former lead voice of the Crystals. She has worked, both live and in the studio, with artists as diverse as The Mamas and Papas, The Beach Boys, Frank Sinatra and Dionne Warwick. Lani Groves was picked up by Stevie Wonder early in her career as a backing singer and worked with him through the period during which he released the albums *Music Of My Mind*, *Fulfillingness First Finale* and *Talking Book*: hers was the female voice on *You Are The Sunshine Of My Life*. Subsequently she has worked with Roberta Flack, Carly Simon and Deniece Williams. She has also appeared on Steely Dan's *Babylon Sisters* and albums by Dave Grusin and Patti Austin. Together, Love and Groves make a formidable pairing.

On *Bringing It Home* they cover ten contemporary standards, including songs by Curtis Mayfield, The Beatles, James Brown and Sam Cooke. Their versions of each song



are individual and distinctive, not simply trite copies. Darlene's rendition of the Jackson Five's 'I'll Be There', for example, is remarkable - she sings both the high and low vocal parts, which is quite a feat considering that a pre-pubescent Michael Jackson sang the high parts on the original version! She also demonstrates considerable vocal skill and dexterity on The Beatles' 'Let It Be', successfully taking the sentimental slop out of this cliched song and imbuing it with sincerity. Lani Groves shows similar flair tackling James Brown's 'It's a Man's World'.

For sheer fun, however, skip to the closing track, The Marvelettes' 'Too Many Fish In The Sea'. Here, the singers trade lines with an enthusiasm that's matched by the band who really cook on this R'n'B classic. It sounds as if all concerned were having a memorable time.

If nothing else, this disc might just convince you that it's worth taking a chance buying an album by artists who aren't "big names". Darlene and Lani might not be well known but there's no question that they've got voices far superior to many singers who are.

# Jazz

**More cross-pollination leads off this month's reviews, with European and American players joining a Lebanese oudh player and Indian percussionists, on audiophile vinyl, no less.**

*Simon Hopkins*



**RABIH ABOU-KHALIL**  
**Blue Camel**  
ENJA ENJ-7053 2

● The Lebanese oudh player Rabih Abou-Khalil's *Blue Camel* is an object lesson in pan-global Jazz. For a kick off, the session features a line-up of European and American jazzers: the hugely underrated alto saxophonist Charlie Mariano, veteran of many great ECM sessions with the likes of Eberhard Weber's *Colours* band, and above all supremely lyrical improviser and no stranger to cross-ethnic projects. (Witness *Jyothi*, his stunning collaboration with the Kamataka College of Percussion.)

There's our own acclaimed flugelhorn/trumpeter Kenny Wheeler, who so ably bridges the gap between the acoustic Jazz mainstream and the avant garde.

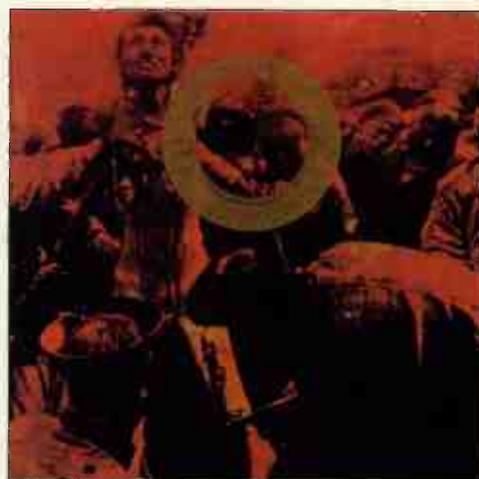
Here too is American bass guitarist Steve Swallow, again an essentially lyrical Jazz musician - especially for an electric bassist, an instrument not widely known for its timbral subtlety. Latin percussionist Milton Cardona joins Abou-Khalil's fellow Asians Nab! Khaiat (frame drum) and Ramesh Shotham (South Indian drums and percussion).

And then there's the leader himself; a master musician in every sense, he's a virtuoso on the oudh, a kind of Middle Eastern guitar-sitar hybrid. (Actually this is hugely unfair, given that the oudh is most probably hundreds of years older than the former.) Shotham is conversant not only in traditional Lebanese Classical styles, but a cracking Jazz improviser to boot.

Let's not forget, Western Classical music is one of the world's few Classical musics not to involve some level of improvisation. As an ensemble, this disparate bunch works perfectly. Sonically, the instrumenta-

tion is superb; the Westerners all play with such rich tones that they carry Abou-Khalil's 'exotic' themes beautifully - all the pieces here are the leader's own compositions. And the whole session leaves ample scope for plenty of predominantly modal soloing, every bit of it damn fine. Mariano in particular is on fine form, painting gorgeous spiralling lines over Abou-Khalil's canvas. And full marks too, to the

Latin-Asian percussion section that busily chatters along keeping the proceedings constantly at simmering point. All in all, a fine example of the global village ideal. Highly recommended. Oh, and the packaging's something too: the first 10,000 come in a beautiful gold-embossed Digipack and there will be a strictly limited edition on audiophile 180 gram virgin vinyl. It deserves it.



**NAKED CITY**  
**Leng Tch'e**  
TOY'S FACTORY TFCK 88604

● It's Yuletide as I write this, and Karen Carpenter is imploring me to have myself a very Merry Christmas. But a universe away, times are darker, and me old matey John Zorn is at it again, in one way or another. (For latecomers to this column, or contemporary music neophytes in general, this: John Zorn, alto saxist, composer, defiler of purism, master of the jump-cut, collagist, genius, a musician who finally made explicit the implicit game of dot-to-dot from Free Jazz to Thrash Metal and all round bon oeuf.)

First off, a mystery. Naked City is the group Zorn put together in the late Eighties (he denies that it's a 'supergroup' on the grounds that most examples of such are appalling,

which is a fair comment): Bill Frisell on guitar, Fred Frith on bass, Wayne Horowitz on keyboards (although if you believed everything you read in the Guinness Who's Who of Jazz you wouldn't know it) and the incomparable, dazzling Joey Baron on drums. And last year, debuting on the band's 'Torture Garden' was vocal cord-abuser Yamatsuka Eye, from Japan's seminal hardcore group The Boredoms.

In one form or another, the group have recorded a bunch of albums that range from the hardcore onslaught of the aforementioned Garden to the free improv of last year's outstanding Heretic. With another crop of NC recordings promised on Zom's own Avant label (of which more in a minute) Leng Tch'e took me completely by surprise. Furthermore, without any musicians' recording credits, or indeed any credits beyond some cursory recording details, and with a daunting fifteen quid Japanese import tag, this might not be the first thing that pops into your head to buy on a trip to Woollies. But it certainly should be.

The album consists of a single thirty minute piece; it opens with droning, heavily distorted bass and guitar (and possible keyboards - who can tell in this dense morass?) that continues throughout the piece. Over this are added, early on, Baron's by turns frenetic and declamatory drumming (incidentally, fantastically recorded by Alec Head and Zom's long-time mixer Oz Fritz), and, a good while in, screaming alto from the leader and torture victim wailing from Eye. After a few minutes of which, the whole thing reaches critical mass and implodes (not wishing to mix my physics metaphors), coming to an abrupt halt.

And that's about it, really; but what fun we have along the way. Frisell's guitar has rarely, if ever, sounded nastier, Zom sounds like he's about to rupture his temples and Baron's own personal storm rages away unchecked. Friends of mine, Zom fans all, have grave reservations, but frankly they're bonkers. Even at fifteen quid for just thirty minutes this is essential, and a thoroughly inevitable direction for Naked City to go in. Can't wait for the promised ambient industrial gloom of Absynthe.

**JOHN ZORN**  
**Elegy**  
EVA WWcX 2040

● And in a canon of work strange enough already, another odd one. As great an improviser as Zorn is (and his bebop outings on News for Lulu, More News for Lulu and on the Sonny Clark memorial Quartets

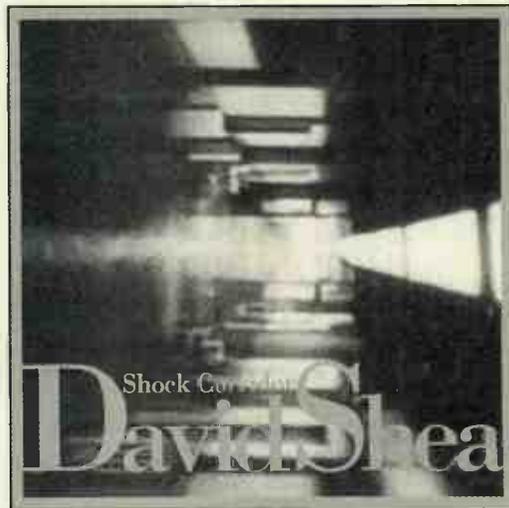
Voodoo can leave no-one in any doubt as to the man's ability to weave a seductive line through the most sinuous of chord changes, at the most ferocious of paces, and still swing like a mother) he's never been averse to taking a back seat as a composer or bandleader. On 'game' pieces such as Cobra his contribution (beyond damn well inventing the genre) is to hold cue cards which signify who should play when, and his acclaimed albums Spillane and The Big Gundown feature some entirely Zomless cuts.

And so to Elegy, on which the only role Zole plays is that of composer. Like 'Leng Tch'e,' a single piece, Elegy features a sort of chamber music septet from hell: alto and bass flautist Barbara Chaffe; violist David Abel; perennial collaborator and Avant recording artist David Shea at the turntable; David Slusser on 'sound effects'; vocalist Mike Paton from the latest line up of cult American eclecticist-metallers Faith No More, with whom Zom collaborated on the overlooked but essential Mr Bungle project; and guitarist Scummy, also a Mr Bungle person. Just for the record, everyone on Mr Bungle appeared - for contractual reasons presumably - under pseudonyms. I naturally assumed Scummy was such, yet here he is again, same name, same wayward all-encompassing guitar-playing, and I haven't a clue who he is. Shame on me.

The piece moves away from the (albeit eccentrically) genre-based approach of large-scale collages and work with Naked City, towards a sound-for-its-own-sake approach, which, along with the overall form of the piece - one sonic incident following another, fairly randomly, at least at the surface level - points to the influence of John Cage. Zorn's always been at pains to point out the massive influence the great, and sadly late, composer-inventor had on him,

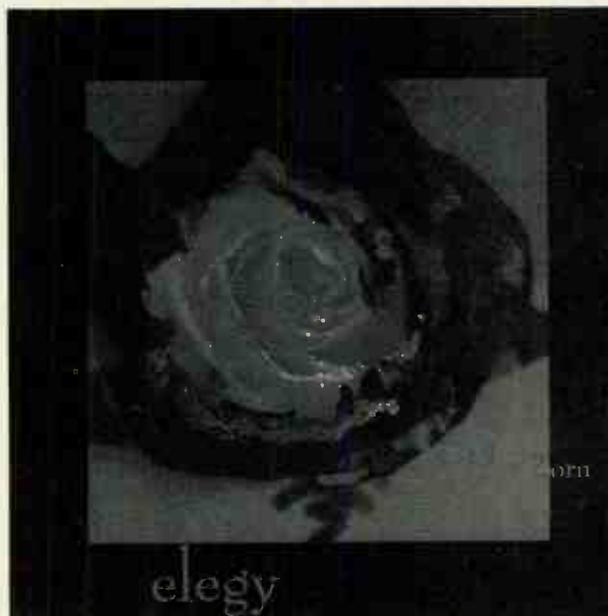
but nowhere is this clearer in his work than on Elegy.

Overall, a dark piece of considerable depth, a masterpiece of arrangement (further proof, as if needed, that no-one in contemporary Jazz can make acoustic and electric instruments sound so naturally in sympathy as Zom) and, as ever, packaged in beautiful graphics from Karath Razar. And full marks to Lisa Wells for perennial services to typesetting; I'm sorry, it's Christmas, I can indulge my peccadillos.



**DAVID SHEA**  
**Shock Corridor**  
AVANT AVAN 013

● And a final mention for David Shea's album on Zom's own label. A collection of three pieces: a septet based on Sam Fuller's 1963 B-movie classic 'Shock Corridor', featuring fellow downtown noisemakers like trombonist Jim Staley and harpist Zeena Paukis; a piano/sampler duet dedicated to MGM's Tom and Jerry composer Scott Bradley; and a somewhat Cagean trio for sampling devices. Challenging stuff, but worth it.



