

# HIFI WORLD

FEBRUARY 1993 £2.00

**SONY MINIDISC**  
fully tested

**BEST OF**  
  
**BRITISH**

## **HARBETH HL-P3** loudspeakers

**MISSION CYRUS 1** latest amplifier

**CREEK DAC 60** convertor

**AUDIOLAB 8000T** tuner

**PYE MOZART**  
vintage  
amplifier



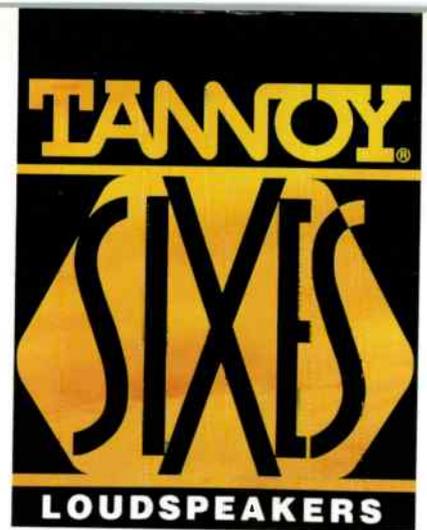
**EAR 834** valve amplifier

**COMPETITION**

**MONITOR AUDIO MA1200 GOLD** Loudspeakers



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You'll read, for instance of the compact 603, '*A speaker this size simply does not sound that good*'. Stereo Review

...rote in March '92  
...tails of musical  
...oks'  
...5 Tannoys  
...music,

*delivering with an enthusiasm and fullness that can make even the most jaded reviewer sit up and listen*'.

Hi Fi News (in October '91) wrote that the 607 provides '*detailed sound*', '*vivid imagery*' and are '*value for money speakers which perform well across a wide range of musical programming*'. Hi Fi Video of France (in October '91) said much the same - in French of course. Australia's Audio Video Lifestyle, in January '92, placed the 609 '*streets ahead of the competition*' with '*quite stunning*' performance.

Australian journal Hi Fi Review, in their January '92 issue, praised the 613 - '*Midrange was excellent*', their reviewer adding '*nothing had prepared me for the depth of bass the speakers are capable of producing*'.

These, plus many more recent reviews are yours for the asking. Please ask - we'd like you to.

Please send me the SIXES 'Press Reviews' book and other recent SIXES reviews. I'd also like a brochure and price list.

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HFV 2/93

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18-page supplement

Hi-Fi World's guide to how to do it yourself.

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Here, in our usual, modest manner is  
the announcement of the decade.

We're the first to admit that we don't exactly set the industry alight with a new product here, and a new one there every few months or so.

For example, our 3020 series amplifier has remained largely unchanged for the last ten years. If we forget our modesty for a moment, it became the largest selling amplifier in audio history and won universal critical acclaim.

We say goodbye to it with a little regret, but then of course, here is the new NAD 302 stereo integrated amplifier.

As it's from NAD, you know it has to be very good because, as you may have gathered, we don't simply make changes for change's sake.

The 302 is a significant advancement in audio design. Using single board construction with minimum length signal paths, you get greater

reliability and more faithful reproduction. Six separate inputs including two tapes and MM phono means it's more flexible, and it's more powerful too.

But most importantly of all, it simply sounds better. After all, it should do. It's taken almost a decade to develop.

Don't take an age to listen to the new NAD 302 amplifier. It's at your local hi-fi dealer now.



## THE NEW 302 AMPLIFIER FROM NAD



BRITISH BY DESIGN

NAD MARKETING LTD. ADASTRA HOUSE, 401-405 NETHER STREET, LONDON N3 1QG. TELEPHONE 081-343 3240

World Radio History

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Our guide to easy listening that's easier on the pocket.



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

## BEST OF BRITISH

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## You couldn't get closer than this.

You are together, sharing the same sounds, the same emotions. It's your song, and it always will be. This is music as it's meant to be heard. The KEF experience. Superb loudspeakers; beautifully constructed for unerringly faithful reproduction. What else could be as pure or as natural?



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For further information please telephone 0622 672261



## METAL FROM MANORBIER

E.J. Jordan Designs, who have made a speciality of metal cone drivers for thirty years, have announced a new full-range driver, the JX92 at £68, and complementary treble and bass drivers, the £48 JX51 and £68 JX125. A range of loudspeakers using these drive units has also been introduced, from the single-unit JH200 at £372 to the multiple-driver JH 10KM at £9,550.



E. J. Jordan Designs, The Dak, Manorbier, South Pembrokeshire, SA70 8QR. Tel: (0834) 871209.



## MORE FROM MERIDIAN

Two new products have emerged from Meridian, the £1,750 602 twin-processor CD transport and the 206 Delta-Sigma CD player priced at £995. The 206 is 64x oversampling, claims pure Class A analogue amplification and output stages, and a new configuration for the servo and decoder section. An advance in servo system design, Meridian say, allows both the 602 and 206 to play CDs without a Table of Contents - i.e. home-recorded CDs. A new circuit combining a precision reference oscillator with a double-reclocking section in the output of the CD player is said to result in the lowest possible jitter. Meridian Audio Ltd., 14 Clifton Road, Huntingdon, Cambs. PE18 7EJ. Tel: (0480) 52144.

## UPGRADABLE HARDWARE

Path Group are offering a simple upgrade path (sorry!) with their Ixos Hardcore loudspeaker cable. Of 'Super-Litz' solid-core construction, three strands of 0.72mm OFC copper per terminal are used, allowing bi- or tri-wiring with one run of cable. A broad, flat ribbon, 16mm wide and 3mm thick, Ixos is relatively unobtrusive and will retain its shape when formed to go round corners. It can also be 'stacked' with additional lengths for bi-wiring or tri-wiring. Tweakability is also built-in, allowing, Path say rather mysteriously, for mass damping and suspension systems to be available later. Price is £2.50 per metre.

Path Group PLC, Unit 2, Desborough Industrial Park, Desborough Park Road, High Wycombe, Bucks. HP12 3BG. Tel: (0494) 441736.



## GO WESTERN ELECTRIC

The first product after the merger of Alema of Sweden and Audion UK is a spectacular valve amplifier based on the famous Western Electric 300B valve. Producing 18watts in pure Class A, the Silver Night is designed by Erik Anderson, the aesthetics by David Chessell of Alema UK. The 300B was originally designed in 1929 and has become a byword for sound quality; the Silver Night takes advantage of its low internal impedance and high degree of self-damping in a no-feedback, low-distortion design. Price is £1,995 for a pair.

Contact Alema UK Ltd., 25 Montefiore Road, Hove, BN3 1RD. Tel: (0273) 202637.

## BRITISH BACK IN BOSTON

It looks as though the rancour caused by the Boston Tea Party has subsided. Phil Jones, co-founder of Acoustic Energy, joined Boston Acoustics two years ago and has come up with the novel Boston Acoustics Lynnfield series loudspeakers.

Both designs - the 300L at £1,449.99 and the 500L at £4,449.99 - have a very different appearance to the norm. The tweeters are covered not only by a mesh, but also have a projection which at first sight resembles a volume control, while over the mid-bass unit is what appears to be a kind of handle.

The truth is that these represent a radical departure in speaker design. The protruberances are christened 'Amplitude Modulation Devices'. Effectively, these are precision-made tubes tuned to attenuate certain frequencies produced by both woofer and tweeter in order to eliminate diaphragm anomalies like metallic ringing (both drivers are metal: an anodised aluminium dome tweeter and an anodised aluminium woofer). Construction of the drive units is unusually complex, with a combined chassis for both mid-range unit and tweeter which places them in closer proximity





than usual, the better to emulate a point source.

While the 300L is a stand mounted loudspeaker, the 500L is floor-standing, using a similar drive unit arrangement but inverted. At the bottom of the cabinet is a vented chamber containing two 6.5in cellulose fibre-coned drivers. Frequency response is claimed to be 32-35,000Hz.

An unusual sculpted column stand, which can be filled with lead shot, is available for the 300L; speakers and LST stands together cost £1,999.99.

Portfolio Marketing, 67 New Road, Little Kingshill, Great Missenden, Bucks. HP16 0EW.

## DCC TAPE FROM SCOTCH

Scotch is the latest company to launch blank tapes for Digital Compact Cassette in 45, 60, 75 and 90 minute lengths. "With the analogue blank audio cassette market in the UK in decline over the past few years, Scotch believes the new DCC format will turn audio back to growth," says marketing manager Alex Sinclair.

Scotch 3M (U.K.), P.O. Box 1, Bracknell, Berks. RG2 1JU. Tel: (0344) 858000.



## AND FUJI . . .

Whose DCC range of blank tape will be available in 60 and 90 minute lengths priced, respectively, at £5.99 and £6.99.

Fuji Photo Film (UK) Ltd., Magnetic Products Division, Fuji Film House, 125 Finchley Road, London NW3 6JH. Tel: (071) 586 5900.



## AND PANASONIC

First DCC blank tapes from Panasonic to appear in the UK in advance of their own Digital Compact Cassette player will be a D-60 at £5.49 and a D-90 at £6.49. A D-45 and D-75 will follow in 1993.

Panasonic Consumer Electronics UK, Panasonic House, Willoughby Road, Bracknell, Berks. RG12 8FP. Tel: (0344) 853943.



## AND, FINALLY, MAXELL.

Whose first DCC blank cassettes will be available in 60 and 90 minute lengths. Maxell's recordable MiniDisc, allowing 74 minutes recording time, should be available during Spring 1993.

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



## NEW DELTA TUNER FROM ARCAM

Soon after the appearance of Arcam's Delta 290 integrated amplifier (to be reviewed soon) comes a new Delta tuner; the 280, priced at £349.90. FM only, with twenty presets, the tuner can be controlled from Arcam's forthcoming System Remote Control Handset priced at £60.

A & R Cambridge Ltd., Pembroke Avenue, Denny Industrial Centre, Waterbeach, Cambridge CB5 9PB. Tel: (0223) 440964.



## SURROUND SOUND VIDEO FROM AKAI

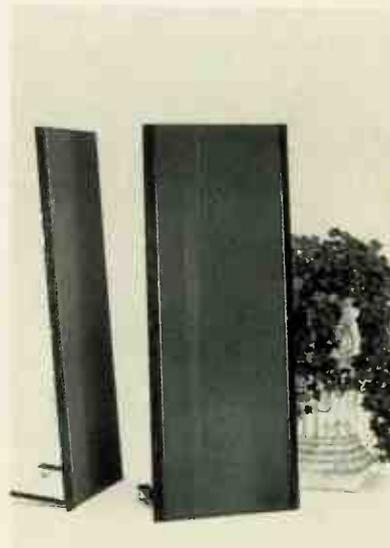
Akai's latest hi-fi stereo video cassette recorder incorporates Dolby Surround Sound, Nicam stereo decoder and a 12watt stereo power amplifier. Including on-screen programming and a teletext facility, the VS A1100 costs £629.99.

Akai (UK) Ltd., Haslemere Heathrow Estate, The Parkway, Hounslow, Middlesex TW4 6NQ. Tel: (081) 8976388.

## A SLIM MAGGIE

No, not the late Prime Minister, a Magneplan loudspeaker for "music lovers who can't afford high-priced, 'high-end' speakers" say importers Absolute Sounds. The same size as the Magneplan SMGa, the new 'quasi-ribbon technology' SMGb at £850 has the bevelled-edge appearance of the more expensive Maggies and the same three fabric options: black, grey or off-white.

Absolute Sounds Ltd., 58 Durham Road, London SW20 0DE. Tel: (081) 9475047.



# The surprising HARBETH HL-P3

Smooth, sophisticated . . . and so small

The HARBETH HL-P3 Hi-Fi/AV Broadcast monitor  
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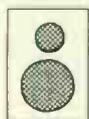
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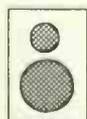
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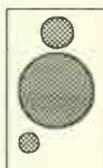
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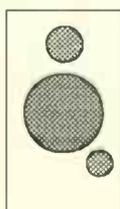
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LS3/5A



HL-P3



HL  
Compact



Monitor  
HL5

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## ROGERS NEW MONITOR

It may be a near match in size to the classic LS3/5a, but despite a grille which superficially looks similar, Rogers' new LS3 compact monitor loudspeaker is different underneath. It's Andy Whittle's first new design for the company; he has taken over where the late Richard Ross left off.