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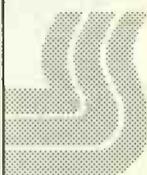
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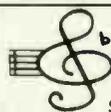
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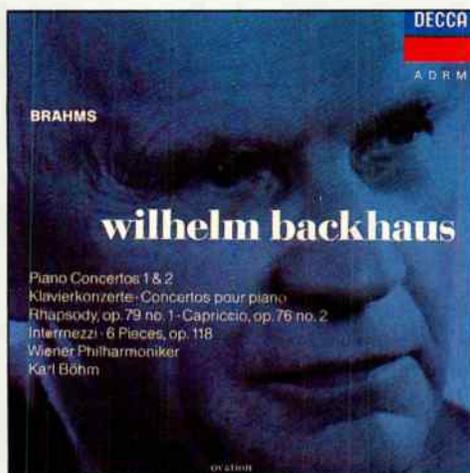
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# Classical

Peter Herring



**JOHANNES BRAHMS**  
**Piano Concerto No1 in D**  
**Minor Op15/Piano Concerto**  
**No2 in B flat Major Op83/**  
**Capriccio in B minor Op76**  
**No2/Rhapsody No1 in B**  
**minor Op79 No1/Intermezzo**  
**in E flat Major Op117 No1/**  
**Intermezzo in E Major Op116**  
**No6/Intermezzo in E minor**  
**Op119 No2/Intermezzo in C**  
**Major Op119 No3/ Piano**  
**Pieces Op118**

Wilhelm Backhaus, piano; Vienna Philharmonic Orchestra, conductor, Karl Böhm

**DECCA 433 895-2 (2 CD SET) (ADD 135.46)**

● Backhaus's clear-eyed objectivity and textual integrity would probably find great favour these days. I suspect Roger Norrington and his London Classical Players would invite Backhaus to record these concertos with them using, say, an 1860 Broadwood. But when Backhaus did make the bulk of his recordings for Decca, during the Fifties and Sixties, his literal approach, with its emphasis on structure and clarity, was very much at odds with the prevailing ideas about interpreting the piano repertoire. Backhaus's playing polarized opinion, as he earned admirers and detractors in roughly equal measure.

On the basis of these Brahms recordings I would count myself among the former, especially in the case of Backhaus's taut and cogent playing of the Second Concerto. Backhaus recorded this in the Sofiensaal, Vienna,

in 1967, when he was in his eighties and, not surprisingly, there is some unevenness in what would be a taxing experience for pianists of any age. I would guess Backhaus and the Decca engineers went more for a 'performance' than a patchwork of edits, and rightly. The result is a compelling recording, full of authority, power and personality and devoid of any self-indulgence. There are some rhythmic oddities, the occasional quirky emphasis and there will be those who will find this all too sober and missing the poetry. But, for me, the approach is

legitimate and convincing in its rugged, magisterial grandeur, though I will concede the scherzo is a little plodding and the finale lacks some warmth. Altogether preferable, though, to those who dawdle over the detail and lose their grip on the whole.

Backhaus benefits from first-class support from the VPO under Karl Boehm and the twenty-five year old Decca recording has emerged remarkably fresh and detailed in this transfer. (But then, Decca's Sixties recordings were generally among the very best of the era.) Most of all, though, enjoy the momentum of this fine performance, and its spacious but persuasive approach.

The recording of the First Concerto is very much in the same mould, even though it dates from fourteen years earlier (1953). Again, Vienna was the venue, this time the Grosser Saal in the Musikverein and, although the focus is very much on the piano and the orchestra sound a little boxy, the CD transfer is eminently listenable.

All the solo works which augment the concertos to produce a generously-filled boxed set date from 1956 but are in more-than-adequate stereo. The playing is characterized by a glittering spontaneity, but Backhaus does not depart from his objective, uncluttered style and the results are never less than interesting in what is a good selection of Brahms' important solo piano compositions. First choice in the concertos remains with the likes of Gilels, Curzon and Brendel, but this set must be an essential adjunct to any comprehensive Brahms collection.



**SERGE PROKOFIEV**  
**Violin Sonata No1 in F minor**  
**Op80/Violin Sonata No2 in D**  
**Major Op94A/Five Melodies**  
**for Violin and Piano Op35bis**  
Gidon Kremer, violin; Martha Argerich, piano  
**DG 431 803-2 (DDD/64.52)**

● One of those agreeable productions where all the elements of recording come together to form a fully satisfying whole: two superlative soloists who strike up an instinctive rapport in music that, while of the highest quality, is by no means over-exposed, and with a naturally unobtrusive, yet evenly detailed sound picture.

Prokofiev's First Violin Sonata was completed in 1946, two years after the Second but meriting its earlier opus number by virtue of having been begun in 1938. It is in many ways an elusive work, with inner, deeper ideas glimpsed behind a deceptively cheerful exterior. The time of its composition may have had something to do with its ambiguous nature: contemporary Soviet critics lauded the work's "epic optimism", which surely misses the black irony of so much of the music, especially in the mock-heroic second movement, marked Allegro brusco. There is no single perspective from which to approach this work and Gidon Kremer and Martha Argerich are fully aware of its many-faceted character, giving a performance of both insight and intensity.

There is a similar questing quality to the Second Violin Sonata, originally written for flute but adapted by the

composer for violin, with the assistance of the violinist, David Distrakh. In its original form, Prokofiev sought a "classical, clear, transparent sonority" from the combination of piano and flute and this is retained with the substitution of the violin. Prokofiev's melodic gifts are fully exploited here, especially in the

beguiling theme of the opening Moderato and in the dance-like finale.

Those gifts are also put to good use in the Five Melodies, composed in the Twenties and here providing a lighter contrast to the complexities of the two sonatas (psychological, if not always musical). These exquisite pieces were

originally written for wordless voice and piano and the singing quality of the violin is amply suited to them. Again, though, they possess much more than superficial attraction. As so often in chamber music, as much is revealed about the character of a composer as about his musical skills. A rewarding issue.

**RECORD OF THE MONTH**

Here's a refresher for the jaded musical palette, three of the sixteen symphonies of the Danish composer Rued Langgaard in committed performances by the Danish National Radio Symphony Orchestra under the baton of the ubiquitous Neeme Jarvi. I would imagine for many Danish music begins and ends with Carl Nielsen, with perhaps a nod in the direction of the so-called 'Danish Mendelssohn', Niels Gade.

Rued Langgaard was a new name to me; I struggled to find any reference to him in a host of musical companions and dictionaries, yet his output numbers around 400 compositions. He was born in 1893 and died in 1952, and was therefore roughly a contemporary of Nielsen whose commanding presence in Danish music seems to have wholly overshadowed him.

Langgaard's personality must have also counted against him. By all accounts he was plagued by phobia, hyper-sensitive, over-wrought, introverted and somewhat eccentric - not that you would glean that from his boldly extrovert richly romantic music with its sweeping themes often reminiscent of Nielsen. But where Nielsen's genius and universal appeal were readily acknowledged in Copenhagen Langgaard became a peripheral figure, effectively exiled from the musical establishment by occupying a post as organist in a remote part of the country at Ribe in the south of Jutland.

Yet in his youth all seemed set fair. The young Rued trained as a pianist and organist and learnt composition with an eagerness that saw him produce his first work at the age of eight. At twenty his first symphony was premiered by the Berlin Philharmonic. The problem for Langgaard was that his music was rooted in the Liszt-Wagner Romantic tradition at a time when the tide of taste, at least in Scandinavia, was distancing itself from the heady intoxication of the Austro-German school. Isolated physically and temperamentally and hampered by his own quirks of character, Langgaard saw very few of his works published during his lifetime.

Widespread interest in his music did not emerge until the 1960s, coincidentally with the burgeoning appreciation of Mahler and Bruckner, when Langgaard was acclaimed by such luminaries as the Hungarian composer, Gyorgy Ligeti.

Whether these three Symphonies

are representative of Langgaard's output, I would not venture to say. It is engrossing music, inventive and imaginative within traditional tonal and harmonic disciplines and music which never outstays its welcome or becomes bogged-down in static repetition. Its integrity seems beyond question; and, after repeated hearings, all that is absent is the lasting depth associated with, say, Langgaard's countryman, Carl Nielsen. I would have to add, though, that few twentieth century composers would emerge favourably from such a comparison.



**RUED LANGGAARD  
Symphony No4 'Løvfald'/  
Symphony No5  
'Steppenatur'/Symphony  
No6 'Det Himmelrivende'**  
Danish National Radio Symphony  
Orchestra; conductor, Neeme Jarvi  
**CHANDOS CHAN9064 (DDD/62.55)**

● Langgaard gave all sixteen of his symphonies descriptive titles and in the case of those recorded here, No4 was subtitled 'Leaf-fall', No5 'Nature of the Steppe' and No6 'Heavens Asunder'. All three, one feels, are to be interpreted on a symbolic, even spiritual level, as well as a literal one.

As with many of the symphonies, Nos4, 5 and 6, although subdivided into sections, are to be played in one continuous movement. In the case of No4, each of the thirteen sections is comparatively short and Langgaard titles each one, sometimes obviously ('Thunderstorm', 'Glimpse of the Sun', 'Rustle in the Forest') sometimes less so ('Despair', 'At an End'). Evidently, the intention is to evoke more than pastoral reflections on autumn, even though the orchestral palette employed is richly coloured. It is music of diverse moods, sometimes mysterious, sometimes passionate or

elegant but, by any measure, twenty-six concentrated minutes in which the diversity of ideas comes together with surprising cohesion.

The Fourth Symphony was completed in 1916 and Langgaard began work on a Fifth immediately afterwards, only to abandon the effort after two attempts. He returned to the material in 1930-31, using some of the passages in what eventually became his Fifth Symphony. Here, he was inspired by the vast, exotic and fantastic expanse of the Russian steppe, although there is no particularly 'Slav' feel to the music (apart from the employment of a quasi-Russian 'bell' motif). The musical landscape is unmistakably Nordic. Curiously, the Symphony's five movements are in no way descriptive and the music is strictly abstract, opening with a movement headed 'Sonata' and including a Coda composed of variations on themes from that first Sonata. Again, the result is a compelling distillation of ideas.

The Sixth Symphony was one of the few to be published during the composer's lifetime and presents an interesting parallel with Nielsen's 'Inextinguishable' Symphony. It dates from immediately after the Nielsen and in the wake of the First World War and, like the Nielsen, sets harmony against dissonance. Langgaard, though, is more explicit about his intentions than even Nielsen, subtitled the work 'Heavens Asunder' and depicting a conflict of cosmic proportions. Before a performance of the work in 1949, he clarified its nature even further by adding to the score: "Then Jesus intervened with power and tore into the violent host of evil in the heavens." Again, the eight sections are interlinked in a carefully crafted structure which sees the conflicting themes stated, battle engaged in a series of variations and the victory of God triumphantly proclaimed in the coda.

The work was first performed, with the composer conducting, in 1923 and brings this exploration of Langgaard's music to an exhilarating conclusion. As to the performances, the playing of the Danish orchestra is first-rate and it is difficult to imagine more committed or persuasive readings. Neeme Jarvi evidently feels that Rued Langgaard's music deserves greater exposure and recognition and, on the basis of this issue, I rather hope Chandos agree with that judgement.