The infinite-baffle LS3 sports a Rogers polypropylene bass driver mounted in a cast magnesium chassis, and an adapted SEAS tweeter. The eight-element crossover is hard-wired. Beautifully veneered - front and back - the LS3's cabinet is constructed of birch ply in best BBC tradition, with an MDF baffle. Black Ash or Walnut finishes cost £450 per pair; Rosewood is available at £539. Four gold-plated terminals allow for bi-wiring. We review a production model next month.

Concomitant with introducing the LS3, Rogers have relinquished the licence for the BBC LS3/5a after building eighty per cent of the total manufactured - more than 45,000 from the company over the years. The decision was reinforced by difficulties with supply when KEF, who manufacture the drive units for the BBC monitor, ran into difficulties last year. Its place in the Rogers range will be taken by the LS3. Despite rumours to the contrary, Rogers maintain their close relationship with the BBC, continuing to build the LS5/9 and LS5/8 under licence from the BBC.

Swisstone Electronics Ltd., 310 Commonsides East, Mitcham, Surrey CR4 1HX. Tel: (081) 6402172.



## IN BRIEF

### GOODMANS EXTEND PLAY

Goodmans' new range of personal Compact Disc players, the 'XP' series, will run for twelve hours on one set of alkaline batteries, says the company, a marked advance on the normal two or three.

Goodmans Industries, Units 2 & 3, Mitchell Way, Portsmouth, Hampshire PO3 5PR. Tel: (0705) 673763.

### PIONEER AT 96kHz

A DAT machine sampling at 96kHz has gone on sale in the Akihabara - Tokyo's 'Electric Town' - stealing a march on the opposition. Digital recording with twice the normal 48kHz sampling rate has been mooted before as likely to achieve better recording quality. No details are known, except that the Pioneer is dual-standard, and is priced at just under £1000 at the current exchange rate.

### LASER ILLUSIONS IN UK

Laser Illusions has appointed Ashmead Audio Imports UK and South West European distributor of the Focus Optical Spatial Filter we reviewed in the November '92 issue.

Ashmead Audio Imports, Suite 59, Centre Point, Southwark, London SE1 5NX. Tel: 081-879-8820.

### DIVA IN BATTERSEA

A new hi-fi shop has opened in Battersea, in London, combining owner Simon Gedge's interest in music and interior design. Selected for both aural qualities and aesthetic design, brands stocked include Audio Innovations, Michell, Primare, Posselt, Quad, John Sheame, Tesseract and others from Britain and Europe.

Diva Audio Fidelity, 7 Webbs Road, London SW11 1XJ. Tel: 071-924-5286.

### SNELL VICTIM OF EXCHANGE RATE

C.S.E., UK distributors of Snell loudspeakers, have announced price increases consequent on the devaluation of the pound.

C.S.E., Suite 4, 1-3 Haywra Crescent, Harrogate, N. Yorks. HG1 5BG. Tel: (0423) 528537.

### B&W BUSINESS UP

Twenty six years in business, and B&W say business is booming, with turnover up 13% in 1991-1992. The company now claims to be the largest loudspeaker exporter in the UK; sales are up 30% in the USA, 25% in Hong Kong and 30% in Taiwan. Market share in the UK is also up, says the company.

### NEW NORTHWOOD

Northwood Audio are another dealer not frightened by the recession, with a new shop open in Aylesbury.

Northwood Audio, 98 Cambridge St., Aylesbury, Bucks. Tel: (0296) 28790.

### A-400 TWEAK

Tom Evans - designer of the Michell Iso, Argo and Alecto - has put his mind to the Pioneer A-400. Some subtle replacement of internal parts tweaks up the Pioneer - including the phono stage - to even better performance, we're told. We should hear for ourselves soon. Cost is £120 plus V.A.T., including return carriage. As always, readers are reminded that alterations invalidate Pioneer's guarantee.

Contact Tom Evans on (0443) 816856.

### CABLE CAMPAIGN

Campaign Audio Design have announced two new cables, one for turntables and the other for digital applications. Czar-KCK200 is a very thin - 0.2mm - high purity silver wire with a very flexible Kapton dielectric for tone-arm wiring at £6.50 per metre. For the less nimble of tonearm re-wirers, CAD has arranged a tie-in with Definitive Audio of Cornwall who will rewire your tonearm with Czar.

Second is Silurian, a 75ohm digital interconnect which employs a thick silver-plated pure copper conductor and a silver-plated braided copper signal return. Prices, including termination with large gold-plated phono plugs, range from £30 for 0.25m to £45 for 1m. Silurian comes with a fourteen-day money-back guarantee.

Campaign Audio Design, 110 Llandudno Road, Cardiff CF3 8PG. Tel: (0222) 779401. Definitive Audio can be contacted on (0726) 844039.

### PINK FACES, PINK PRICE

A printing error accidentally knocked a thousand pounds off the price of the Pink Triangle Da Capo Digital to Analogue Converter we reviewed in the last issue. It is expected to cost £1,350.

new connectors are clever space savers which allow an optical connector to be inserted into the normal tiny 3.5mm jack socket. On the MZ-1 the electrical connection within the jacks provides analogue line input and outputs.

Blank Minidiscs can store up to 74 minutes of music, Sony say, which is the same as the maximum time on a CD. To make a digital recording after inserting a disc, all that is required is to slide the Record switch to activate the write laser. The player will start recording where there is space on the disc, so you do not need to search forward for a blank space. When you have finished, the MZ-1 automatically writes the Table of Contents (TOC) data to the disc. This stores information such as track name and number, so that a track can be found with the same speed and convenience as that of a pre-recorded MD. Because MD can be re-recorded any number of times (unlike CD-R, the other recordable CD medium), mistakes can be easily recorded over or erased.

If you record from an analogue source the MD player will see an album as one continuous track. To divide the tracks you have to find the gaps manually using Search and Pause, then work the Edit switch until "Divide" appears in the display. Pressing Enter twice then splits the track. Finally Stop has to be pressed to write the new information to the TOC. This is fiddly and time consuming but only has to be done the first time a recording is made. There is no automatic gap sensing and numbering (Renummer Command) system of the sort fitted to DCC.

Naming the disc is a lengthy process. You have to press Play and then slide the Edit switch until "Disc Name" shows in the display. The name is entered using an alphanumeric keypad. Track labelling is a

similar process. In practice it is faster to divide and name analogue recorded tracks at the same time.

A word of warning to potential buyers of this machine is required. The rechargeable battery supplied and the charging circuit operate in a different way to normal rechargeables. I would strongly

*"If James Bond had a Walkman (and Sony were British) it would be this one"*

recommend that you read the charging instructions if you want the longest life from the battery.

I lived with Sony's MZ-1 over a weekend; I wasn't one of the most sociable of characters for the period. It was playing through my home hi-fi for a large amount of the time but on leaving the house those painful in-ear headphones were pressed into service to continue the experience. In fact, it was at these times that I had most enjoyment out of MiniDisc.

My own source of portable music is a Sony Walkman Pro. The bulkiness of the MZ-1 was not as off-putting to me as it might be for someone used to a cassette-box sized ultra-light personal stereo. Although the MZ-1 did not have the lucidity or tonal qualities of the Pro, the ability to quickly access favourite tracks and to have ten albums stored in one pocket was a great convenience. One little gripe is that when in its pouch, the track skip buttons were concealed, but

not the search controls. It would have been more convenient if these had been reversed I feel.

When wired to my hi-fi, the MZ-1 was unimpressive in recording quality, even allowing a generous margin for it being a first attempt. In many ways it was reminiscent of early 16bit 4x oversampling CD players. The bass was undynamic with no real depth, the treble was sharp and gritty. And the mid? The midband was compressed and weak, failing to project forwards to any reasonable degree. This was possibly the biggest failing of the MZ-1. The rest would have been more bearable if the midrange had been lifted more in line with the bright treble.

Imaging, stereo separation and the height, width and depth of soundstage were not in the same class as CD. Whereas CD can occasionally trick you into believing that you are there at the live event, MD was always recognisable as a recorded medium. Even via headphones the stereo effect was not as noticeable as on my Walkman Pro.

Having said all this, the MZ-1 I played with was an early model for the Japanese market and I believe, on past experience, that they will do better in the future. MiniDisc is still in its early days and thus deserves to be given a chance. It does have a great many things going for it, such as minute disc size and the ability to make direct digital copies from CD. Carefully conducted listening tests have shown that the ATRAC digital data compression system doesn't degrade sound quality any more than Philips' PASC system; Eric has been involved in listening tests that proved this quite clearly. Martin Colloms feels likewise. So we'll have to wait and see how MD turns out in the long run. My weekend with it wasn't a great success, but this may change in the future ●

## PRESTIDIGITATION

**MiniDisc provides over an hour of digital recording on a disc half the size of a CD.**

**Is it magic? Dominic Baker explains how Sony do it.**

MiniDisc is seen as Sony's answer to Philips' Digital Compact Cassette (DCC). Whilst DCC is a tape recording system MiniDisc uses discs and a laser. Here's how MiniDisc works.

A MiniDisc measures 72 x 68 x 5mm in its plastic computer disc sleeve; it takes up approximately one third of the space of a DCC cassette. Recordable MiniDiscs are magneto-optical, which in more down-to-earth terms means that they require both a laser beam and a magnetic

field from the opposite side to record. This has the advantage of producing a very stable recording that will not degrade with time.

The outline theory of magneto-optical recording is relatively easy to comprehend. Consider one particular spot on the disc. This spot is first heated by the laser to a point above a critical temperature (2000°C) which effectively dissipates its magnetization and its optical properties. The disc continues to spin, the spot

cooling as it moves away from the laser. A magnetic field is then applied by a recording head, in a similar way to that of a cassette deck, which affects the magnetic and the optical properties of the disc.

The discs can be re-recorded with no loss of quality due to this process. The record laser is effectively working as an erase head wiping the magnetic field from the disc. In practice the magnetic head remains fixed in one orientation making

the erased section all the same polarity.

The recorded discs have the digital code recorded and stored in a magnetic format, but this also produces optical differences that can be read as digital zeros and ones by an optical laser system, as in CD. However, prerecorded discs are made in the same manner as CDs, meaning they are mechanical/optical.

The Kerr effect provided Sony with the method they required to read magnetic information on a disc with a laser. Upon striking a specific portion of the disc, the polarized light will be reflected back along of one of two opposing directions, depending on the magnetic polarity, N or S. Photodiodes are then used to sense which way the light has gone and the digital code is extracted. Ironically, this patented technique was developed by Philips at their Eindhoven Laboratories.

A MiniDisc can store up to 74 minutes of musical information on one 64mm optical disc. This is the same as for a CD yet a CD has approximately five times the recording area. How do Sony do it? The answer to the problem is data compression.

The system that MiniDisc uses is called Adaptive Transform Acoustic Coding (ATRAC). It was developed by Sony specifically for high-fidelity audio and uses the latest digital data compression technology. ATRAC does two things.

Firstly, the music signal is split into discrete frequency bands. In the areas where the ear is most sensitive these bands are narrow to enable the music to be reproduced accurately. Where the ear is less sensitive, at high frequencies for example, the bands are wider and thus have less definition. So, the analogue signal, which consists of an infinite number of bands, is split into blocks whose size depends on the sensitivity of the ear in a particular region.

Secondly, it uses non-uniform time splitting. When a complex passage of music is changing quickly ATRAC allocates short blocks of time so that the changes can be accurately followed. If the music is changing less rapidly, ATRAC allocates longer time blocks which in turn enables narrow frequency bands, better frequency resolution and thus better sound quality.

The whole ATRAC process is referred to as non-uniform frequency and time splitting and enables music to be recorded using 1/5 of the bit rate of CD. A decoder is used to effectively reverse this process and the music signal is restored.

Because the laser reads more information per second than is required for playback it does not need to be reading the disc all of the time. In fact it reads in intervals, constantly refreshing the memory. If this periodic reading of the signal is interrupted by a shock or movement, however, once it has re-tracked the laser will read constantly. The memory will quickly fill up and the laser reverts to its normal periodic reading ●

**MEASURED PERFORMANCE**

The ATRAC digital compression system of MiniDisc is so specialised and complex (like PASC in DCC) in its processing routines that it must be tested with music-like signals if valid results are going to be obtained. Ordinary test signals are invalid.

For this reason, the tests here are a little unusual - but they have to be. Philips have confirmed their accuracy and validity however. The music-like signal is noise weighted to the recommendations of IEC Publication 268-1 (see Fig 1). This is mathematically corrected in our Hewlett Packard HP3561A FFT spectrum analyser to give a net flat frequency response.

Through the Analogue-to-Digital Convertor (ADC) of the MZ-1 recorder, then back out again through the Digital-to-Analogue Convertor (DAC), the frequency response of the monitoring circuits is revealed (Fig 2). I expected it to be flat, but a slight upward trend toward high frequencies of +0.2dB or so is present.

After recording onto disc, frequency response of the recorded signal, including ATRAC processing, was that shown in Fig 3. Much like Philips' PASC system, high frequencies get chopped out when full level must be described in all bands at once. This means that when a wideband music signal is recorded - say a full orchestra playing fortissimo - everything above 14kHz or so gets chopped out by MD, on the basis that the ear, under these circumstances, won't be able to hear it in any case. This is shown by the depressed 16 and 20kHz (centre frequency) bands at far right in the third-octave analysis. To their left, treble around 12kHz has clearly been raised by +1dB to form a peak. Plateau treble lift of +0.5dB can also be seen from 1.25kHz upward, so the MD recorder adds treble emphasis to a signal. This was at -10dB recording level; I found the effect became even more pronounced at lower levels.

That MD should affect a signal in this way was surprising and disappointing. However, like everyone else, we had an early Japanese player and - as always - final judgement has to be made on production units. It could well be that the response errors I measured are easily corrected, although loss of high frequencies probably won't be, being intrinsic to digital data compression systems like ATRAC and PASC.

MiniDisc was also noisy with a measured hiss level of -79dB (true RMS, IEC weighted). This compares with around -98dB worst case for CD and similar for DAT. Noise from cassette with Dolby S hovers around -78dB and a good Nakamichi can manage well over -80dB with Dolby C. So our early MD recorder was not especially quiet, but hiss should be barely audible all the same.

Measurements of distortion were frustrated by noise. A -30dB tone at 1kHz produced the result seen in Fig 4. Summing components in all bands, which draws in noise as well as distortion harmonics, gives a level of 0.1%. CD manages 0.02% under the same conditions, so MiniDisc has roughly five times as much distortion. This isn't too promising, but it is better than early CD.

Our early MiniDisc recorder had its performance limitations, as these

measurements show. But I suspect they are teething troubles. Perhaps a better ADC would effect a cure. Or it may be that Sony's carefully worded statements about sound quality being "below that of CD" have meant just what they say - and we have all been expecting too much. Only time will tell. **NK**

**IEC Test Signal Energy**

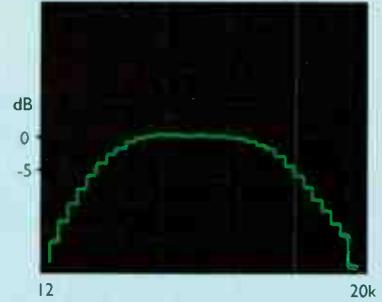


Fig 1 - noise spectrum of music-like IEC 268-1 test signal used.

**Frequency Response**

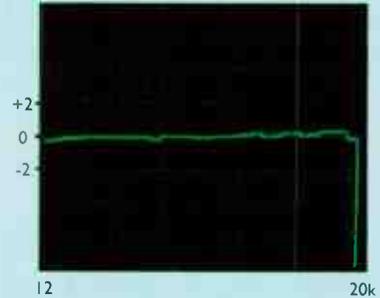


Fig 2 - Frequency response from 12Hz up to 20kHz through the ADC and DAC, on Record-Pause. Some slight treble lift.

**Frequency Response**

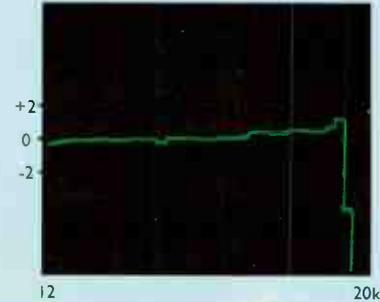


Fig 3 - Plateau treble lift above 1.25kHz of around +0.3dB, with +1dB peak at 12kHz, from a recording made onto MiniDisc. This will give recordings a bright sheen.

**Distortion**

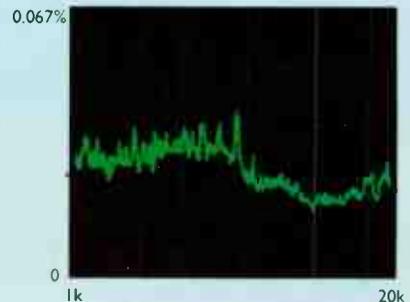
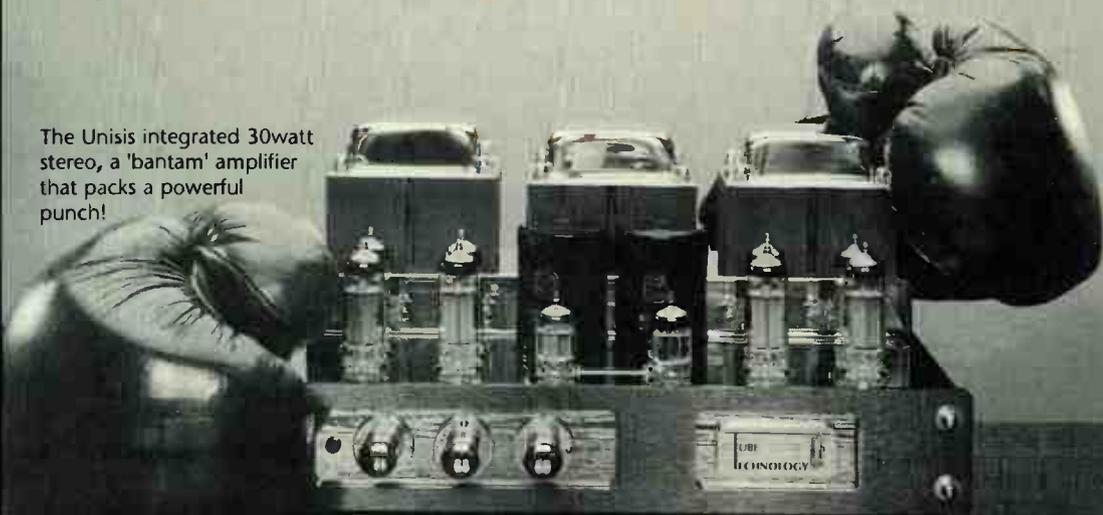


Fig 4 - Distortion harmonics and noise amounting to 0.1% at -30dB recording level.



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# FORMAT FIGHT

**Eric Braithwaite referees between Sony's MiniDisc and Philips' Digital Compact Cassette.**

I was there - at the listening session in London's Cornflake Shop - when Sony's MiniDisc had a resounding thumbs down, as the Sunday Times' headline proclaimed on 22nd of November 1992. David Mellor, MP and ex-Heritage Secretary, announced that he wouldn't buy either Digital Compact Cassette or MiniDisc. War between the two formats, in the public eye at least, has commenced.

The Sunday Times test included all five formats: vinyl, cassette, CD, MiniDisc and DCC. Vinyl addicts will be disappointed to hear that LP passed the post last: cries of "Shame" and "Order! Order!" For this test, I switched between recordings made on a Philips DCC900 full-size machine straight off the production line and Sony's MZ-1 portable MiniDisc recorder.

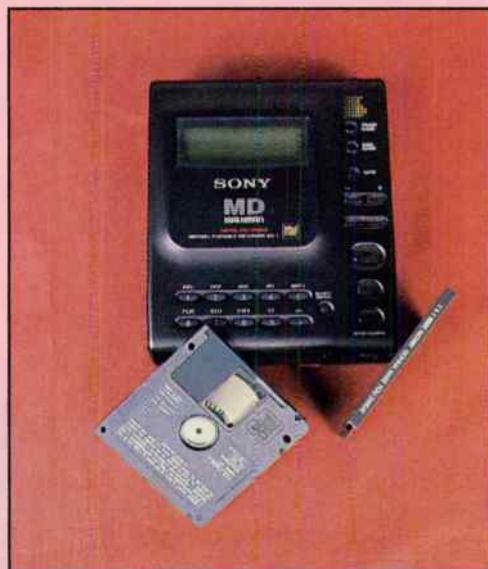
Ideally, we would have compared like with like, but the Sony arrived without the non-standard optical lead to allow direct digital recording, unlike the DCC900 which has both optical and co-axial digital inputs. As a result my comments here may be more on the quality of the in-built Analogue-to-Digital and Digital-to-Analogue conversion than the ATRAC compression it uses. I heard an outboard ATRAC processor at Metropolis Studios in London last year, when I wouldn't have marked it down against Philips' outboard PASC demonstrated at the Decca London Recording Studio earlier.

It was the same track of Japanese Jazz band Gumbo I used at Metropolis - acoustic guitar, flute, bass and piano - that provided the opening shot in these hostilities. A fellow listener commented later that he didn't realise it was a soprano flute for eight bars; the MD recording - compared to the DCC version - made the band sound second-rate and the recording amateurish. The flute had a thinner sound, with a few top notes sounding tormented, the guitar had a metallic tinge and while the bass was quite well-rounded in the mid-range, it became spongy lower down.

Depth of field and the impression of studio space were markedly diminished. Some piano notes below Middle C occasionally drooped - there's no other word for it - into the band instead of belonging to a distinct instrument. There was a curious sensation of there being two separate instruments. Curiously, a similar effect could be heard on Pascal Roge's Decca recording of Satie's 'Le Picadilly' (his spelling!) where it sounded almost as though there were two one-handed players. On DCC, the picture was clearer, the rhythm faster, the musical

connections between the players more evident; they were more obviously playing together - as were Roge's left and right hands on the Satie piece.

DCC was much better than MD in clarifying the tune underlying the improvisation - it's 'While My Guitar Gently Weeps' - with the bass also firmer, warmer and rounder. The flute, too, was clearer, cleaner, apparently playing longer



notes and with some of the player's intakes of breath retained, though not quite with the full perspective and precision of CD.

On DCC, the tape of Tuxedo Cowboy's 'Woman of the Heart' had a drier air than the CD, particularly noticeable on the vocal, with the studio ambience somewhat reduced. A curious effect - but probably not one that would impinge on anyone who didn't know the recording extremely well - was that the flautist appeared to be driving in a faster lane than the singer. On MiniDisc, the whole band was in a slow lane, with the recording's grip on rhythm and timing markedly looser. Mid-range detail was slightly more pronounced than on DCC - the off-stage noises and fingerwork on fretboards more obvious - but at the expense of dynamic range overall.

A consistent picture was developing by this stage, confirmed by Gary Moore's 'Story of the Blues', Prince's 'Thunder' and James' 'Sound'. In every case, DCC scored over MD in dynamic range, observance of tempo, forcefulness and speed. At worst, MD left a lingering impression of an Opti-Modded FM Rock station, while DCC tapes often diminished some of the air and space around players, MD recordings were described by another listener - a musician himself - as "flat". Prince's

'Thunder' lacked some of its force and drive; Gary Moore's husky Blues was short of muscle, with the guitar riffs - which should be wild and exciting - rather dull and ordinary.

Classical music also demonstrated very similar traits; on Malcolm Arnold's 'Larch Trees' a minor indecision in the string section on the DCC copy was momentarily heard as a slight 'pumping' effect; I've heard this before on DCC, though it's elusive. The flute had a metallic tinge, though orchestral colour was full with string and brass sections all satisfactorily in their places. For some reason I wasn't entirely convinced by the whole picture; it's a somewhat soft-focus recording, and the DCC tape had just that extra layer of gauze.

On MiniDisc, tonal colour was thinner than the CD, the tempo slower, although pizzicato strings shone prominently; perhaps over-prominently. Time signatures - as happened with Rock recordings - proved more elusive than on the rival format. Decca's de Falla disc turned out to sound more truncated in depth, colour and tone, the castanets, hand-clapping and shouts at the beginning of 'The Three-Cornered Hat' more perfunctory and casual than they should be.

The soprano, although recorded in a very reverberant acoustic and well back in the hall, sounded 'swimmy'.

You will have guessed by now which half of David Mellor's comment I agree with. In its current form, used as a domestic recording medium, the MZ-1 does come some way behind Philips' first full-size DCC recorder. Yet I've heard 4:1 compression not only from the laboratories of Philips and Sony, but JVC as well. None - in isolation - displayed the gross effects I heard during my first experience of the MZ-1 MiniDisc player.

So who's the guilty party? The A-D convertor? The D-A convertor? Are Sony's convertors for some reason inferior to Philips', perhaps because they work on battery power? Are there anomalies in the implementation of ATRAC in the MiniDisc player? Questions, questions. . .