*Las*

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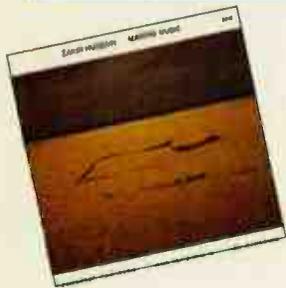
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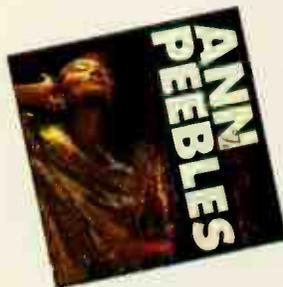
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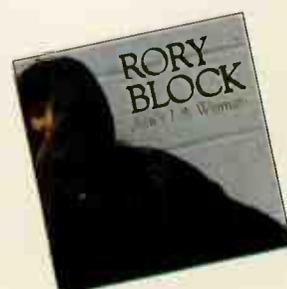
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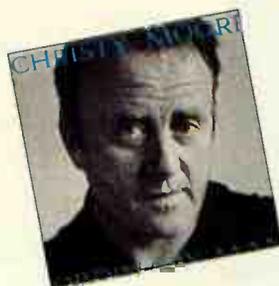
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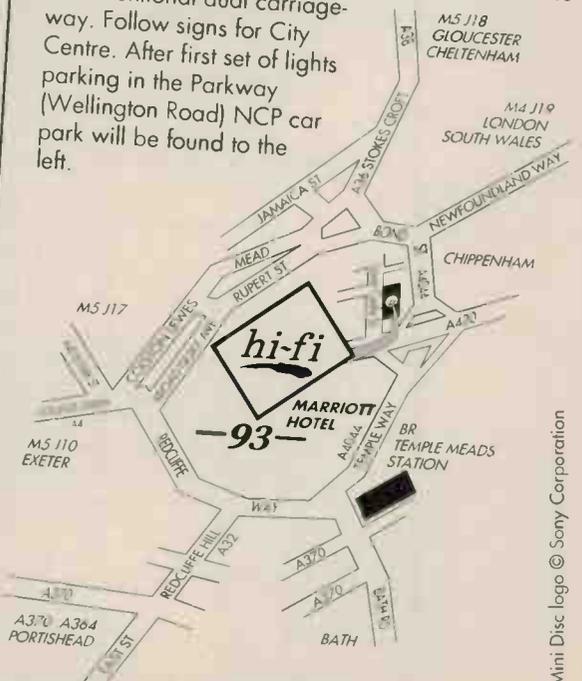
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#### By train:

Temple Meads Station is a short distance from the Marriott and is accessible by bus, foot or taxi.

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From M4 (Wales to London) take Junc 19 marked M32 Bristol. The M32 ends at Junc 3 and becomes a conventional dual carriage-way. Follow signs for City Centre. After first set of lights parking in the Parkway (Wellington Road) NCP car park will be found to the left.



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# Win over £1500 worth of DPA Digital CD front end

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## DPA COMPETITION ENTRY FORM

Please write in the answer or tick the box

1. Where are DPA Digital based?  
\_\_\_\_\_
2. The TI is based around a transport from which company?
 

<input type="checkbox"/> Meridian	<input type="checkbox"/> Mission
<input type="checkbox"/> Marantz	<input type="checkbox"/> Micromega
3. 'Sync-locking' transport and DAC together reduces:
 

<input type="checkbox"/> Mechanical interference	<input type="checkbox"/> Design complexity
<input type="checkbox"/> The effect of external vibration	<input type="checkbox"/> The effect of jitter
4. Another British company has also introduced 'sync-locking' between a separate transport and DAC. Which is it?
 

<input type="checkbox"/> Audiolab	<input type="checkbox"/> Amstrad
<input type="checkbox"/> Arcam	<input type="checkbox"/> Acoustic Energy
5. An accessory said to play a part in reducing jitter at the laser pick up was reviewed in Hi-Fi World recently. What was it?  
\_\_\_\_\_
6. DPA Digital's new interconnect is called 'White Slink'. Name one of their other interconnects?
 

<input type="checkbox"/> Pink Slink	<input type="checkbox"/> Slim Slink
<input type="checkbox"/> Slink	<input type="checkbox"/> Black Slink
7. What does OFC stand for?  
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This month's lucky competition prize winner will receive one of the best Compact Disc front ends available - from DPA Digital in Wales - worth over £1,500.

The prize comprises the massively-built fully remote-controlled TI transport combined with the Bigger Bit Digital-to-Analogue (DAC) convertor, long a Hi-Fi World favourite. The transport can be sync-locked to the DAC, which reduces jitter and gives a smoother, more lucid presentation.

Thrown in is a brand-new interconnect cable from DPA Digital, which no-one outside the company has yet seen. Constructed from seven strands of 0.4mm silver-plated OFC copper wire, coated with solderable enamel and PTFE dielectric, 'White Slink' is also screened to reduce noise.

Based on a Marantz transport, the TI's novel 'sync-locking' is its prime feature. An optical lead feeds the clock signal from the DAC via the 'Deltran' socket at the rear. Last year, Rob Watts of DPA (then Deltec) explained the reasoning behind, firstly, separating the transport from the DAC, and the problems of jitter.

"The circuit in a single-box CD player will be sensitive to its environment. Mechanically, vibration can be transmitted from the transport, but RF (Radio Frequencies) are generated which can be picked up by the DAC through electro-magnetic coupling. It is very evident audibly. It can be picked up by the amplification through even a screened cable, but that can be cured by using an optical link."

"There's a big psychological gain for designers in treating the transport and the DAC separately as well. If you have a brief that includes a transport and a DAC together, it can all become diluted. I think eighty per cent of the sound quality of a CD player is down to the DACs. A lot of effort needs to be put into their environment."

"But there are disadvantages in a two-box set-up, because with the particular interface used, the clock signal for timing is transmitted along with the music data signal from the transport; it has to be extracted in the convertor. As a result you get jitter, which is signal-dependent and audible. We use two lots of phase-locked loops to eliminate some of it, but it can't be eliminated entirely."

Taking the clock signal from the DAC and separating it from the music signal has the effect of removing some of the RF noise and jitter which corrupt it, cleaning it and making it more precise, as Noel found in the January 1993 review. "The absence of a sync-lock results in a slightly rough treble which has a tendency to glare," he wrote.

Combine the new transport with the highly regarded Bigger Bit, and our prize winner will have a front-end to be proud of!



Please send your entry form, completed in block capitals on the form provided, to arrive by 22nd March 1993, to:

DPA Competition,  
Hi-Fi World Magazine,  
64 Castellain Road,  
Maida Vale,  
London W9 1EX

We regret that photocopies cannot be accepted. The winner will be the first correct entry to be drawn from the hat.

We will endeavour to publish the results in the April issue of Hi-Fi World. Audio Publishing Ltd. reserve the right to publish such entries as the company sees fit. No correspondence about this competition will be entered into and the Editor's decision is final. Employees of DPA Digital and of Audio Publishing Ltd. may not enter.

Entries should be sent to DPA Competition, Hi-Fi World Magazine, 64 Castellain Road, London W9 1EX, to be received by 22nd March 1993.

**TANNOY GRF DELIVERY**

Don't cry, but you didn't win Tannoy's Guy R. Fountain monitor loudspeakers, featured in the October 1992 issue competition. Sorry, but the lucky winner was Terry Clements of Wimbledon, London, shown here leaning on his newly delivered prizes, looking a bit fazed. The cat's just jumped out of the window.

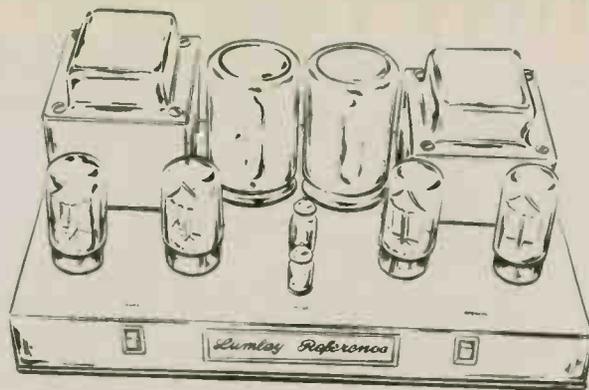


**KRAKEN  
COMPETITION  
WINNER**

For the two winners of our December competition, the Kraken is not so mythical after all; bat-like, one will be winging its way to Mr G. Dunn in the West Midlands and the other to Mr B. Chappelow in Lincolnshire. Congratulations to both commiserations to the many hundreds of other entrants Noel's fingers failed to pluck from the editorial hat. Keep on trying!



# The Legend Continues



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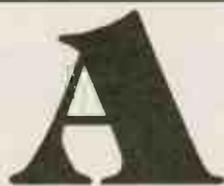
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-*Hi-Fi World* 9/92.  
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# The Best of Both Worlds?

**Dominic Baker listens to the Goodmans 650 system which promises midi-system convenience plus separates sound quality.**

**T**his month's system, the 650 series from Goodmans, is one that promises separates quality combined with midi-system features. Supplied with a pair of highly-recommendable Maxim 3 loudspeakers, it promises to be good.

Unlike most midi-system packages, each component is truly separate and can be powered up and used in its own right. At a later date, if you fancy an upgrade, this allows for any individual item to be replaced without rendering the entire system unusable.

Separately available midi-sized components are rare and all have different life-spans. In normal use a cassette deck, for example, will last about three years before the heads need replacing; maybe less if it is not regularly cleaned and demagnetized. The speakers and amplifier, if they are not abused, should last several years longer.

It is easy to end up with only half a midi-system working. Repair bills in most cases tend to be of a similar order to that of a replacement,

making the venture uneconomical. This is where separates score: if one element goes wrong, it can easily be removed and replaced. Being separate, it is not dependent on the system. More importantly, the system is not dependent on it; if the cassette deck fails, music can still be sourced from CD or tuner. Many midi-systems combine functions which makes replacement almost impossible.

Goodmans' 650 system can be built up from a range of individual separates, all of which match in style. This will certainly please those who find the mixture of shapes sizes and colours of separates from different manufacturers unacceptable. It has one of the major advantages of a midi system: the amplifier, CD player and tuner can be operated from a single remote control unit.

From the outside, it looks as though Goodmans have come up with a winning combination. Can a one-name system compete with the carefully matched separates we have

concentrated on over the last few months? Can it offer the level of convenience and rival the style and competitive pricing of the mass-produced midi-system? Answers to these questions are on the following pages.

## The System

The Goodmans System 650 consists of a range of separate components and a pair of Maxim 3 loudspeakers. For the purpose of this test I chose to have Compact Disc, Tuner and Turntable as sources. Including a surround-sound amplifier, the cost comes to £478.96.

Each of the components are fairly weighty - apart from the turntable - which suggests that structural strength has not been compromised despite the flimsy plastic front panels.

Both the amplifier and CD players have remote sensors, but control interconnects run between the components allowing remote control of all but the record deck from one

handset. The remote is not particularly sensitive and needs to be pointed straight at the amplifier, but it does the job nonetheless.

Rated at 50w output power per channel, the amplifier has inputs for phono (moving magnet), tuner, Compact Disc, one tape deck and either video or TV. An input/output loop is provided to facilitate use of a graphic equaliser. A surround-sound capability allows for using a second pair of speakers in conjunction with a hi-fi stereo video or Nicam stereo TV.

A one-bit machine, the CD player has twenty programmable memories and its own remote control unit, which is overridden by the system remote provided with the amplifier.



The CD Player comes with its own, individual remote control as well as the system control.



An auto-play arrangement allows the CD to start playing on power-up. In conjunction with the timer in the tuner this could be used as a high-power alarm clock for those who enjoy their sleep too much.

The tuner, which houses the timer and the system power switch, acts as the nerve centre of the system when the interconnects are linked up to the other components. It receives Long Wave, Medium Wave and FM Stereo and is provided with thirty-six pre-set memories.

While the FM section sounded a bit thin and synthesized, it was quite good and adequately clear with the signal from our roof aerial. Luckily, it isn't over-sensitive, local minicab messages didn't break through, as they did with one of the midis we tested in the January issue. Medium Wave reception was much the same as ever, sounding muggy and compressed, with much the same sound on Long Wave too.

Via CD the Goodman's 650 system

sounded clean and punchy. While the Maxim 3s would certainly benefit from a better source and amplifier, the Goodman's components were nonetheless well matched. The sound was balanced and quite open, free from boxiness or adverse colouration, though at high levels the system could sound ragged.

The record deck was the only exception in this otherwise very reasonable system. Poorly focused, distorted, thin and grainy, its low quality level many might find unacceptable compared to the CD player.

### Conclusion

Overall, however, the Goodman's 650 system offers excellent value for money. If you do intend to upgrade at a later date, which this system allows, changing the amplifier would be a good first upgrade, followed by the source you use most. Although it is adequate, a better CD should be available for £170 or so - and the Maxims certainly deserve it.