Until we can by-pass the in-built conversion, I for one suspect we're not going to know the real answer. In the meantime, as a convenient portable, MiniDisc is an attractive space-saving format. As a digital recording medium, if I was short of space, either for the machine or the software, I have to say I'd go for DAT at the same price. On MiniDisc for the moment, as the Speaker announces in the House of Commons after a vote, the Noes have it ●



# World



## CAPITAL GAINS - OR LOSSES?

The DCC argument rages on and I feel it necessary to add my thoughts to the forum. As we have already seen from CD, the actual sound quality of the product will have almost nothing to do with the system's survival. What will matter is the perceived sound quality and convenience, both of which will be judged on the merits of the publicity surrounding the whole product.

The general UK press (and what I have seen of the world press) seems remarkably divided over its prognosis for the future of the format. Very few layman articles have seemed competent on the technicalities of the system and many have completely failed to mention its (only?) advantage over CD: recordability.

It appears that DCC will provide a similar sound to CD, but with all the problems associated with its older cousin, the Compact Cassette. This is especially true beyond our world of critical hi-fi. If Which? magazine can't even tell the difference between a £300 CD player and a £150 one, what hope does Mr Midi have of telling CD from DCC on pure sound quality?

What this means is that the advertising and general publicity that Philips is generating is trying to play down the recording aspect of the system. The reason for this is obvious: the recording industry's fear that DAT and CD-R would be transferred straight to DCC. We have seen what this lobby can do to a fledgeling system in two cases so far and Philips are obviously desperate to avoid it happening a third time. With the hype over DCC stressing that many new and back-catalogue titles will be available at the launch of the product, we are being told that DCC is to be mainly a new replay medium.

But why do we need a new replay medium? We've got "perfect sound for ever" from our CDs. The answer is we don't. CD did (in my opinion) provide something new: convenience. DCC provides something new, but that role is

being played down so we can assume that blank tape prices will remain high to discourage that function.

What we are left with is a system that has been introduced because the manufacturers need it. The sales of CD players have dropped dramatically over the last few years. CDs are selling well but the market is not showing major growth any more. Philips are now in the position of having every Tom Dick and Harry able to build his own CD player and so more companies are competing for a stagnant market. This never impresses shareholders.

So Philips innovate to stay ahead of competitors. But, in order to make their innovation worthwhile, they must sell it to

the public. What we are seeing fits perfectly the theories of the economist Joseph Schumpeter (1883-1950). He saw the driving force of capitalism as a "gale of creative destruction". Along comes an innovation that changes society, raising living standards. This is then copied by others until the whole innovation collapses under the next one.

It applies to the methods of building cars, new types of shops and in this case to hi-fi. If Philips produce DCC merely as an alternative to CD it will just join the CD market without increasing it. If they stress its record role, it could just be the innovation to destroy CD.

So I believe that while the recording companies hold the axe over any format that plays

up digital recording quality, we will not see a violent revolution in hi-fi formats.

**Graeme Bishko, London W3.**

See our review of MiniDisc and comparison of MD and DCC, pp15-19. **EB**

## EXPUNGED

I recently discovered that my brother has sited his new Croft power amp. on a mixture of Oasis and sponge. I think the idea was that it would reduce external vibrations. Unfortunately, the amplifier being rather heavy, it compressed the sponge so much it looks like it's mounted on four cheeseburgers. My brother told me that he'd

## TESTING AND TWEAKING

There have been a number of features in your magazine over the last few months that I would like to make some comments on.

I was very interested in your two articles on the IPL STL3, owning the Mkl version. I was pleased you found them excellent as I have nothing but praise for them. I was a bit bewildered by the initial problems you suffered. I have no grounding in electronics, but I found the instructions ample. The objective testing and tweaking was very interesting, particularly with the bass tuning. I achieved an excellent bass performance from the start without long-haired wool. But my STL uses the SEAS P17REX bass unit which has a larger magnet and lower Qts (total system Q) which provides greater damping and control. I have to use mine close to a rear wall, but the bass is excellent and does not suffer excess bass emphasis, so I would recommend anyone restricted by room size and positioning to

try the above alternative.

When I built mine, I placed the crossover in an external box attached to made-to-measure metal stands (£30 from a local welder) which made 'fiddling' easier. One change I made which I felt brought major improvements was changing the metal dome tweeter to the new SEAS soft dome. This produced a cleaner and smoother response which allowed higher volumes without harshness. But then I have developed an aversion to metal domes!

I have also built the IPL M3 using Morel 142 5" bass and tweeter as used on the Origin Live OL1A. Initially used in a small closed box, the sound was quite remarkable for its size, though the bass did flap a little at low frequencies at high volumes.

I have now transferred the above units into a transmission line enclosure which has significantly improved its performance providing much greater openness and a tighter, better controlled bass which goes a long way down for a

little driver. But I did find I had to use a little Long Haired wool at the end of the line to reduce some bass warmth and emphasis, due probably to the smaller driver and higher Qts. The crossover was again placed externally, fixed to wood stands (spiked) using 4in x 2in timber. The tweeter is superb, and would be an excellent partner for the STL3s.

One of the great joys of DIY speakers is that, aside from the satisfaction of building them, you have the opportunity of using high quality components. A great source for some of these is that bible of catalogues, Maplin.

In the latest edition they have a new range of polypropylene capacitors from ICW (made in Wales). These have a rated voltage of 630V DC and little extras such as hand-soldered, solid copper lead-out wires. They are expensive - £33.65 for 4.7uF - but they sound superb. I compared them against the excellent Solens and found they offered an improvement

## Letter of

**Send your letters to: Hi-Fi World Letters Page,**

# writes

sent dad out to get the Oasis and he ended up buying the stuff from a funeral parlour. Apparently the staff were in hysterics when he told them what it was for. Mr Jolly has a lot to answer for!  
**Laurence Leadall,  
Welwyn Garden City,  
Herts.**

Heavy hi-fi tends to squash the softer Sorbothane squidgy feet that are available for isolation as well. We hope the experiment didn't result in a lifeless kind of sound. **EB**

## LISTENING INVESTMENT

Six months have elapsed since I upgraded my ageing Philips CD player to a Pioneer PD9700 (which I noticed was used to test

the six pre/power amplifiers in the August 1992 issue of Hi-Fi World). I am very pleased with the way the new machine has settled into my system. However, I would like to make a couple of comments which I have discussed with friends and are seldom more than touched upon by the hi-fi reviewing fraternity.

1. My hi-fi system is at first glance an odd selection of components: Royce Elegia/SMEllls A&R P77 front end/A&R A60 amplifier, Monitor Audio R352 speakers on Partington stands, Sansui TU-S33L tuner and Aiwa L300 cassette deck. Before buying anything, I invest time in listening to components and assessing how they will interact with my system. Changing the

sound does not necessarily mean an improvement. It is possible to build a system costing thousands of pounds which may yield disappointing results. (Hi-Fi Shows can provide proof of this observation all too often.)

2. I have noticed, irrespective of source or type of music, a certain volume has to be reached to realise the full potential of a system. A certain volume level is reached on the amplifier at which point it is as if the music jumps out of the loudspeakers instead of hiding inside.

I know what Hi-Fi World means when they say "capable of real guts and thunder in the bass department." However, this may be only achieved at un-social (to some) levels. I have a thorough understanding of Noel

## WIN FURUKAWA FA-2010 BALANCED ANALOGUE INTERCONNECT CABLES

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The writer of the most interesting or funniest letter will receive a free set of Furukawa FA-2010 "balanced analogue" interconnect cables, worth £95.



Keyword's measurement sections and with the increasingly technical base, i.e. Noel, Paul and now Martin, it should be ensured that a good correlation is maintained between measurement and "listening perception".

3 Vinyl vs. CD is a no win situation created by good marketing. The manufacturers who convinced the majority of people to buy midi-systems with £50 turntables have had an easy job convincing the same people to buy £200 CD players. Ironically they would not consider spending £155 on a Rega Planar 2 yet will spend hours telling you how much better CD is than hissy, scratchy, rumbly old records.

Finally, keep up the good work at Hi-Fi World; the balance of reviews is perfect and the Record Reviews are excellent. (I suppose we won't be able to call them Record Reviews much longer!)

**Chris Bailey,  
Haverhill,  
Suffolk.**

I believe that system mismatching and the disappointment that results from it is a widely appreciated problem, as our queries pages highlight. Readers are often sold surprisingly inappropriate combinations of products, but it is difficult to know the exact reason. And this will always be a problem whilst people have differing tastes and expectations.

The volume dependent effect you notice is due both to the human hearing mechanism, which effectively becomes wider in bandwidth at higher

## The Month

in being somewhat cleaner and less coloured. There is only a limited range of values, though.

In the cable section of the catalogues they have some very nice OFC speaker cable. I have tried the type S12 for internal wiring on the bass with excellent results. They also have a flat four-core 2.5mm OFC at only £32.95 which I am going to try.

Referring to G. L. Hewick's letter (Nov. 1992), he should have tried Maplin's High Grade common-screened pair (XS4OT) with high-density polyethylene insulation. I first tried it to connect up my cassette deck, which was a large improvement over the basic cable. I then tried it between the pre-power sections on my ION SAM 40. After some A/B-ing, I found it provided improvements in bass definition and overall clarity - and only at 98p per metre. I now use it to connect up the tuner as well.

I heard a couple of programmes on the radio a few months ago. The first was

Radio 4's Science Now where, if I remember correctly, a professor held a number of musical evenings where he played a number of recordings on LP and CD. At the end of the sessions, the results were constantly 90 - 95% in favour of the LP!

The second was a documentary on Radio 3 about one of the huge superstores in Japan. When they visited the vast audio/visual department where they sold everything, they were told by the manager that the biggest-selling product was the turntable, stating a large number of people were saturated with high technology and were now saying they preferred the sound of the LP. He complained that they had sold out of turntables, as very few Japanese manufacturers made them. Here is a great chance to cut our balance of payments and get the likes of Rega, Systemdek, Linn, etc., to start selling their wares by the ton. Sweet revenge!

**R. D. Lewis,  
Tenby,  
Dyfed.**

Sweet indeed! And very ironic too. But then, a good friend of mine has a warehouse in Kings Cross, London, full of Garrard 301s awaiting export to Japan. Once there, they are snapped up by enthusiasts, who mount them in all sorts of special heavyweight plinths. Mint samples without a Watts Dust Bug stain (not removeable!) on the front fetch quite a price I'm told.

Mindful of this I dug my own brand new, but unused (it rumbled badly) Garrard 401 turntable out of the loft recently. It has been derumbled (hopefully), dropped into a special plinth and fitted with a new 12in SME arm, the 312. This mouthwatering monster will be collected for assessment soon and, we hope, will shortly grace our pages. The costs, the means and the sound will then be made public and we may at last find out just what it is the Japanese discovered so long ago about this product. What a pity that so few people in Britain know. **NK**

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

Continued on page 47...

# MONITORING IN MINIATURE

**A mini-monitor loudspeaker from Harbeth, a company founded by a man from the BBC. Alan Sircom studies the quality of the HL-P3.**

**H**arbeth's £399 HL-P3 is a broadcast quality miniature monitor loudspeaker in the tradition of the famous BBC-designed LS3/5a. Harbeth have been a licensee for that loudspeaker, which is still a world-wide best-seller, since 1987. As a broadcast monitor, however, the design cannot be changed: a single LS3/5a of 1993 must match any other single LS3/5a whether it was built ten years or fifteen years ago.

Over the years, it was felt that the LS3/5a was getting long in the tooth, despite its late-Eighties computer-optimised revision. Spondor and Rogers have both approached the problem by making it bi-wireable, but Harbeth felt that this change was little more than cosmetic.

Rogers are in the process of producing their own studio monitor, which will be known as the Studio 3; Harbeth's approach was to completely redesign a compact monitor, to bring it in line with the Harbeth 'family sound'. In extensive listening tests, it was felt that the standard LS3/5a has a slight upper mid/lower treble emphasis that overstates piano notes.

Early in 1990, Harbeth launched their HL-P3 as the compact monitor for this decade. Although comparisons between the LS3/5a and the HL-P3 are almost inevitable, only the 4mm connectors are common between the two designs. The dimensions of the two speakers are very similar. The HL-P3 stands 305mm high, 188mm wide and 170mm deep. It weighs 5kg and suits light, tall stands; Harbeth plan to launch a pair of matching wooden stands which should suit well.