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Can this system compete with true separates? Though it is good, ultimately it lacks the finesse, cohesiveness of presentation, sense of detail, power, accuracy and enjoyment that a true hi-fi system is capable of. But, yes, it can compete with the average midi-system, though in a demonstration, with messages scrolling across a graphic equaliser, an inexperienced buyer wooed by gadgets might be tempted to disagree. With around seventy per cent of their convenience and style, the Goodman's system is competitively priced and sounds considerably better. It's very good value. ●



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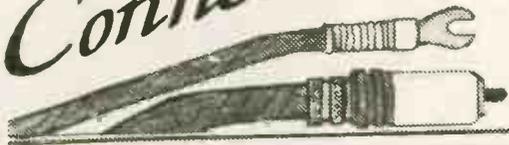
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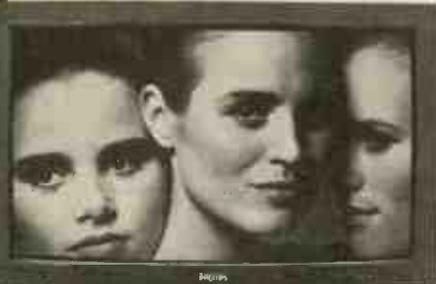
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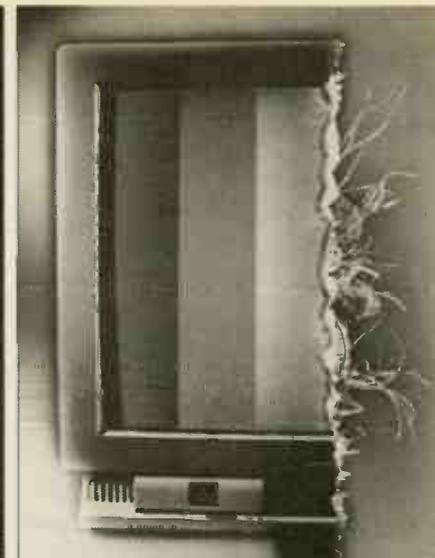
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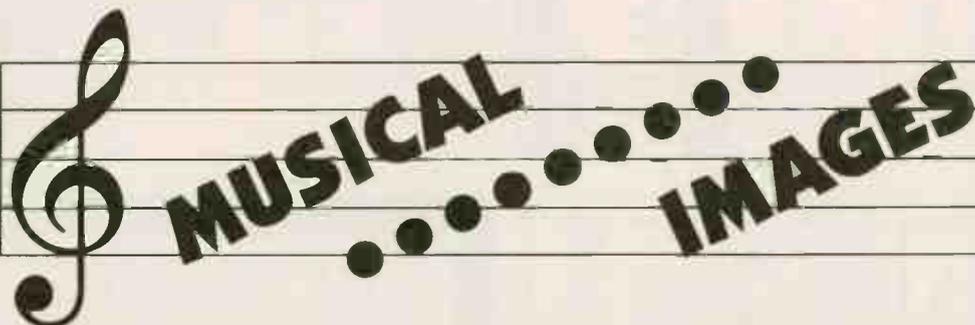
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9 pin silver plated chassis	3.25	0.22µF/1000v DC	5.20
9 pin gold plated chassis	5.20	0.39µF/1000v DC	8.25
Topcap silver plated	7.60	1.2µF/1000v DC	11.80
Paper in Oil Signal Capacitors		0.22µF/1600v DC	6.45
		0.22µF/2000v DC	8.80

Other values available by special order

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0.1µF/400v	540.00	Other values available by special order.	

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220+220µF/350 SK type	54.30	22µF/50v Bipolar	13.85
220µF/16v F type	5.00	47µF/50v Bipolar	20.77
220µF/16v FK type	5.55	Many other values available by special mail order, please enquire about values and prices.	
22µF/350v VK type	7.10		

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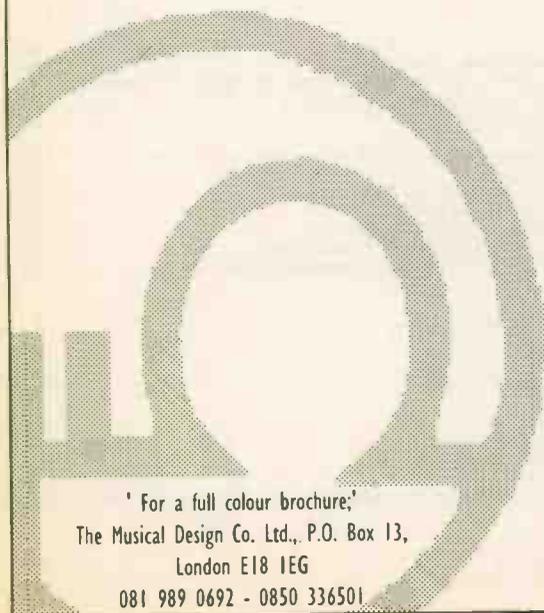
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# World favourites

HI-Fi World's revamped, comprehensive, selection of preferred products out of those we have reviewed in the last eighteen months, with the issue in which the test appeared.

## COMPACT DISC PLAYERS

SONY CDP-497	£160	Superb starter CD. Packed with facilities.	Aug 92
DENON DCD 890	£269.99	Exciting and forceful sounding player, but slightly characterful sound.	Nov 92
MISSION DADS	£300	Bitstream based player. Very even handed, with solid bass. Some lack of spaciousness.	May 9
ROTEL RCD-96SBX	£300	Bitstream based player. Calm, open and sophisticated performer.	Oct 91
ARCAM ALPHA +	£420	Offers a warm, full-bodied sound with a big, rich bass.	May 91
CREEK CD60	£500	16-bit player. Excellent rhythmic properties and a superb bass performance.	Apr 92
CARY CAD-855	£900	16-bit Rotel player, with Cary-designed valve output stage. Packed with ambience and musicality.	Feb 92
MICROMEGA SOLO	£1350	Distinctive transport; very light and musical, but with a deep, well controlled bass.	May 92
NAIM CDI	£1598	Single box, 16-bit player. Close to the two box CDS, very disc dependent, has vital tingle factor.	Apr 92
TEAC X-1	£2300	Superb 20-bit player. Convincing, idiosyncratic and characterful. Has plenty of flair.	Jun 92
NAIM CDS	£2937	Two box, sixteen bit player. De rigeur for Naim-based systems. Musically informative, has both punch and delicacy.	Sep 91

## COMPACT DISC TRANSPORTS

ARCAM DELTA 170.3	£650	Smooth. Draws the listener into the performance. Improves on all the strengths of the 170.	Jul 92
TEAC P-500	£650	Can be too restrained for some tastes, but subtle and highly detailed.	Feb 92
DPA DIGITAL T1	£795	Superbly clean and detailed sounding transport when sync-locked to DPA's convertors.	Jan 93
MICROMEGA DUO	£1745	CD-ROM based transport. Defines refinement and air, but without sacrificing impact.	Nov 91

## DIGITAL TO ANALOGUE CONVERTERS

QED DIGIT	£125	Based on Philips Bitstream. Excellent value, with no rough edges. Co-axial input for CD only.	May 92
MICROMEGA MICRODAC	£299	Philips Bitstream-based. Typical Micromega sound, very musical and refined, lacks the cutting edge of detail.	Mar 92
MISSION DAC 5	£299	DAC7 based. Clean, forward mid-range, capable of portraying real subtleties. Bass lacks firmness.	Jul 92
ARCAM BLACK BOX 3	£360	Warm sounding DAC. Now looking a bit tired against stiff opposition.	May 91
AUDIO ALCHEMY D.D.E.	£376	Digital Decoding Engine has broad and smooth presentation.	Feb 92
DPA LITTLE BIT	£395	Sets up a wide, open stage and places a captivating performance within it. High performance/£.	
SUGDEN SDA-1	£650	16-bit Philips based. A wide open window for the transport to flow through. Very neutral.	Jun 92
DPA BIGGER BIT	£695	The Bigger bit has enormous insight revealing the mixing and production work behind most rock recordings.	Nov 91
AUDIOLAB 8000DAC	£695	Philips Bitstream-based. Well built and flexible. Typical Audiolab sound, very silent and neutral.	Jan 92
DPA PDM-ONE III	£1280	Less ruthless than, but staggeringly close to the PDM-TWO. The latest version of the PDM-ONE is a two box DAC-7 affair	Mar 92
PINK TRIANGLE DA CAPO	£1350	Own-design one bit DAC reaches new standards in Digital. One of the best.	Jan 93
DPA PDM-TWO	£2350	Frighteningly deep and controlled bass. Very forthright; a trifle violent in its truthfulness. Literally - stunning!	Jun 91

## TURNTABLES

SYSTEMDEK IIX-900	£190	Surprisingly natural sound, if not as detailed as some. Suits Rega, Moth and Helius arms.	Aug 91
PROJECT 2	£245	Czech built turntable with much to offer. Very coherent.	May 92
REGA PLANAR 3	£250	Built to last. Transparent and lucid, although can sound bass light. Sets the standard to beat.	Aug 91
THORENS TD 166/M/UK	£270	Fitted with Rega RB 250 arm. Good basic deck, with tweakability.	Jun 92
MICHELL MYCRO	£397	(with RB300 arm, £539) Falling between the Syncro and the Gyrodec, the Mycro has superb mid-band clarity and poise.	Apr 92
PINK TRIANGLE L.P.T.	£449	Neutral sounding turntable with excellent soundstaging and decent bass. Use Linn, Rega or Roksan arm.	May 91
ROKSAN RADIUS	£550	(with arm) Isn't tripped up by unsettling music, the Radius acts a good mid-price turntable.	Nov 91
THORENS TD-3001BC	£650	Arm-less Thorens, good match for Rega RB-300 or Naim ARO. Easy to use turntable that gets very close to the Linn LP12.	Apr 91
PINK TRIANGLE EXPORT	£676	Terrific soundstaging properties, good bass and a neutral performance that considerably improves upon the LPT.	Jun 91
VOYD VALDI	£699	Similar to the Pink Triangle, the two-motor Valdi is an expressive performer, best suited to Audio Innovations equipment.	Jul 91
ROKSAN XERXES	£785	Highly analytical and exciting turntable. Can be almost CD-like in its presentation.	May 92
PT ANNIVERSARY	£1200	Very neutral turntable, but with a lot of magic. Excellent imagery and detail. A natural partner to the SME V.	Sep 91/May 92
SME MODEL 20	£2495	The last great turntable, bettered only by the £11,000 Model 30. The 20 never disgraces itself.	Oct 92

## TONEARMS

REGA RB 300	£139	For Pink Triangles, Michells, Roksans and Systemdeks. Simple and superb; dynamic with solid bass.	
MØRCH DP-6	£665	'Unipivot plus' tonearm. Plays music with a silken and rich quality. Perfect match for the Da Capo cartridge.	Jul 92
SME 309	£568	Based on IV & V; uses an aluminium armtube and detachable headshell. High end value for money. Smooth; excellent imaging	Jan 93
SME SERIES IV	£828	Simplified version of the legendary SME Series V. A precision measuring instrument only bettered by the V.	Mar 92
SME SERIES V	£1232	A masterpiece of precision engineering, with a cohesive sound.	Sep 91/May 92

## CARTRIDGES

GOLDRING 1012	£45	Excellent value. Well balanced performer, rich and full without warmth. Very spacious and clear.	Apr 91
GOLDRING 1042	£89.95	A wealth of treble detail and a fine sense of analysis proffered by the Goldring secures its place in this section.	Jan 93
SUMIKO BLUE POINT	£99.95	The Blue Point casts a romantic charm over all types of music. Robust too.	Oct 92
ORTOFON MC15	£100	Moving coil cartridge at moving magnet price. Has a tight grip on rhythm.	Jun 92
ROKSAN CORUS BLACK	£110	Moving magnet cartridge, based on Goldring design. Exciting and detailed, with great speed.	Sep 91/May 92
SHURE V5T-V	£150	One of the finest moving magnets currently available. Excellent tracker.	Jul 92
DENON DL-304	£199	Tonally uncoloured the Denon offers a superbly transparent mid-band. It could sound a little thin in some systems.	
GOLDRING ELITE	£200	British made moving coil. Good value, smooth and detailed, but can sound a trifle brittle at times.	Apr 92
GOLDRING EXCEL	£499	British made high-end m-c. Refined and lyrical presentation, slightly dull at times.	Oct 91
LYRA LYDIAN	£500	Scan-Tech designed moving coil cartridge. Magical sound, even better nude!	Aug 92
MØRCH DA CAPO	£500	Scan-Tech designed moving coil cartridge. Musical and accurate, without any flaw.	Feb 92/May 92
AUDIONOTE IO	£1295	Very low output cartridge, with high silver content. Needs step-up transformer. Very musical, can show up how poor most cartridges are.	Nov 91

## CASSETTE RECORDERS

TECHNICS RS-BX404	£130	Terrific value and good sound for the money.	Sep 91
TECHNICS RS-BX606	£170	Three head deck. Superb value, capable of seeing off much more expensive machines.	Nov 91
SONY TC-K677ES	£240	One of the first low-cost three head decks. Can be grainy and slightly bright, but makes for stable recordings and playback.	Sep 91
JVC TD-V541	£280	Three head deck. Good for both recording and playback, especially of prerecorded tapes. Easy to use.	Dec 91
DENON DRS-810	£300	Drawer loading cassette - just like CD. Sweet sounding, but a bit expensive.	Jan 92
NAKAMICHI			
CASSETTE DECK 2	£350	Makes fine recordings with metal tape. Excellent with pre recorded tapes. One of the finest two head machines about.	Mar 91
CASSETTE DECK 1.5	£500	Scaled down version of the Cassette Deck 1, without rivals at the price.	Jan 92
CASSETTE DECK 1	£600	In the light of the 1.5, this fails to be such good value, but still a sound three head deck.	Apr 91
PIONEER D-500	£600	Very smooth sounding DAT deck, but still slightly coarser than the original source.	Apr 92
TEAC V8000S	£699	Dolby 'S' deck. Easy to use. Very stable sound, with instrumental textures close to perfect.	Jun 92
ARCAM DELTA 100	£850	Dolby 'S' deck. Excellent sound quality, close to the original source. The best Dolby 'S' deck around.	Apr 92
NAKAMICHI CR-7	£1500	No Dolby 'S', but auto tape tuning, motorised head and remote control. Astonishing complexity; the best!	Aug 92

## TUNERS

DENON TU-260L	£110	Excellent budget AM/FM tuner. Easy to operate, good all-rounder with a fine sound.	Mar 92
NAD 422S	£160	Warm sounding, but detailed budget AM/FM tuner. AM poor, looks dated.	Dec 92
ARCAM ALPHA 3	£199.90	Excellent vocal clarity and decent sharpness; good for Rock.	Jun 92
AURA TU-50	£230	Superb FM-only tuner. Produces a delightful, three-dimensional sound. A cracker	May 92
YAMAHA TX-950	£260	Fine all-rounder, with a good AM section.	Jul 92
KENWOOD KT-7020	£270	Silky smooth sound, but very insensitive and needs a good aerial.	Feb 92
ARCAM DELTA 80	£340	AM/FM analogue tuner. Realistic sound quality, but slightly insensitive.	Jan 92
QUAD 66FM	£490	Among the very best in terms of tonal colour and imagery; remote controllable.	Nov 92
NAIM NAT-02	£853	Little box, big money, dead good. Try and find better unless it's a . . .	May 91
NAIM NAT-01	£1377	The best tuner currently available. All else is mere artifice. If you want better radio reception, go and live in the BBC's studio.	Mar 92

## INTEGRATED AMPLIFIERS

HARMAN-KARDON HK6150	£159	Good sounding starter amplifier. Great dynamic range. Excellent bass.	Jun 92
NAD 302	£159.99	Lots of insight and detail but could sound a little rough in the wrong system.	Jan 93

DENON PMA-350	£170	Packs a lot of punch for the money. Phono stage lags behind the line inputs.	Mar 91
PIONEER A300X	£199	Exceptionally sweet mid and treble plus the superb dynamic range of the A400	Dec 92
SUGDEN A25B	£203	Surprisingly warm and well rounded for the price. Worth seeking out.	Dec 91
ARCAM ALPHA 3	£200	Lean and lively, with an astonishing amount of detail. Excellent line stages.	Oct 91
MISSION CYRUS ONE	£249	The series 8 guise has brought about improvements in balance and power pushing it further forward.	Feb 92
CREEK CAS 4140 S2	£230	Bit soft and rounded, but with a pleasant character. Easy on the ear.	Nov 91
PIONEER A-400	£240	The amplifier that shook up the UK hi-fi industry. Very hi-fi sounding, but can sound good with high-end equipment.	Nov 91
AURA EVOLUTION VA-100	£270	Full of refinement, although not the best measuring amplifier around.	Jul 92
HARMAN/KARDON HK6550	£349	Thoroughly refreshing, tonally neutral amplifier with a realistic price tag.	Nov 92
MISSION CYRUS 2	£380	Best with PSX power supply (£300). More powerful, dynamic and well balanced than almost any of its price rivals.	May 92
AUDIOLAB 8000A	£430	Very neutral and superbly built. Good bass, great imagery, but can be sterile.	Apr 92
SUGDEN A48B	£460	Gentle performer, but never masks the music with warmth. Tonally very even.	Apr 92
AMC CVT-3030	£500	Valve hybrid amplifier. Has valve and transistor virtues in a reasonably priced package.	Aug 92
AUDIO INNOVS. SERIES 500	£990	Sweet sounding valve design. Good looking, but a little system dependent.	Aug 91
AUDIONOTE OTO	£1250	12w valve amplifier. More in tune with music than hi-fi. Superb dynamic range.	Jun 92
TUBE TECH.UNISYS	£1299	Superbly built chrome valve amplifier. Pacey and musical.	Aug 92
COPLAND CTA-401	£1495	Solidly built Swedish valve amplifier. Very refined and unfatiguing sound.	Feb 92

**PREAMPLIFIERS**

NAD 1000	£180	Wonderful value. Relaxed, smooth and easy on the ear. Best with 2100 power amps.	Jun 91
QUAD 34	£336	Civilised, smooth and unintrusive. Not especially transparent, but relaxing and built to last. Clever tone controls.	Jun 91
AUDIO INNOVS. SERIES 200	£349	Valve preamplifier. Good value, rather Coloured but very dynamic. Best with Innovations equipment.	May 92
AUDIOLAB 8000C	£375	Superbly made solid state pre, without flaw. Clean sounding, if a touch sterile. Excellent all-rounder.	Jun 91
CROFT SUPER MICRO A	£649	Valve preamp. Great mid-band, Good soundstaging properties, a bit warm & euphonic.	Oct 91
MICHELL ARGO+ISO	£687/£393	(+£155 for optional Hera PSU) Pure detail, incisiveness and the beauty of the highest of high end especially with the Hera power supplies. Line-level only, hence an Iso required for vinyl replay.	Oct 91/Jul 92
DPA DSP50S-L/PSU	£745/£250	Line level pre-amplifier + outboard power supply. One of the best pre's available at any price.	Apr 91
DPA DSP50S-D	£325	Disc stage to complement DSP50S-L line level pre. Can be used with DPA power supply to form an excellent disc pre amp which could be used with any line level pre.	Apr 91
CONCORDANT EXCELSIOR	£900	Valve preamplifier with MM phono + 2 line stages. Magical and realistic sound quality, deep soundstage. Superb for recordings.	Dec 91
JOHN SHEARNE PHASE ONE	£1099	Attractive preamplifier with matching power amplifier. valve-like lucidity and sweetness. Suits neutral equipment.	Aug 91
ALCHEMIST FREYA	£1150	Line level preamplifier, with distinctive styling. Detailed and commanding sounding, may sound too bright in some systems.	Oct 91
LINN KAIRN	£1295	Remote control preamplifier. Flexible, but can sound too forward. Best suited to Linn equipment.	Aug 91
E.A.R. G88	£5246	Exceptionally solidly built valve pre, with a 'bolted down' sound to match. Can sound awesome.	Nov 91

**POWER AMPLIFIERS**

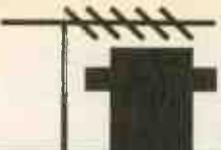
NAD 2100	£290	Matches 1000 pre. Powerful (150 watts) but relaxing sound ; big bass.	Jun 91
QUAD 306	£395	Well suited to the ESL-63 loudspeakers. Beautifully built, smooth sound but not transparent; weak bass.	Jun 91
CONCORDANT EXULTANT	£500	Modified Quad II mono amplifiers. Colder sounding than the original. Good value. Good match with Excelsior preamp.	Jun 92
AUDIOLAB 8000P	£545	Powerful solid state stereo power amplifier. Clean, natural sound with a slick styling to match. Very well made.	Jun 91
CROFT SERIES 5	£548	Stereo 25 watt valve amplifier. Can be bridged. Rich, warm sounding. Good with ProAc loudspeakers.	Oct 91
QUAD 606	£570	100 watt stereo solid state amp. Smooth and civilised. Similar to 306, but more power and deeper bass.	Jun 91
DPA DIGITAL DPA50S	£1175	Together with the 50S pre and disc stage this forms Noel's favourite amplifier. Very clean, very clear and very neutral.	Apr 91
JOHN SHEARNE PHASE ONE	£1199	Matching power amplifier to Phase One preamp above. Attractive finish, sweet sound.	Aug 91
AUDIOLAB 8000M	£1190	150 watt solid state monoblocks. Typical Audiolab look, build and sound; crisp and clear but can also be clinical.	Sep 91
ART AUDIO TEMPO	£1398	20 watt triode monoblocks. Attractive looking, vibrant sounding, ambient and subtle.	Dec 91
ALCHEMIST GENESIS	£1400	100 watt valve monoblocks. Powerful sound. Very cable dependent but with plenty of dynamic range.	Oct 91
AUDIO INNOVS. SERIES 1000	£1499	S0W valve monoblocks. Powerful sound.	May 92
MICHELL ALECTO	£1800	High end bargain of the year the Alecto's have a lucidity and three dimensional realism that it rarely attained.	Dec 92
ART AUDIO MAESTRO	£1927	Pentode/Triode switchable valve monoblocks. Beautiful looking, sweet and involving.	Jun 91
E.A.R. S49	£4372	Massive 200watt valve monoblocks. Awesome sound, uncanny solidity of images, hard treble.	Nov 91

**LOUDSPEAKERS**

CELESTION I	£99	Low price, compact size, big sound. An exciting all round performer.	Oct 92
GOODMANS MAXIM 3	£99	Excellent budget small box. Forward sound, without undue box coloration.	May 92
MISSION 760i	£119.90	The 760is are detailed, fast and have bags of rhythm. Ear bashing pleasure.	
TANNOY 603	£124.99	The 603's are a rich and smooth blend that offer their best when bi-wired.	Sep 92
MISSION 761i	£169	Not a perfect loudspeaker, but is full of bass and a lot of fun and entertainment for the money.	Feb 92
MISSION 780	£180	Not without flaws, but the accent is on the music. Good small design.	Sep 91
TANNOY 605LE	£189.99	Highly analytical but has limited bass extension and is not particularly smooth. Very revealing.	Jan 93
B&W DM610	£200	Very competent and musical. Loads of life and energy.	Sep 91
ROGERS LS2a2	£209	So far the most correct loudspeaker we have discovered at the price. Sweet and even-natured. A bargain.	May 92
HEYBROOK HBI Mk III	£249	Powerful, efficient loudspeakers. Loads of welly, loads of bass, but somewhat unrefined.	Apr 91
TANNOY 609	£250	Cheapest Dual Concentric loudspeaker in the range. Fast and fun, but unobtrusive.	Jan 92
NAD 8100	£300	Fine floorstanding loudspeaker that goes deep and loud. Terrific sense of fun.	Aug 91
EPOS ES11	£330	Two way reflex loudspeaker with a civilised but giant-killing sound quality. Excellent imagery.	Apr 91/Jan 92
TRIANGLE COMETE	£375	Highly efficient small box loudspeaker with a superb mid-band. Great for valve amplification.	Apr 92
WILMSLOW FOCUSS	£400	Kit loudspeaker, based around DynAudio drivers. Very transparent and detailed for the price.	Feb 92
KEF 101/2	£495	The baby of the KEF Reference range. Very system dependent.	May 91
CELESTION 100	£499	Need powerful amplifier and careful positioning. Have insight and good tonal accuracy.	Dec 91
NEAT PETITE	£525	Baby two-way. Tight, fast, great stereo and good dynamics. Few little boxes come close.	Aug 91
PENTACHORD	£534	(£1059 with subwoofer) Superbly transparent. With the sub-woofer, they go deep too.	May 91
PROAC STUDIO I MK II	£612	Two-way reflex loudspeaker. Easy to listen to and well-balanced, although somewhat Coloured.	Aug 91/Jan 92
KEF Q90	£649	Uni-Q design with ABR. Efficient, dynamic and capable of going very loud indeed.	Jan 92
REL STADIUM SUBWOOFER	£695	Mono, self-powered subwoofer that works! Very flat frequency response.	Jun 92
B&W MATRIX 805	£795	At home both in the recording studio and the listening room. Speedy delivery and excellent imagery; paint a clear picture.	Jan 92
AUDIO NOTE AN-J	£799	Good soundstaging with a very convincing, natural sound. Derivative of Snell design.	Jun 91
MONITOR AUDIO 1200 Gld	£949.99	Excellent resolution of detail maintains a listeners attention; insightful.	Dec 92
HEYBROOK SEXTET	£1079	Revealing, lucid floorstanders. Not smooth, but tight and fast-paced. Need careful partnering.	Oct 91/Feb 92
PROAC RESPONSE ONE 'S'	£918	Excellent small box design. Can convey the spirit, drive and passion in music in a small room.	Jul 92
MAGNEPLANAR MG1.4	£1190	Electro-magnetic planar design. Needs long room. Can create an open, relaxed and easy musical performance. Lacks detail.	May 91
APOGEE CENTAUR MINOR	£1200	Hybrid ribbon design. Great imaging and detail, good value for panel fans.	Jul 92
CELESTION 700SE	£1399	Small box, carved from Aerolam. Excellent imagery, transparency and detail. Needs power and careful positioning.	Mar 92
TDL STUDIO 4	£1499	Need a large room, but can move a lot of air. Best with organ music, the 4's can sound impressive, awesome and frightening.	Jul 91
PENTACOLUMN	£1795	Stunning imagery, excellent detail. Speakers that excel at everything.	Dec 91
QUAD ESL-63	£2072	(Pro version, £2240) Legendary electrostatic loudspeakers. Can lack bass, dynamic range and volume but have detail and imagery impossible to better.	Apr 91
TANNOY GRFM	£3500	Giant loudspeakers. Capable of awesome sound. Need good valve amplification.	Jul 92
NAIM DBL	£6127	Capable of producing immense sound pressure levels. Not for the squeamish.	Mar 91