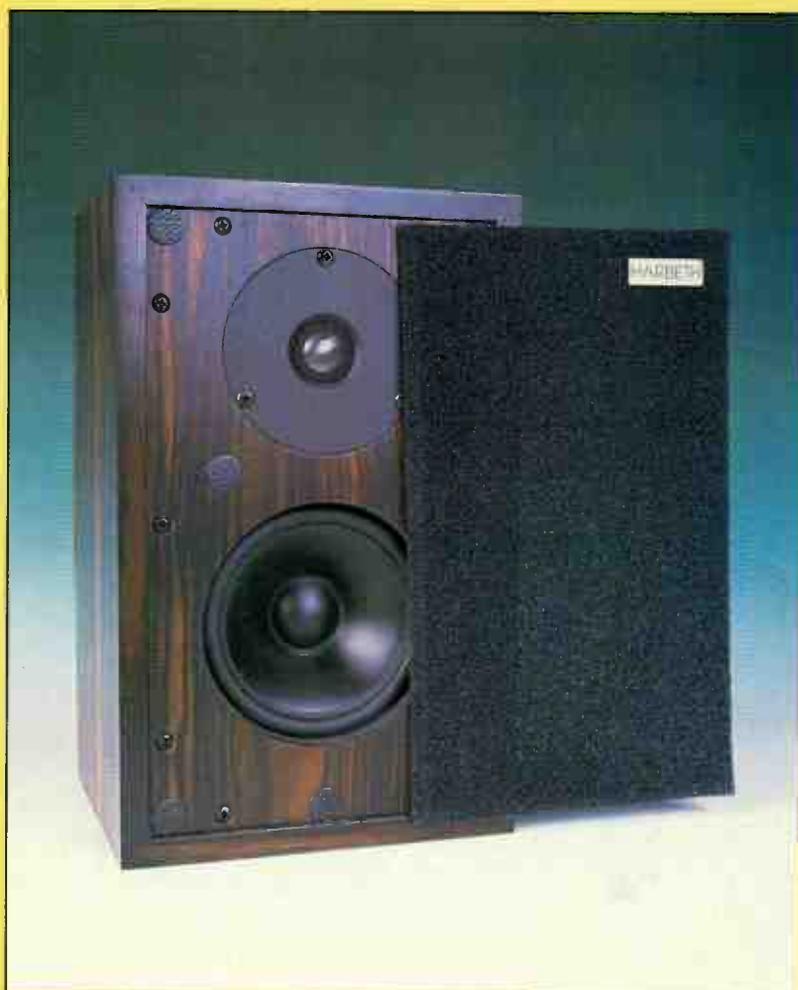
Instead of the KEF drivers used in the 3/5a, Harbeth have opted for SEAS units: a 19mm aluminium dome tweeter and a custom 110mm mid/bass driver. Both are allied to a

twenty-one component, 18dB/octave crossover, which divides treble and bass sections for bi-wiring. Each component, even down to the capacitors on the crossover board, is individually tested and matched in-house using Fast Fourier Transform computer analysis, to give a +/- 0.5dB pair match.

As a true A.V. monitor, both drive units have shielded magnets to allow the P3 to be positioned close to a

colour television, without distorting the screen colours. In tests, the BBC have intimated to Harbeth that the stray magnetic field from HL-P3 is lower than that of the earth itself and this is why broadcasters such as BBC TV, Channel 4 and NBC News use the P3 in their control rooms.

Both impedance and power handling of the HL-P3 are improved over the LS3/5a. The P3's nominal impedance is now claimed to be a



more normal four to six ohms rather than the BBC's ten. This, combined with a power handling figure increased to forty-five watts, gives the P3 a claimed 2-3dB advantage over the ageing LS3/5a. Sensitivity, however, remains low at 82.5dB/1W/1m. This low efficiency figure is due to an attempt to maximise the bass extension of the small sealed box design.

The cabinet itself is made from 12mm MDF, with an 18mm MDF baffle, with all internal surfaces damped using bitumen. The front baffle and sides of the cabinet are then veneered to match; Teak and Walnut are standard finishes, with seven others to order - our samples were a deep, pair-matched Ebony. The HL-P3 is supplied with an acoustically transparent foam grille, but this is easy to remove as it is only attached by seven Velcro circles on the front baffle.

Listening to the HL-P3, I found its mid-band clarity and life the most striking feature. Play any recording with a distinctive voice, Richard Burton reading 'Under Milk Wood' for example, and the absence of character is uncannily Quad-like. One of Harbeth's subjective testing procedures is to use live vocal against recorded spoken voice; similar tests involve solo piano and solo violin. If the loudspeaker can pass this test, it is well on the way to success.

Imagery is also clear and highly three-dimensional. Playing a live

recording, the full ambience and spaciousness of the hall is clearly portrayed. Detail and articulation are first rate, again just a tad short of Quad Electrostatic levels. Where it scores over the standard Quad is in its dynamic range. While the HL-P3 lacks the dynamic scale of the Snell/Audio Note K loudspeakers, the HL-P3 is still adept at displaying changes in dynamic range.

Obviously, such a small loudspeaker does have its limitations. The bass, although tight and well controlled, does not extend down to the depths. It is quoted as being 6dB down at 68Hz, the area from 80Hz-20kHz maintained within tight +/- 3dB limits. Deep bass simply fades away gracefully, never sounding bass-light; low frequency information is fast and surprisingly well portrayed for the 'P3's size and specifications.

### Revealing

This loudspeaker is also surprisingly revealing of source. There can be the beginnings of metal-dominance in the treble, but on closer examination, this is more likely to be the fault of the ancillary equipment. Partnered with a low-cost system, the HL-P3 will sound pleasant, but not exactly enthralling. Up the ante and the HL-P3's will pass muster, even when the cost of the system turns into the sort of money used to place deposits on houses.

The HL-P3's most obvious competitor, apart from the LS3/5a, is

the illustrious Epos ES1 I. Of the two, the Epos offers the listener a more impressive performance, but it is one that is, ultimately, incorrect. The ES1 I may well sound powerful and dramatic on Rock programme, but its drama is its downfall; play spoken word or Classical music and this dramatic presentation soon leaves its mark.

The review samples themselves came from an odd, un-Harbeth source, a friend who has used Epos ES14's in a comparatively high-end system for some time. He has tried to upgrade his loudspeakers, listening to a variety of up-market models, but always returned to the ES14's until, by chance, he fell for the diminutive HL-P3s. Ultimately, he would like more bass than the little box can provide and is tempted by the as-yet untested bigger Harbeths, such as the HL Compact 3 and the Monitor HL5. He was, however, an instant convert to the Harbeth philosophy.

Eric and I both insisted that the Harbeth HL-P3 be included in Hi-Fi World's recommended products list, from brief exposure to the loudspeaker at dealer demonstrations. Hearing the P3s through my own system only reinforces that recommendation. Developed using rigorous objective and subjective testing procedures, it lives up to its 'Broadcast Monitor' title and I would be hard pressed to find a better, more neutral sounding, design anywhere near the price.

### MEASURED PERFORMANCE

The Harbeth HL-P3 is designed as a small monitor loudspeaker and as such is required to have a reasonably flat response. It fares well in this respect, measurement showed, with the midrange from around 250Hz up to the high treble at 16kHz only varying by a maximum of about 3dB.

The gently contoured lift across the upper midrange will push vocals forward in the classic LS3/5a manner, although in this case not to such an extent. This, coupled with the very flat treble response, should provide an amenable sounding balance free from peaks or suckouts.

The traditional concept behind this speaker - that of a highly accurate near-field monitor - never was about deep bass extension. Accurate portrayal of vocal detail was always higher up on the agenda, but even so the HL-P3s have a respectably extended frequency response, being only -5dB down at the 63Hz band in our third-octave analysis.

Sensitivity of miniatures such as this is always going to be low if a respectable bass extension is to be achieved. The output at 1m for a 2.84V pink noise input was 82dB which is a lower than the

average value of around 84dB. The Harbeths need a powerful amp to go loud.

Impedance measures an overall 9.3 ohms with the curve dropping to a very low 3.2ohms at DC. This was apparently necessary to balance the desired Q and cone weight against the required response. Some care will have to be taken when selecting an amplifier for these speakers as this low load could cause some amplifiers trouble.

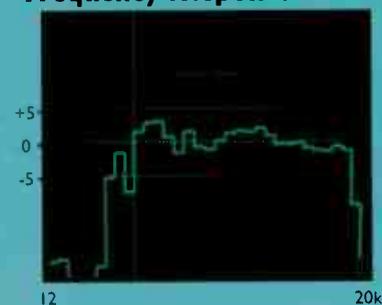
The impedance curve is quite steep in places - an indication of reactance in the load. This reactive element can cause problems when driven by some amplifiers. For example, the Harbeths will appear to have a better sensitivity at moderate levels but at high level the low impedance may cause premature clipping with the wrong amplification.

The combination of low sensitivity, high overall impedance dropping to below 3.5ohms in places and the reactive load they present to an amplifier makes the Harbeth HL-P3s a tricky customer to deal with. I would suggest that an ideal partner, if a little expensive, would be Naim's NAP250 with a suitable pre-amp from the same company. This has excellent low current delivery which is exactly the

treatment that the Harbeths require.

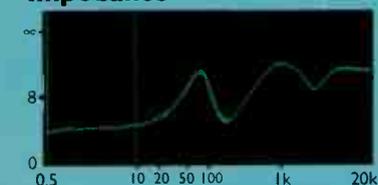
Another cheaper alternative would be the Audiolab 8000C/P which will give a slightly drier tonal balance but will still be capable of driving the HL-P3s to high volume levels. **DB**

### Frequency Response



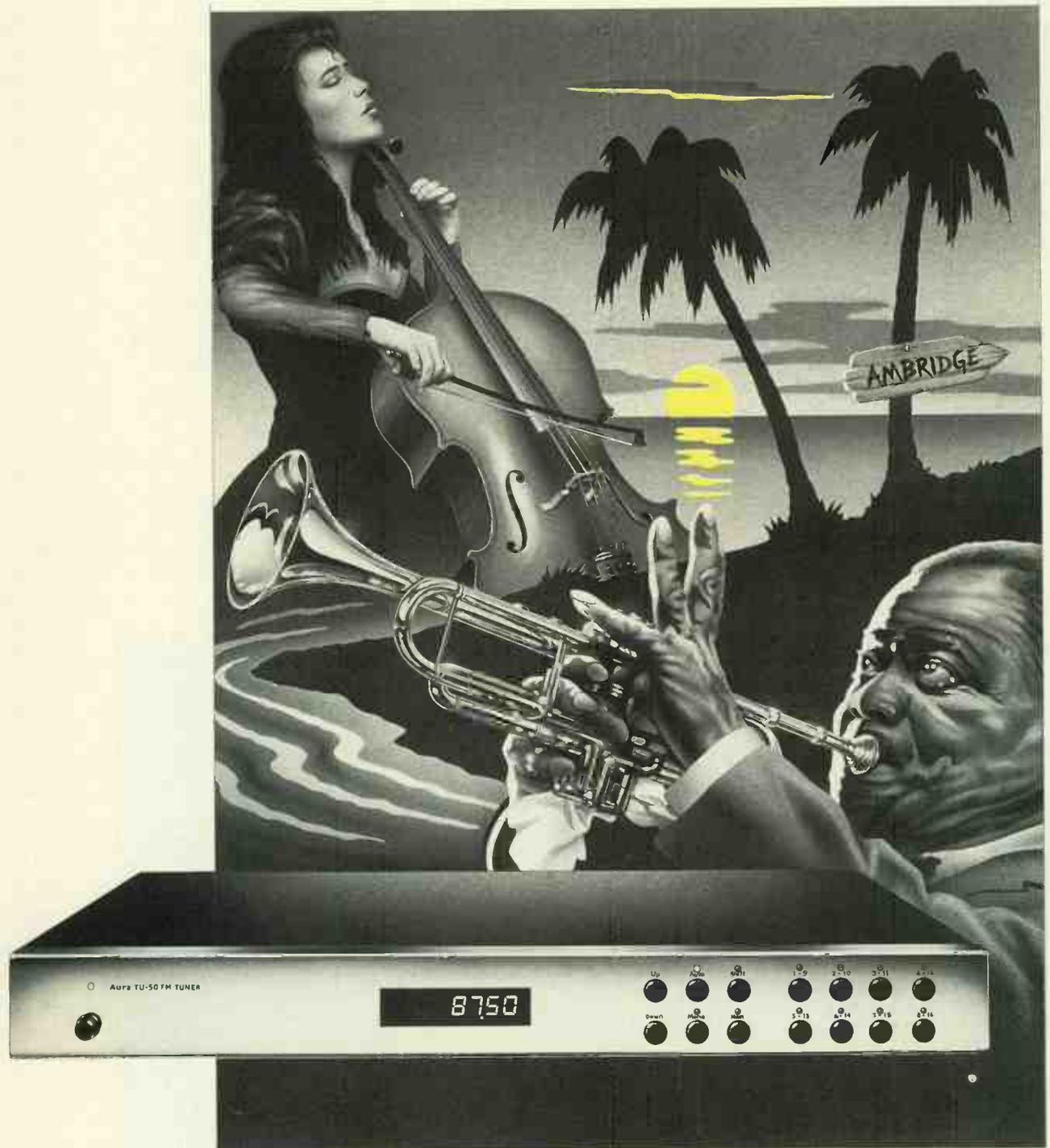
A raised mid-band.

### Impedance



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# Taking on a tradition



**When Alan Shaw bought Harbeth, he continued a tradition and fulfilled an ambition.**

Harbeth is a classic spin off from the British 'establishment', which in this case means the BBC. The company was founded in 1977 by Dudley Harwood, on his retirement as head of the BBC's Loudspeaker Research and Design Department. So we are talking here about the origins of what has become a distinctively British approach to loudspeaker design, pioneered by the Kingswood Warren facility.

The company name, in typical English fashion, was derived by Dudley simply adding the first syllable of his name to the last syllable of his wife's; she was called Elizabeth. First product with the new Harbeth name was the Type HL Professional Monitor, which was succeeded by Mark II, Mark III and Mark IV versions. In 1977, this two-foot high box with a baffle, holding an 8in bass unit and 1in soft-dome tweeter, cost £135 plus VAT. A walnut veneer cost a whole pound extra! In 1987, Alan Shaw took over the company - it went public in August 1992.

Eric Braithwaite interviewed Alan Shaw about the modern Harbeth.

*EB: What was your introduction to sound reproduction?*

BBC local radio was run largely by volunteers, myself included, but with professional engineers. The monitor speakers were a commercial model - the Maxim. It was when I heard the engineer say "No, there's something funny about that" I realised what loudspeakers are for - to hear through that glass partition into the studio. I was thirteen.

*EB: And it developed from there?*

I built cabinets at home; I remember even trying to mould Bextrene cones over the kitchen cooker! I read up the published BBC papers; that's where Dudley Harwood's name came to light. He was one of those responsible for the BBC's reputation as the world's principal research centre during the Fifties and Sixties. When the Spendor BCI came out, there was a review in Studio Sound by John Shuttleworth which suggested that it was possible to get a monitor-quality sound from a two-cubic foot box. In 1975, Hi-Fi News and Record Review



published a review of a new miniature, the LS3/5a, about the size of a shoebox with an almost unbelievable frequency response of 80-20,000Hz.

*EB: I believe you built one?*

A friend was lucky enough to be offered the parts, circuit diagrams and assembly instructions. I was already familiar with the classic 'plywood and bitumen damping', but the crossover was more challenging, though I managed to wind my own coils. The first piece of music I played was 'Young Hearts Run Free' by Candy Stanton: everything the BBC claimed about the importance of sound was manifest in this speaker, the LS3/5a.

*EB: When you took over Harbeth yourself, you gained a licence to make the LS3/5a?*

In the following year, 1987. The BBC had found one of the originals, and to their horror discovered the current run at the time sounded different! KEF re-designed it using Computer Aided Design and the BBC was confident enough in our approach and enthusiasm to grant us a licence. We offered a standard of construction and testing significantly better than our competitors.

*EB: The technical back-up and quality of construction is something Harbeth is very proud of; but how did you come to take the company on?*

My career took me in to semiconductors, working for NEC, but loudspeakers remained a hobby. I was in London, with time to kill, and I thought "Harbeth". I looked them up

and drove over. I pulled up in what was a kind of goods yard; in the office was this old man, obviously unshaven for a couple of days, fast asleep in front of a one-bar electric fire. And here was Dudley Harwood who, to me, was of guru-like stature. He was very much a one-man band and it took a while, but I bought the company. My wife thought I was mad.

Coming from a Japanese semiconductor company, I was shocked by the lack of quality control. From that day forth, we've tested every part, every driver, and kept records of every single speaker. As Spencer Hughes (the 'Spen' half of Spendor) said, "Any fool can make a speaker on a kitchen table; the clever bit is to make ten thousand that are exactly the same, not an iota better or worse."

*EB: Your experience in working for NEC had its advantages in that respect?*

We took the turnover from about £44,000 in Dudley's last year to about a million in one year.

*EB: And the company is very well thought of in Japan?*

Dudley Harwood had a very powerful reputation there. The Far East remains our largest market - and exports accounted for 97% of our turnover last year.

*EB: Harbeth have made something of a speciality of miniature monitor-type loudspeakers since you took over. How did the HL-P3 come about?*

I designed the P3 to fill a role the LS3/5a isn't suitable for - a reference monitor loudspeaker for use in close proximity to a colour television. My children asked if I could give them a pair of small loudspeakers to be placed either side of the colour television for hi-fi stereo videos. It was then I discovered that the LS3/5a's were unsuitable, due to their wide, stray magnetic field.

*There was no need to ask if Alan Shaw thought he'd succeeded; the HL-P3 continues a BBC tradition, as he first recognised it as a schoolboy. An ambition fulfilled?*

"An ambition fulfilled." ●

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# AUDIOPHILE

# AIRWAVES

**Three years of development have gone into Audiolab's new tuner.**

**Eric Braithwaite has been waiting with baited breath . . .**

**I**t's a wise company that takes its time building a tuner. The quickest way is to simply put other people's mass-market chips and circuits into a recognisable box and leave it at that. Audiolab's £600 8000T tuner however, has taken three years from conceptualisation to production. The time has been well-spent in the lab thinking about the airwaves and using up a few wet towels.

Audiolab's documentation struck a welcoming chord for me: "there is life after video" it says. Mind you, with simulcasts still going, there's life with video and a high-quality tuner as well. The 8000T is a tuner that's not been frightened by the Far Eastern competition. Apart from the 'Audiolab' name and standard shape of On/Off switch, anyone passing a shelf of tuners might not notice

anything particularly British about it. Anyone used to British tuners, however, will observe that it is something of a rarity, for it covers Medium Wave and Long Wave as well as VHF stereo. Out on the front are all the pushbuttons that might be on a Pioneer, along with a bold digital read-out in green. There is, however, that engaging eccentricity, a large rotary tuning knob to supplement the Up and Down frequency buttons, specially for people like me who prefer to twist instead of push. This has magnetic detents, so the steps between frequencies can be felt: an unusual touch, if you'll pardon the pun.

Over the last few years, the airwaves have become a little pushed for space in Britain. To deal with the crush, IF bandwidth is selectable between Narrow and Wide, not only on FM but on AM as well,

a rare addition. Switching to Narrow, however, does result in diminution of quality, especially on AM when excellent sound turns into a dull, dreary affair. I found, however, that without it AM reception was extremely clear and clean with the least interference I've heard from any AM tuner.

Presets amount to a healthy thirty-nine accessed by nine buttons marked 1-0. The display will prompt for a two-digit entry or display 'E' for error if anyone tries to enter a number greater than the limit. Two 'Step' keys allow the user to work through memorised stations in order. Other front panel controls allow mono to be selected for weak stereo stations and there's a 'Hi-Blend' switch to reduce the noisiness of weak stations at the cost of reducing stereo separation.

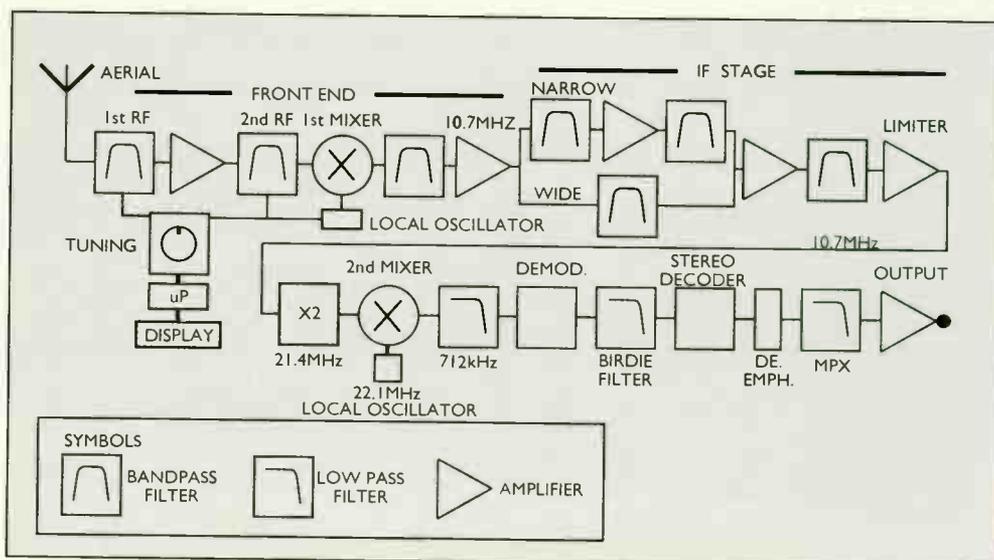
All the essential operations are flagged on the informative display. 'Mono Only', for instance will show that you have deliberately chosen to listen to a station in mono, a very useful aide memoire when you tune to a stereo transmission which happens to be playing early Rolling Stones in mono, for example. Also showing, as they say in the cinema, is a centre-tuning scale and an accurate logarithmic signal-strength meter.

With all this user-friendliness, it's odd that the opportunity to utilise the Radio Data System with its ability to display the names of stations hasn't been taken. Well, not directly, anyway; a curiosity is an additional output at the rear which does allow the RDS carrier to be taken to a separate decoder which will display the information, though the manual explains its other function. This is one which the ordinary buyer won't think twice about, yet it will make reception as close to perfect as can be obtained.

Thanks to the odd gale every now and then, aerials on the roof do wobble. Then again, you might be having one installed specially for this tuner. An installer will check for multipath interference. The RDS output, in conjunction

with another labeled 'FM Signal Strength' connected to an oscilloscope will show whether the aerial is properly aligned. Somewhat specialist, this, but handy. Connecting the Signal Strength output to either a DC voltmeter or oscilloscope will

give a continuous reading of signal strength. This might not seem particularly exciting, but it will allow you to line up a rotatable aerial to within a degree or so for any transmitter with considerable accuracy.



This is a simplified block diagram of the VHF/FM section of the 8000T tuner.

The aerial signal is tuned at the first and second RF stages and before the mixer to select the wanted station in the 88-108MHz band. The station frequency is converted down at the mixer to 10.7MHz before leaving the front end module. The IF stages provide further, tightly defined signal tuning to eliminate unwanted stations and interference.

The limiter removes the influence of signal amplitude variations then the signal is frequency

doubled to 21.4MHz. A second, fixed mixer then down converts to 712kHz to eliminate spurious responses.

Demodulation to yield the basic audio signal takes place and then stereo is constituted from the composite audio signal. De-emphasis and multiplex filtering are applied, then the signal is amplified and buffered by an output IC.

Not shown here is the AM section, nor the control, metering and display circuits.

## MEASURED PERFORMANCE

Here's a purposeful looking tuner if ever I saw one. It bears all the hallmarks of Audiolab, namely simple, clean styling combined with a set of thoroughly well presented and meaningful features that only a couple of engineers would decide upon.

The Audiolab comes as a flash of honest dedication, of steadfast belief in the value of offering something that is genuinely useful and well thought out, even if the benefits aren't immediately and transparently obvious.

Dominating the front panel of this tuner is the soft green, back-lit liquid crystal display panel, custom designed to Audiolab's requirements and free from RF interference, unlike fluorescent displays. It's probably the best tuner readout I have ever seen, improving upon the excellent Hitachi readout of the FT-5500 series. The centre tune indicator reads in 25kHz steps either side of the signal's carrier frequency, showing the precise degree of off-tune. Audiolab use double the tune resolution of most synthesiser tuners: 25kHz instead of 50kHz. This allows a degree of fine tuning to be applied to lessen possible interference from nearby transmissions, since 25kHz of detuning doesn't usually degrade the sound too much.

The signal strength meter is similarly calibrated so that it covers a wide enough

range to give a useful picture of external conditions. It can be used to assess aerial effectiveness and even the likelihood of overload. Each of the nine segments reads a different signal strength from the aerial, covering a huge range stretching from a miniscule 1.6µV right up to a strong 2.5mV. The owner's handbook identifies the threshold levels and range of each LED. My own measurements agreed perfectly, except on the highest segment, which on our sample lit at 2.5mV when the handbook says it should be 10mV. Curiously, with more than 5mV of input applied, the display extinguished, showing no signal at all. This, I am told, is due to misalignment of our early sample.