**MISCELLANEOUS**

AUDIOPLAN DIGITENNA	£55	High-tech coaxial cable, for CD to DAC connection. Highly focussed sound.	Jul 92
AUDIOPLAN MUSICABLE	£VARIOUS	Superb, high quality cables that represent the finest in European cable.	Mar 92/May 92
BEYER DT41 I	£54	Excellent 'studio' quality headphones. Deep bass, powerful sound, if a bit splashy at times.	Jun 92
CELESTION DLP 600	£349	Digital signal processor for the Celestion 600 series loudspeakers, sounds like a £400 upgrade.	Jun 92
FRANCINSTEIN	£79	CD stereo enhancer, which adds crosstalk to make the sound more 'analogue'.	Jan 92
FURUKAWA FD-11 CABLE	£85	Coaxial cable, for use between CD and amplifier. Good quality, utilitarian cable. Safe choice, easy sounding.	Jan 92
FURUKAWA 7N PC-OCC	£900/£350	per mono metre. Very expensive cables. Highly detailed, sounds like an equipment upgrade.	Jul 92
KONTAK	£82	Space age contact cleaner. Upgrades your system at a single bound.	Mar 91
LASERGUIDE	£15	Coating for a CD surface. Is said to improve clarity, focus and spaciousness.	Dec 91
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SONY WALKMAN WM-D6	£260	The famous 'Pro' Walkman. One of the finest cassette recorders at any price, but portable. Superb value, if a little 'touchy' at times.	Mar 91
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TECHNICS SL-XP330	£129.95	Ignore the price tag for this is one of the best sounding portables around.	Dec 92
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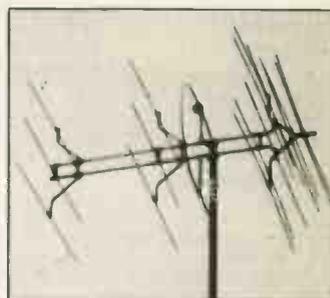
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## AVI / ATC / AMC / RUARK

Last month's advert detailed the new AVI CD player, but to fully appreciate the quality of this player you should ideally evaluate it on the latest ATC SCM 50A's with the new amplification.

Both of these are now in stock.

In November, 'Classic CD's' Complete Hi-Fi Guide, selected the Ruark swordsman plus II at £299 as the best £200-£300 speaker and the Ruark Accolade as joint winner with the ATC SCM50A's in the above £2000 category.

We, of course agree, and will be delighted to demonstrate their virtues (by appointment only please).

# WHY A HI-FI TUNER NEEDS A GOOD AERIAL

**For best sound quality, a hi-fi tuner must have a strong signal of around 1mV minimum.**

**The question is: how do you get it?**

## INDOOR AERIALS

Simple pin-up wire types (dipoles) only provide enough signal within a few miles of a transmitter. Otherwise they are noisy and prone to receiving multipath signals that produce distortion.

We've tested powered indoor aerials and expensive hi-tech designs costing up to £50 and find they give no more signal than simple, horizontal dipoles, either of the wire type or of rigid aluminium. Their only benefit is smaller size. It is better to buy a rigid aluminium dipole and mount it high, upstairs on a wardrobe, at the top of a stairwell, or similar.

## LOFT AERIALS

Loft aenals have the advantage of height and, if there are many elements, gain as well, so they provide a stronger signal than a simple dipole indoor aerial. In areas of reasonably high signal strength - which usually means within ten miles or so from a transmitter, a loft aerial may be satisfactory.

Usually with three elements, a director rod (short), reflector rod (long) and dipole element in between, loft aerials are also directional; they must be pointed toward the transmitter. They reject interference and reflected signals better than dipoles, giving a cleaner signal to the tuner.

The best mounting position is high up in the V of the roof, away from metal objects like water tanks. A long downlead will be needed, preferably of good quality to minimise signal loss.

## BALCONY & WALL MOUNTING AERIALS

Balconies in blocks of flats have the advantage of height, giving a much stronger signal. However, the balcony should face the transmitter for good results.

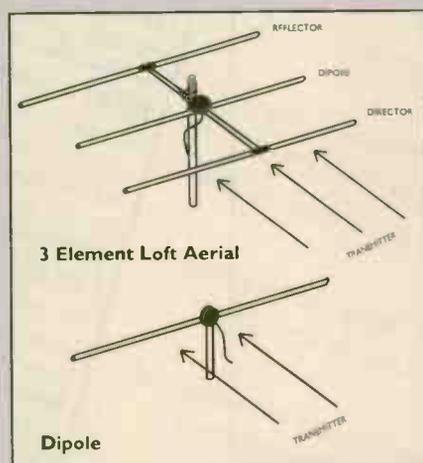
It is often possible, if a little difficult, to wall-mount an aenal on a stub mast outside a window, but you may need consent to do so. Hanging out of a window can be dangerous, so consider using a professional installer. And make sure the wall faces toward the transmitter of course.

## OUTDOOR AERIALS

In most locations, only an outdoor aerial will give a signal strong enough and clean enough (i.e. free from interference and multipath reflections) to provide true hi-fidelity from a good tuner. Benefits are height (the higher the better), crucial for

obtaining a strong signal free of reflections, and number of elements, which determine both gain and directionality.

Multi-element aerials are used in areas of medium to weak signal strength, meaning up to around forty miles from a transmitter. Any further away is judged as a 'fringe' area and will demand even more elements.



## ALL-ROUND AERIALS AND WHIPS

Whip aerials, vertical dipoles and all-round aerials (curved horizontal dipoles) provide less signal than a simple, indoor dipole (i.e. negative gain). They are suitable only for areas of high signal strength.

Although whips and curved dipoles offer all-round reception, this means they provide little rejection of reflections, interference and distant stations. They are not especially suitable for hi-fi use.

## AERIAL AMPLIFIERS AND ROTATORS

Aerial amplifiers are useful only at the masthead to overcome losses in a very long downlead. They are also used to provide enough signal for distribution around a house.

These roles apart, amplifiers boost noise and rubbish from an aerial by the same amount they boost wanted stations, giving no gain in quality, even though the signal strength meter of a tuner might go up. Not recommended.

Rotators are used to swing a directional aenal around, to receive more stations. A simpler solution is to have two aerials pointing in different directions, with their outputs diplexed together or, for more signal but less convenience, twin

downleads with an aerial switch at the bottom.

## ATTENUATORS

When it's necessary to use a directional aerial to cut down reflections from tower blocks, but the aerial then gives too much signal (i.e. more than 10mV), an in-line attenuator can be used to prevent tuner overload.

## AERIAL INSTALLERS

The best and overriding reason for using an installer is personal safety; roof work is very dangerous. Installers are also very quick and well equipped; DIY may take the large part of a day. Local installers should know about area-specific problems, the location of repeat and fill-in transmitters, and such like - all matters that are likely to be a mystery to most people.

Finally, good installers should have a Field Strength Meter that not only enables them to see whether an aerial is giving the required result, but can prove this to the satisfaction of the customer. Around 1mV is wanted, meaning powerful stations will come in higher (say 3-5mV) but weak ones a bit lower (0.3-1mV). If for no other reason, knowing that the aerial works properly is enough reason for using an installer.

Discuss this matter with them first though. In some areas, it may be impossible to obtain such a strong signal, no matter what aerial is used; get a variety of opinions if necessary.

## CONFEDERATION OF AERIAL INDUSTRIES

The CAI has a countrywide list of aerial installers who are members that abide by the rules below.

To find a local service, contact -

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*CAI members must employ staff competent for the business conducted. They must follow standards of practice, agree to investigation, examination or test at any time. They must guarantee any aerial, equipment and/or installation work for a minimum period of twelve months ●*



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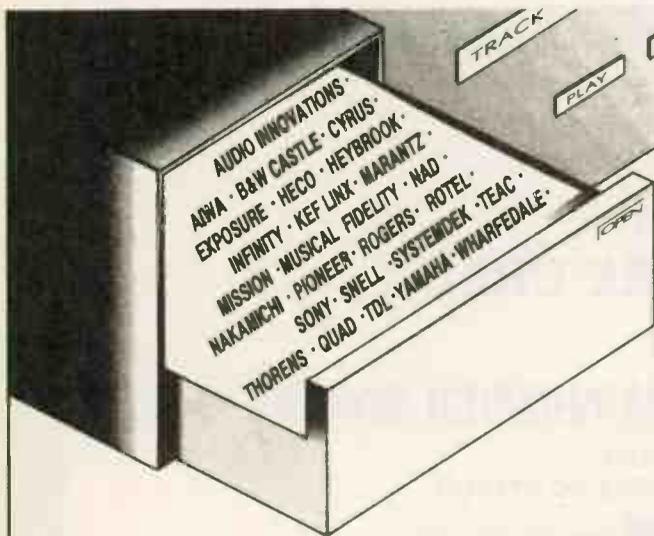
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# PUTTING THE EMOTION INTO MUSIC

**Dominic Baker feeds Aiwa's new Compact Disc player with silver and finds pure emotion coming out.**

**T**he XC-950 is one of Aiwa's two new U.K. built Bitstream CD players. Both use Philips' SAA-7350 1 bit DACs and 20 bit 8x oversampling linear digital filters, but the '950 is the 'audiophile' player of the pair, including Aiwa's 'Pure-C' pure signal anti-jitter circuit.

The front panel is typically Japanese, looking almost identical to five or more £200 players on the market, finished in black brushed aluminium with sleek, flush-mounted single touch buttons. Though the finish rapidly showed signs of wear, the construction appears not to have been compromised, with the XC-950 being weighty for its price.

Aiwa have chosen to place the CD loading drawer right above both the display and numeric keys. This is a touch annoying as it makes punching in a particular track number to initiate play quite tricky, but then again there is a remote control. This is not one of the smallest around, but it duplicates the

majority of functions, making journeys from your armchair as few as possible. If a fully-remote system is required, the XC-950 can also be controlled from the handset provided with Aiwa's XA-950 amplifier.

Aiwa have provided an optical output, allowing for the possibility of upgrading with an external D/A converter at a later date. A full-level analogue output is complemented by a remote controlled variable output which could be used to directly drive a power amplifier such as the budget models from NAD, Rotel or QED if only a CD source was required.

In common with many budget CD players, the Aiwa has a useful set of facilities to aid recording. Pressing the key labelled 'Q-Peak Search' sends the machine scanning the disc for the peak level which, once located, can then be used to set the recording level. For even more convenience, and simpler still, the Aiwa also has a 'CAL' button which outputs a signal at a level of -10dB. All

that is needed to set the recording level is to rotate the appropriate knob of your cassette deck until the meters are on the 0dB line. The Aiwa also has fade-in and fade-out controls which adds a professional touch to recordings.

I used the Aiwa with the Harman Kardon HK6550 and Mission Cyrus I amplifiers along with Maxim 3, Celestion I and Wharfedale Diamond V loudspeakers. I also had on hand Denon DCD890 and Marantz CD52 MkII CD players for comparison. What quickly became clear was that although the Aiwa was the cheaper of the three it certainly wasn't behind in other respects.

The XC-950 had an excellent bass quality, which was fast and powerful but also clean and uncluttered. The strong bass lines on P. J. Harvey's 'Happy and Bleeding' were followed with keen precision, the Aiwa never once shaken off the trail. It went on to cope with Simple Minds 'Live', the bass once again served up with control and verve.

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## Au51c Pre-amplifier

Canada - You can tell that the Au51c is special. Five minutes convinced everybody present that a pre-amp must sound like this if it is to be of reference quality.

Canada - Cold? out of its packing carton, the Sugden instantly sounded better than great. During the next few hours of operation, the unit literally blossomed and developed the sort of sound closely akin to a live performance.

## D-1 CD Player

The combination of excellent transport and high-quality parts make the Sugden a very relaxed and easy player to listen to, with no digital edge.

## Au51p Power Amplifier

Canada - We've never tested an amplifier which sounds this big and did its job so well.

## A21a Class 'A' Amplifiers

U.K. - A true thoroughbred that will undoubtedly attract newcomers to Sugden's dedicated band of followers. It almost begs you to put on more music and then proceeds to play it with aplomb.

Holland - A concert hall in your living room. The reproduction quality of the amplifier is without any stress and gives total involvement in the music. A strong feeling of musical involvement.

## SDA-I Digital To Analogue Converter

U.K. - Sugden's SDA-I bowled us over with a sound populated by masses of high resolution details and complemented by very quiet dark backgrounds and tremendous dynamics. It's a star performer all right but the price is far from the realms of high end fantasy. Heartily recommended.

Canada - At a price well below many DACS of similar sound quality, it offers real value for money in addition to its sonic refinement.

Germany - D/A converters from the Sugden stable have established themselves on a solid platform within the hi fi scene.

A48 Integrated Amplifier U. S.A. - In terms of sound quality the A48 is a revelation. More than any other integrated amplifier in my experience. The Sugden imbues music with a warmth and body that is quote addictive.

## A25B Integrated Amplifier

U.K. - Not only does the little A25B look more refined than many of its peers, it also has a sophistication to its sound that is sadly lacking in most of its immediate competitors.

Singapore - The Sugden A25B will not fail to please in the way it presents the music. It is therefore, highly recommended.

Canada - The quality of parts used, the seriousness in the way this unit is put together, are your pledge of a long lasting piece of equipment. The quality of sound produced by this amplifier is exemplary.

Australia - We are hard pressed to think of an amplifier quite so musical. A delight to the ear.

France - The general transparency of sound and the punch delivered by the amplifier are really astonishing.

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This was an impressive start because although measurement shows that nearly all CD players reach down to 4Hz, very few sound as if that bass actually exists. The Aiwa seemed to uncover more of the deep bass on recordings than most others below £300. This, coupled with the sharply presented treble, gave an impressive sense of a wide bandwidth, the XC-950 sounding capable of going well above and below the audible spectrum.

Moving up the frequency range the mid was also very good with plenty of punch and speed to it; vocals were well projected and coherent. Female vocals in particular were strongly etched and carried plenty of character, which put emotion into the music. Aiwa's player wasn't quite as lucid as the DCD890, but appeared slightly clearer and better focused, yet not lacking any of its excitement and enthusiasm.

Although the Yamaha CDX660 was the more neutral of a group we tested recently, the Denon was my preferred player. It was full of energy and made music a bit more exciting and involving than the CDX660. The Aiwa has the same virtues as the DCD890, but in addition it is

slightly cleaner and has a more neutral character, like that of the Yamaha.

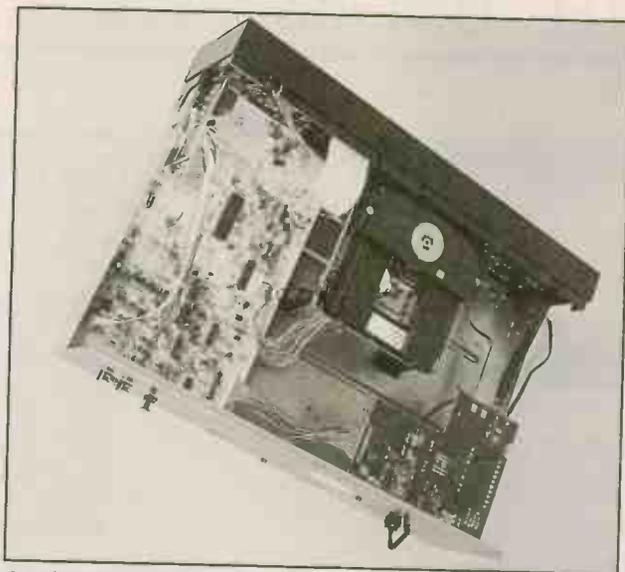
Perhaps the Pure-C circuitry that aims to reduce jitter was playing a part here. Sync-locking is a process that is used to reduce the amount of jitter occurring

the Pure-C circuit was working to some extent.

Although it was well detailed, the extreme treble could become sharp at times and did not have the precision of other £200 - £300 players. Some of the brighter tracks on The B52's 'Cosmic Thing' album proved a bit much for the XC-950. The treble would show its edge and although it wasn't offensive could be annoying for some.

I would suggest staying clear of bright transistor amplifiers combined with metal dome tweeters if you intend to enjoy the Aiwa as your front end source. A smooth-sounding amplifier such as the Harman Kardon HK6550 and either Maxim 3s or Celestion Is should prove ideal partners for a well balanced, detailed sound, one which is very respectable for the price. It has pace and impact in the bass, a forward, open midrange and a detailed treble. The scale of the presentation was impressive, if

not quite as deeply layered as more expensive players. The XC-950 is one of the best £200 players available and gives several of its more pricey rivals something to think about ●



Aiwa's new CD player uses Sony chips, except for the Philips converter that clings to the underside of the circuit board, out of sight.

between a separate CD transport and an outboard DAC, resulting in a smoother, better focused midrange free from roughness. The Aiwa seemed to have some of these qualities, suggesting that

to its rivals though, since it also has jitter reduction, which does tend to lessen the upper mid-range harshness of CD. It could well be that in use one effect would balance the other; it is impossible to tell in advance and dangerous to speculate, I find. Some apparently minor problems can be clearly audible and upsetting, others can be audible but tolerable, and certain measurable effects are just about inaudible (e.g. second harmonic distortion). Dominic measured this player before listening to it, as we always do, and was well aware of its potential shortcomings.

Frequency response of the Philips player I well remember had bass and treble lift; it looked minor but it was audible and it certainly was responsible for the basic tonal balance we heard. So it was with the Marantz, except that the treble lift had been removed, allowing the bass full rein - and it sounded like it. Dominic felt the bass was a bit too dominant.

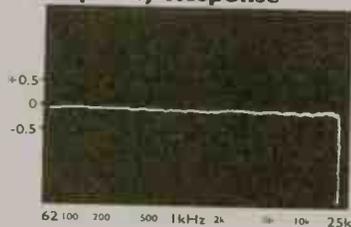
In contrast, Aiwa have given the XC-950 a studiously flat frequency response, as our analysis shows. This should give it an even sounding tonal balance. Bandwidth measured 3Hz-20.9kHz, a conventional result, so there are no gripes here.

Channel separation figures were normal and plenty good enough for a wide stereo stage. The noise figure was mediocre, but at -104dB in-band noise was still low enough to be inaudible. Aiwa have stepped up output from Philips' standard figure of 2V, to 2.4V, a +1.6dB increase that will make it sound subtly livelier in any A/B demo. **NK**

**TEST RESULTS**

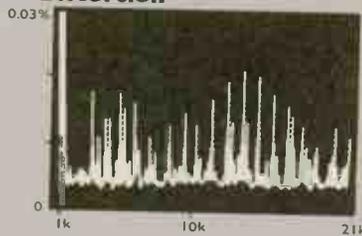
Frequency response	3Hz-20.9kHz	
Distortion		
-6dB	0.006	0.006
-30dB	0.044	0.016
-60dB	0.82	0.84
-90	31	31
-90dB dithered	2.3	2.3
Separation	left	right
1kHz	96	102
10kHz	72	77
Noise		-104dB
with emphasis		-104dB
Dynamic range		102dB
Output		2.3V

**Frequency Response**



Flat frequency response

**Distortion**



Downband noise acts like distortion

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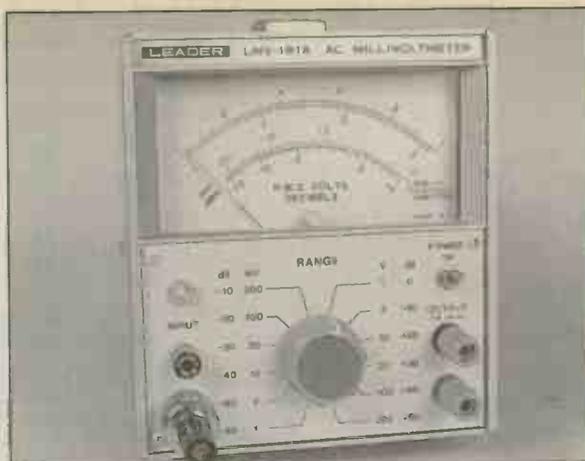
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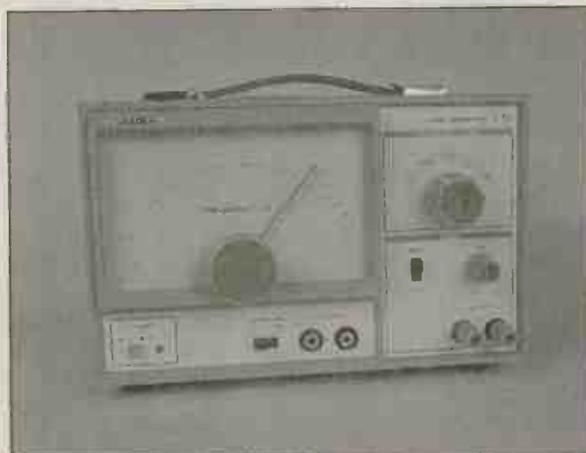
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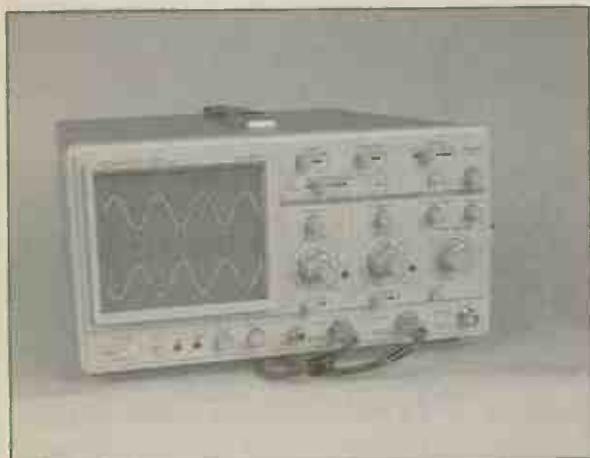
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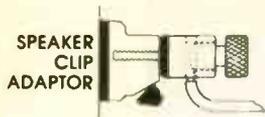
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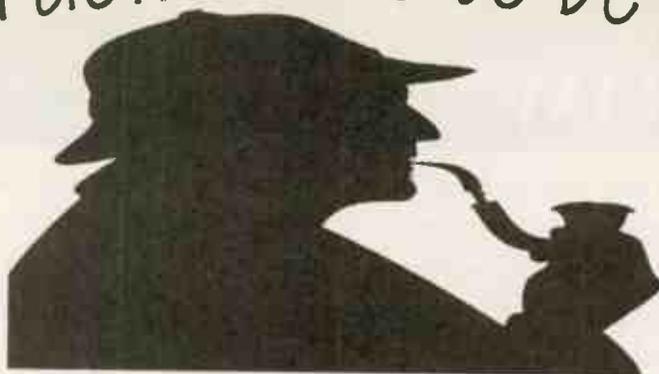
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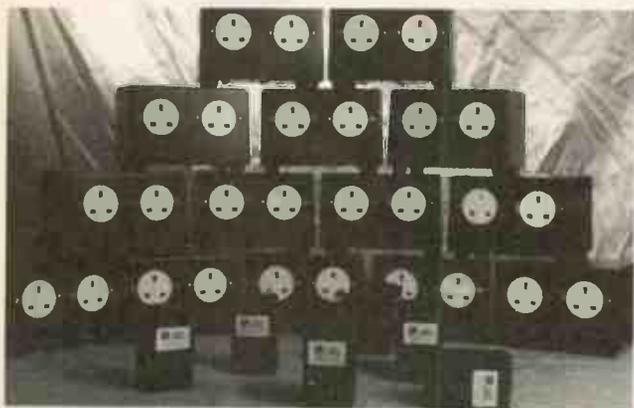
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**Holland** Phonologic Postbus 21956, 3001 AZ Rotterdam 413 0029

**Switzerland** Grammophile Rathaus platz 4, 3011, Berne 12 111 71

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## SPEED PROBLEM

Please can you help: my system first comprised a Rotel 930AX, Technics SLPG 200A, Rogers LS4 bi-wired with Monster 4 core 16 strand and Sonic Link Violet. Room size is 4 x 3.5 x 4m (LxWxD).