Sensitivity was high at 20µV for a -50dB hiss level on stereo, at 1.6µV for the same condition with mono transmissions (or with mono selected on the tuner). Even though this matches the best tuners available, the 8000T still needs 1mV or more from the aerial to give its best performance, like most other tuners. Then 'full quieting' is reached and, on this tuner, hiss sinks to -74dB. That's not an especially low figure; budget models manage as well these days. However, it is low enough for hiss to be just about inaudible I find, the threshold of inaudibility being around -70dB.

I was surprised that the 8000T uses double conversion through its IF (Intermediate Frequency) strip. The mixer after the front end

delivers the usual 10.7MHz IF frequency. This is changed up to 22MHz then down to 712kHz in order to eliminate the various spurious responses that tuners can suffer. Audiolab designed their own front end and IF strip; this tuner doesn't rely on circuit blocks from Toko or Alps. It results in a better defined response within the two IF bandwidth options: wide and narrow.

I notice that this facility has become largely cosmetic with many tuners nowadays, changing the response of just one tuned IF stage by very little I suspect, since measured differences in selectivity are small and usually confined to adjacent channel station spacing, which is very close. The Audiolab demonstrates a far larger change between wide and narrow IF, wide giving 54dB of selectivity, which is quite low. However, distortion remains very low (0.1% or so) right up to full modulation and channel separation on stereo is high at -56dB, falling less than usual to -40dB at high frequencies (10kHz). Since full modulation at high frequencies gives most deviation, it is here that the 8000T performs unusually well in comparison to other designs, due to its wide passband (and resultant low selectivity of course).

However, the penalty is that strong stations will cause interference to weak ones if close by. If this happens, 'narrow' IF must be selected. Selectivity (alternate channel) improves

Otherwise, connections at the back are straightforward. There's a 75ohm co-ax input for a VHF/FM aerial and terminals for an AM loop aerial as well as an external AM wire or rod antenna for those who take their AM listening seriously. Audio output is a standard pair of phono sockets; Audiolab say the 8000T should be capable of driving long interconnects if required.

Audiolab's efforts have proved more than worthwhile; the company has spent time listening to top-ranking tuners and the 8000T is definitely up there among the best. It's characterised, on FM, by a remarkable sense of breadth and depth, only exceeded in this respect by the top Naim. Tonal quality is supremely natural and smooth: anything from a saxophone on Jazz FM to a Stradivarius on Radio 3 has that credibility that never leaves a listener in doubt about the character of the instrument or the style of the performer.

**A Visible Tuner**

Staging is a real strong point: in a live concert, whether it's Classical or Rock, it's possible practically to see into the wings, almost walk around the performers. The music is full of nuance, every inflection of a singer reproduced, each turn of an announcer's head before a microphone practically visible. Audiolab's new tuner is a master at rendering a broadcast studio visible to every corner in the space between and behind the speakers.

It's unlike some others, however; there's a gentle roll off at the top end that

neither diminishes the dynamic range nor softens the impact of staccato notes, but gives this tuner a more 'laid-back' aura. It doesn't stop a lead guitarist or a vocalist stepping out in three dimensions, but they are just that bit softer edged than other tuners in this rank. Nonetheless, this is an entrancing sound, full of life with not a dead area anywhere.

AM reception, for the first time I can remember in years, was sheer bliss to listen to. Yes, stations like Capital Gold are effectively mostly mid-band, but it was possible to tune into Radio 1, John Peel, or a Folk or Classical broadcast on the World Service without feeling at all disappointed after listening to FM. The dynamic range is obviously more limited, but the delight of hearing real tonal colour is rare. I happily listened right through to broadcasts on AM I'd only normally take snatches of. When you complain to



Audiolab's front end module and control microprocessor sit in metal screening containers to prevent interference.

yourself that a news correspondent's phone line was substandard - on AM! - you know you're hearing quality.

Audiolab's 8000T has definitely proved worth waiting through its gestation period for. It lacks the hair-shirt inconvenience of some of the upper-bracket models, it has all the user friendliness of gadget-ridden oriental models but not their sometimes unnecessary complexity. And it certainly proves there is life beyond video - just listen to the sound pictures it produces!

significantly to 76dB, but distortion rises to 1% of second harmonic, a high value. Rivals manage 80dB of selectivity or better with much less distortion.

Audio frequency response measured 3Hz-14.5kHz within -1dB limits and the analysis clearly shows a flat characteristic with a slight rolling off of high frequencies above 10kHz. I'd expect this to give a sound of a type preferred by Audiolab, namely smooth and amenable, rather than bright or warm. Multiplex filtering removes pilot tone at 19kHz and sub-carrier at 38kHz effectively, providing a clean output for recording. Pilot tone in particular can block Dolby system action, if it exists in any quantity.

Whilst the 8000T doesn't provide the highest standard of measured performance available, it gets very close in most areas. With tuners for hi-fi use, judgements about measured performance must take into account the fact that in certain areas, for best sound quality to be attained, some sacrifice has to be made in RF (Radio Frequency) performance. In wide selectivity mode the Audiolab is very wide by current standards. Audiolab explained that this helps accommodate overmodulated transmitters, as well as giving superb performance with high deviation signals in general (i.e. strong high frequency programme material). This is where modern high selectivity tuners often sound 'grey' and hard in their sound, a blemish the 8000T should avoid.

Here's a very complex tuner, carefully engineered for best audio sound quality, without great sacrifice to radio reception abilities. However, as always when good sound quality is the prime aim, I recommend the Audiolab is paired with a suitable aerial, as Naim recommend with their similarly specialised tuners. **NK**

**TUNER TEST RESULTS**

Frequency response (-dB)	3Hz-14.5kHz
Stereo separation	56dB
Distortion (50% mod.)	0.1%
Hiss (CCIR)	-74dB
Signal for minimum hiss	1mV
Selectivity (at 0.4MHz) N/W	76/54dB
Sensitivity	
mono	16µV
stereo	20µV

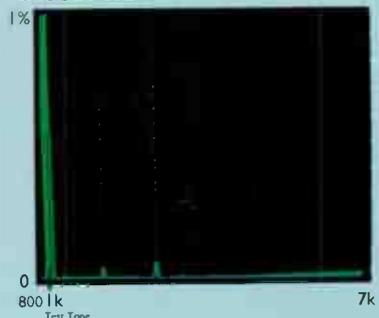
signal strength meter			
SEGMENT No. (µV)		SEGMENT No. (µV)	
1	1.6	6	160
2	3	7	1000
3	8	8	2200
4	32	9	2500
5	100		

**Frequency Response**



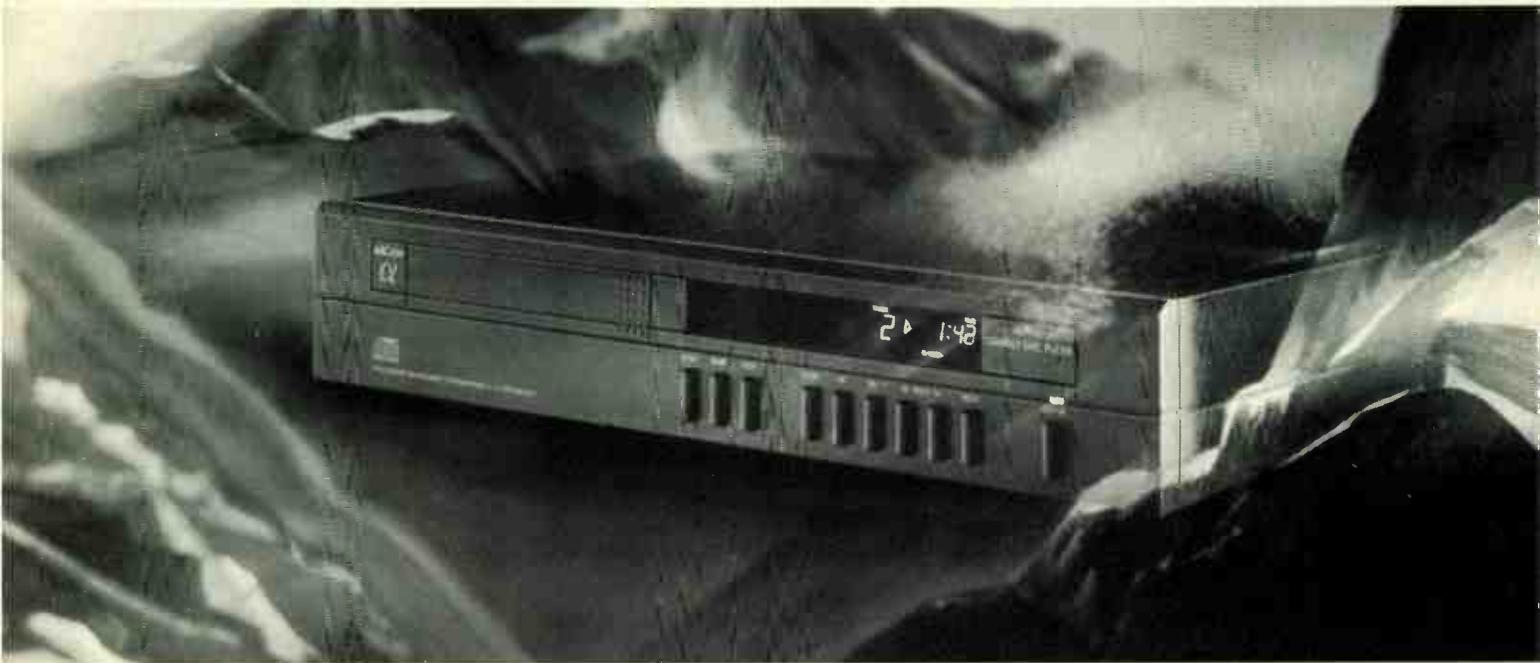
Slightly falling treble.

**Distortion**



Minimal distortion of 0.1%.

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# A View From The Audiolab Lab



**Phil Swift, Managing Director of Audiolab, speaks to Noel Keywood**

**about the 8000 T tuner.**

**NK:** *When did you start designing this tuner?*

The proper work on it started about three years ago. Some of the tuners we'd used and liked were what people would cast as rather exotic, going back quite a few years; we'd been used to using very expensive ones. We decided what was necessary was to have a fundamental look again at what performance we wanted.

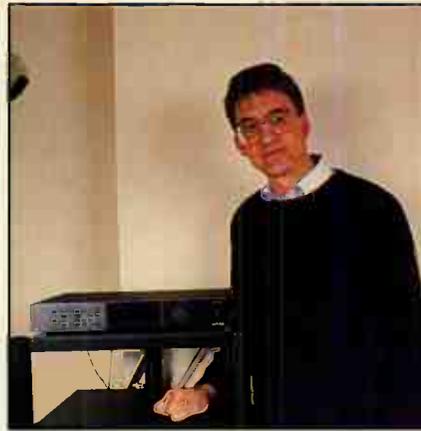
**NK:** *Were you responsible for the tuner or was it the whole team?*

The original basic concept of the tuner was by Derek Scotland and myself; having got a working unit up and running, but without some of the performance parameters we had in mind, we've actually had Mike Hawkins, our RF designer here whose background is in mobile communications, working on it. It opened up whole new areas of experience for us.

What we really found was that digitally synthesised tuners tend to be aimed at achieving wonderful performance figures on paper, but don't work in 'real air-space'. We certainly wanted to keep the convenience those tuners had in terms of auto-tuning and presets; you have to acknowledge they're user-friendly and easy to understand, so we had to formulate that into a product: microprocessor controlled with push-buttons to operate the main functions. We also wanted the facility for tuning as tuning - there are tuners with tuning knobs on, but essentially they are only a substitute for pushing a button and going up or down the frequency band. Ours is nothing like that. It's instant-acting - a rotary pot with a digital encoder and magnetic cogging. This has 25kHz tuning steps.

**NK:** *Were the 25kHz steps to cope with off-tune stations?*

I'm not personally aware that there are any stations at 25kHz; but in North America they have this obsession that no transmitters are on frequency, so digital tuners can never tune correctly. But this will. You can see that it's tuned - and because you have audio output you can listen to 100kHz above and below to see whether you are in the centre, and hear the distortion come in. We used some quite sophisticated software to make sure the 8000T doesn't miss stations. Some go up and down the band and don't stop on anything; others stop on a burst of noise from the sky.



**NK:** *Did that mean you had to consider selectivity very carefully?*

Very much so, yes. A combination of selectivity and sensitivity. You often think if you're close to a transmitter, no problem, you don't need a sensitive tuner - then you find people in the middle of a city with a building between them and they need a sensitive tuner. Essentially the selectivity of the tuner is determined by the front end.