I listen to all forms of music: Soul, Rock, Folk, Blues, Jazz etc. Most of the time it's hi-fi but when playing some thing that's moving fast, with plenty of instruments, the sound becomes slightly muddled. I thought it must be the cheap Technics, so I changed it for an Arcam Alpha. You can hear the difference on individual instruments (more life-like), but it still hasn't cured the problem. Have I got a mismatch? If so, what do I partner the CD with to get a decent sound without spending a fortune?  
**John Whitty, London.**

There are a number of things that are likely to be causing the problem, some of which may be relatively simple to correct. The loudspeakers should be placed on an appropriate pair of loudspeaker stands. This will sharpen up their focussing and may lead to them becoming less confused. The type of support recommended by Rogers is an MDF pedestal stand which should be sand filled to give a high mass. They are 470mm high and have bottom spikes to ensure rigid contact with the floor.

Next try changing your loudspeaker cables. Two separate 2-core cables may well help you get one stage closer to solving the problem. I would recommend trying Furukawa FS-T07 which is a copper

# BUDGET QUERIES

**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.**

stranded cable with a smooth and well defined sound.

If neither of these tweaks work, then a change of either loudspeakers or amplifier may be necessary. If the sound is becoming confused then it is probably because the amplifier is losing control of the loudspeakers. You could either go for a more sensitive loudspeaker or a more powerful amplifier.

The loudspeakers are



budget queries

already quite sensitive so unless you are not particularly fond of their sound I would recommend changing the amplifier. Once again the Audiolab 8000A springs to mind as being the best solution, but more affordable alternatives are the Arcam Alpha 3 and the Harman Kardon HK6550.

These hopefully will not be necessary when your 'speakers are BlueTak'd to good stands, leaving you to spend your money on CDs instead. **DB**

## ROCKY REVIVAL

I have just purchased a Goldring Lenco GL78 stereo transcription turntable from a hi-fi exchange. Could you please give me some information on this deck. Was it regarded as a high-end turntable, what year did they stop making

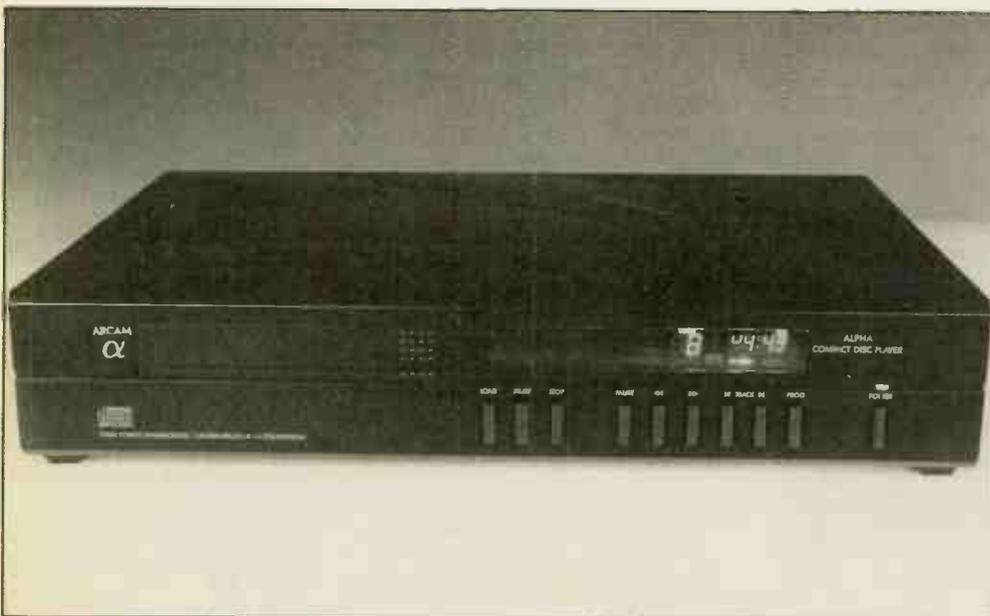
them and was it an expensive turntable at the time?. I need a cartridge, could you please advise; my price range is between £30 and £50. I would also be grateful for any information you can give me.

**D A Ellis Chester**

Unfortunately, I think you may have taken the revival of vintage equipment a stage too far. Although there is a great deal of vintage equipment that can be renovated and/or modified to sound as good or better than much of the new hi-fi (the Leek Troughline for example) a lot of it is best left in the care of junk shops.

The Goldring Lenco 78 has a number of problems, rumble being by far the most obvious, increasing with age. The tone-arm biasing almost totally precludes the use of all but basic heavyweight cartridges with conical stylus tips. These are difficult to find and are often of poor quality. Other high quality cartridges can be fitted but the amount of time and fiddling needed to do so makes it a job for only the most dedicated. The arm was also very massy.

The only thing that may save this dinosaur is the chance of finding an ADC arm. This will allow you to more easily fit a good cartridge, since it can be squeezed into the same hole on the chassis as the original arm, but even this will be fruitless if the turntable suffers from rumble. It will also involve a good deal of awkward handiwork underneath removing springs and levers, along with the original arm-wire lead-out tags.



**Muddled sound? Add an Arcam Alpha.**



In their day, brand new Lenco 78s were (just) capable of giving the Thorens TD125, which cost a little more, a good run for its money, but they quickly fell behind with age. They were quite expensive but were not really regarded as high end. The exact date of withdrawal from production could not be traced but it was sometime in the early '70s. **DB**

### RESUSCITATING REGA

My system comprises the following items: Rega Planar 3 (original model with curved tonearm), Rega R100 cartridge (with glued-in stylus), Naim Nait (original model), Castle Clyde speakers (original models - one driver has recently given up the ghost) placed close to wall, QED 79 strand to speakers and QED 50cm open stands.

This system has given me a great deal of pleasure, being lucid, dynamic and relaxing to listen to, more so than some other set-ups which at first acquaintance appeared superior.

I now require new speakers, which have to be small back-to, or near-the-wall models, due to space limitations. I also wish to replace the R100 cartridge to help preserve my LPs. Maximum budget is £200

Musical preferences: I listen to most types of music except heavy Classical, Rock or Reggae - female and 60s/70s Rock/Pop

are most often on the Planar.

I invariably listen at relatively low volume levels, therefore speakers must be capable of resolving musical detail at low listening levels.

I would be grateful if you can suggest no more than three cartridge/speaker combinations I could consider which would synergise with my equipment and improve on the relatively good results I have enjoyed so far.

**R. McNeil,  
Co. Armagh,  
N. Ireland.**

There are several worthwhile upgrades that you could apply to your system that will greatly improve its performance. The first step you have already identified yourself. Of the loudspeakers that are available to you the Goodmans Maxim 3s are by far the best. For £100 they are an absolute bargain and can be further upgraded by the little tweak described in our December issue. This involves a little soldering but is otherwise very simple and makes a huge difference to the sound.

The second stage to upgrading the performance of your system is not so easy. There are three things that will all be of considerable benefit, but only two of them will be possible within your budget.

A suitable cartridge replacement would be the £45 Goldring 1012. This is a very open sounding cartridge, lacking only the smallest amount of high frequency detail in comparison to the 1042 - which is twice the price. The 1012 will go beautifully with the modified Maxims giving you a very fast, detailed and accurate sound, as well as one having emotion and warmth when needed.

To make sure that your record deck is running

smoothly, I would recommend purchasing a new belt and having the bearing cleaned and freshly oiled. This will ensure that it is in tip-top condition, giving the new cartridge the best home possible.

With the remaining little piece of your budget I would recommend sending your Nait back to Naim Audio in Salisbury. For about £25 they will service it and upgrade it with better power supply and coupling capacitors. If anything has become noisy, they will replace the culprit components with new, higher quality parts that they now use. This should pre-empt any reliability problems that come with age, thus extending its life further and improving the performance of the amplifier.

Finally, all this work will fall into place on the addition of a Rega RB300 tonearm. Because of your limited budget this may well have to wait, but perhaps you could get somewhere near by trading in your old arm, cartridge and blown loudspeakers for the £135 RB300. The full potential of both the cartridge and the deck will be realised with this excellent arm and your system should have improved beyond recognition. RB300s can occasionally be picked up second hand for around £60-£70, so keep an eager eye out.

Lyric hi-fi in Belfast will be more than happy to service your Rega, renewing the belt, cleaning the bearing and oiling it, checking the arm is set up correctly, checking the speed and replacing the cheap electrolytics with high quality polypropylene capacitors in the crossover of the Maxim 3s as described by us.

**LYRIC HI-FI  
161/163 Stranmillis Rd  
Belfast  
or:  
84 Bridge Street  
Portadown  
Tel: 0232 381296**

The full service of the Rega will cost £15 and the cost of parts and labour for upgrading the Maxim 3s will be about £20. This upgrade makes the already excellent Maxims one of the best mini-monitors that you will find. **DB**

You would - obviously! - get a far better trade-in value for the Clydes if the blown driver was replaced. For new driver units, contact:

**CASTLE ACOUSTICS,  
Shortbank Road,  
Skipton,  
Yorks.  
Tel: 0756 5333.**

Ideally, both should be changed to retain matching. Since they are fixed to the baffle using wood screws this is relatively simple, providing that you are careful and note which lead from the crossover goes to which tag. **EB**

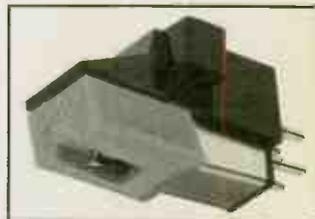
### DUAL DECISION

I have a Dual CS505-I turntable with a standard cartridge, a Dual TKS49S, I would like to upgrade the cartridge and would appreciate your advice on a compatible and worthwhile upgrade. With the advent of CD it is quite difficult for me to find anyone with enough knowledge of turntables and cartridges to give advice - and even how my current cartridge stacks up.

**Mr I. Turner  
Dundas  
New South Wales  
Australia.**

The Dual CS505-I turntable was an excellent turntable and still rates well today. The TKS49S was an Ortofon-built cartridge exclusively for Dual. It clips into the arm rather than using the normal mounting and thus is not directly replaceable. However if you contact RAM Projects, the importers of Dual hi-fi in Britain, they will be able to supply an adapter kit for £10.85. This will enable any cartridge to be fitted.

**RAM Projects  
Unit 27  
Stretford Motorway Estate  
Manchester  
M32 0ZH**



**The value-for-money  
AT95E.**

You don't mention the rest of your system so it is difficult to determine what kind of sound would suit it best. The Audio Technica AT95E is clear, clean and quite bright, and the Goldring 1012 is slightly warmer sounding. Both deserve a listen. **DB**



**Yet again the excellent Maxim 3s provide the solution.**

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