**NK:** *Did you buy in a front end and look at the front end specs? Or did you start to design your own?*

We designed the front end ourselves. We basically used varicap tuning, but modern varicaps with proper techniques and a dual-gate Mosfet mixer.

**NK:** *So your oscillator will go into one gate and the signal into another?*

It is actually double conversion. First IF is 10.7; we then frequency double to 22MHz; then we come down to 712kHz. There's a very good reason for that. You cannot have any two frequencies which will give you anything interfering in the pass band. It obviously increases deviation relative to the signal very significantly and allows you to get the best possible Signal-to-Noise performance: 75dB, very much in line with the best that anybody else is producing. Very difficult to achieve, things like that.

**NK:** *How about the detector?*

That is why we come down to 712kHz. We've actually designed and built our own demodulator. It's a charge integrating demodulator, with very low distortion and very high overload capability. But there are a whole further series of advantages. It

relies principally on passive components, it's exceptionally stable, it isn't temperature-sensitive, it doesn't age, and it's totally non-microphonic. It's a very significant part of the tuner.

**NK:** *Not microphonic?*

A lot of demodulators, you tap them and they go 'bonk, bonk, bonk' through the speaker. The tuner is all RF-engineered; there's actually very little mechanical design involved except to ensure it's not mechanically sensitive. We looked at a lot of different IF filters for the tuner - even considering our own discrete IC filter configuration - they were selected by spectrum analysis. Trying to design a tuner without a spectrum analyser is like trying to design a TV in dark glasses!

**NK:** *Then on to the decoder. Is that a chip decoder?*

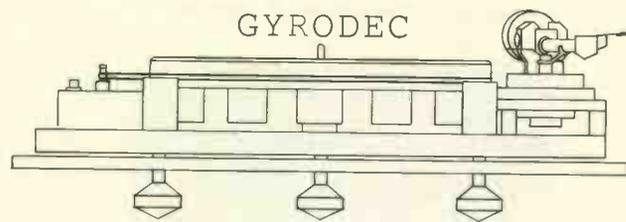
It's actually a Sanyo one. You'll see it in a number of relatively expensive units with a different name stamped on it. I should say there is again a properly-designed birdie filter, between the demodulator and the decoder. There is actually an LC Butterworth filter which is computer-optimised. Then we use a technique called active-notch filtering. It's part of the decoder, but in itself the active notch is still not sufficiently good because it only takes out 19kHz and 38kHz; the problem with many tuners is that there's so much garbage other than at 19 and 38, where they're notched, so we also use passive filtering and buffer the output.

**NK:** *How about the signal strength metering? And you put in an analogue display?*

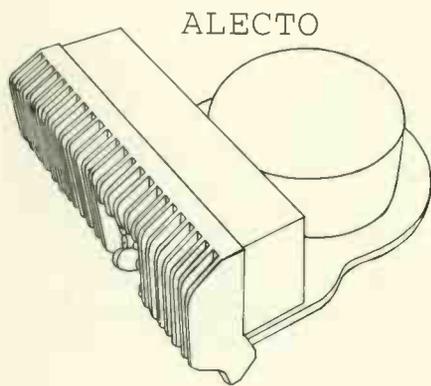
We have our own microprocessor control system for the tuner. We have an analogue to digital convertor that takes the signal, then turns it into digital. What we wanted was a direct, real-time read-out; this has something no other tuner has. You can listen to the audio output while you're tuning, which you can't do with a digitally synthesised tuner, and we have a real-time signal checking meter system with centre-zero indication. Plus, it's much more user-friendly to have a bar than it is looking at numbers.

We had to consider how the tuner was going to be used - who it was for. We wanted it to be used by a very wide range of people; there are all the people who bought our equipment who'd like a matching tuner - and one that can be used with a wide variety of ancillary equipment. ●

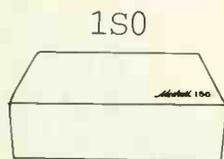
# Michell - Symbol of Precision



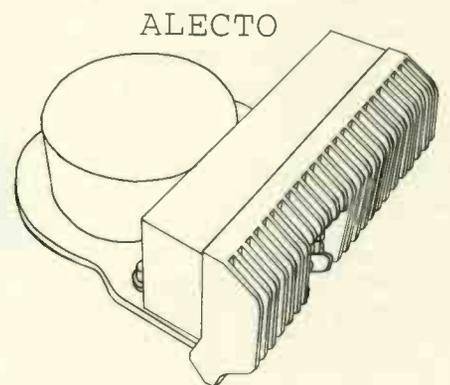
GYRODEC



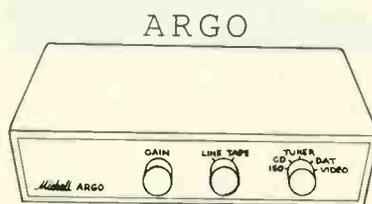
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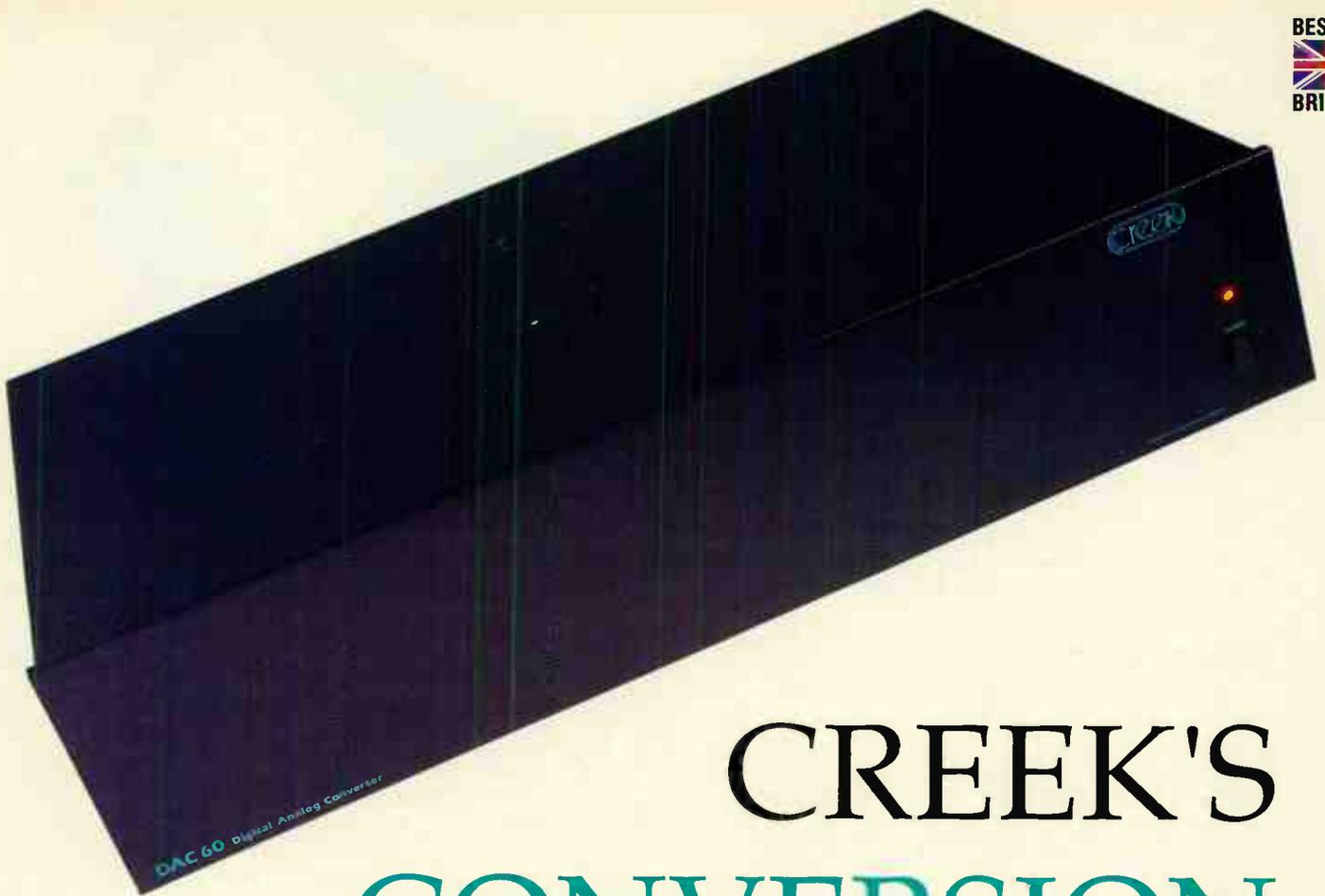
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# CREEK'S CONVERSION

**Creek have added a digital-to-analogue convertor to their range;**

**Martin Colloms tests the DAC 60.**

**A**fter years of producing amplifiers and tuners at modest prices, the acquisition of Creek by the TGI Group (Goodmans, Tannoy and Mordaunt-Short) made it possible for a digital design engineer to join the team. His first creation was the Creek CD player, released last year, which met with modest success. This has now been followed by a comparably priced digital-to-analogue convertor, the DAC 60 priced at £500. Together with a transport, or a CD player like Creek's own CD 60 acting as a transport, it allows Creek to offer a high quality, audiophile CD player. Creek say that the DAC 60 can be used as an upgrade to significantly enhance the sound quality of the CD 60 player in fact.

Our sample arrived hot off the production lines and was found to be trouble-free. Built in a full-size, all-steel case measuring 42cm wide by 9cm high and 29cm deep, it weighs nearly 5kg. Simplicity is the key word to describe this unit's operation. There are no controls whatsoever save the on/off switch and only one choice of input, coaxial, wired via

a phono socket. The finish is all black, satin enamel for the fascia, a glossy texture for the cover.

Inside, the box seems mainly full of air! The massive toroidal power supply section is well separated from the 'works' to avoid the induction of mains hum and other related interference. The 'works' comprise a compact, short path, double-sided printed circuit board that seems a little lost with so much space around it. On-board regulators provide a second layer of smoothing that follows the first level of IC regulation present on the power supply board, providing very smooth, clean power supply lines. This can be very important in DACs, since sound quality in some circuits can be directly related to voltage supply stability and cleanliness.

The digital input, 44.1kHz (CD) or 48kHz (DAT), is acquired by a Yamaha '3623 ADIC chip, the data fed to a Burr Brown 1700, low ripple digital filter sourced from NPC. It operates at an 8x re-sampling rate and the output code is at the higher 20-bit level to help preserve

the full 16-bit input code.

Conversion of the digital signal to analogue form is carried out by high grade Burr Brown PCM63 'co-linear' chips, operating at the 20 bit level. One chip is used per channel, and each contains two converters. They are offset to place the zero crossing condition at only one bit of 'state change', thus minimising the usually intractable zero cross noise. Resolution down to the 20 bit level is achieved by this system.

Current-to-voltage conversion is allocated to the ubiquitous 5534 audio chip, followed by passive first order filtering using selected polypropylene capacitors. A high quality dual op. amp, the OPA 2604, is used for the output stage, one chip per channel. The other halves of these chips are accurate enough to perform a DC servo function, allowing the DAC 60 to be direct coupled at its output; system voltage offsets are cancelled. De-emphasis is selected by FETs while output muting is non-invasive, being achieved by shunt relay contacts that do not sit directly in the signal path,

so they will not introduce degradation over time.

Creek have made extensive use of surface mounted components, especially in the audio section. They have been specially selected for superior sound quality. 'SM' components, as they are called, generally lack output wires - together with their losses and subtle degradations. Soldered joints are made directly to small terminations, shortening signal paths and reducing stray inductance. In the right hands, SM techniques can be a powerful asset in the armoury of the audio designer. Creek have seen fit to add mechanical damping in the form of untidy grey blobs of mastic stuck over a number of key components, especially the ceramic de-coupling capacitors.

Power input is via a conveniently detachable IEC cord. Audio output is at a fixed level via gold-plated phono sockets.

### SOUND QUALITY

Using Epos ESI 1 and Spendor SP2-2 speakers together with a selection of amplifiers including a passive controller, the Passion by Audio Synthesis, and Meridian 605 monoblocks, a variety of DACs were used to help establish the performance of the Creek design. On hand was the Audiolab 8000, the Micromega Duo BS, a 1991 Meridian 203 and the Accuphase DP70-V transport-decoder. With recent experience of the Mark Levinson Model 30 and the Orelle DA-180 in mind, I was well equipped for the task in hand.

Beginning with the Creek CD player, which is a pleasant performer having a nicely balanced sound, I found the addition of the DAC 60 delivers a substantial uplift in quality, justifying its

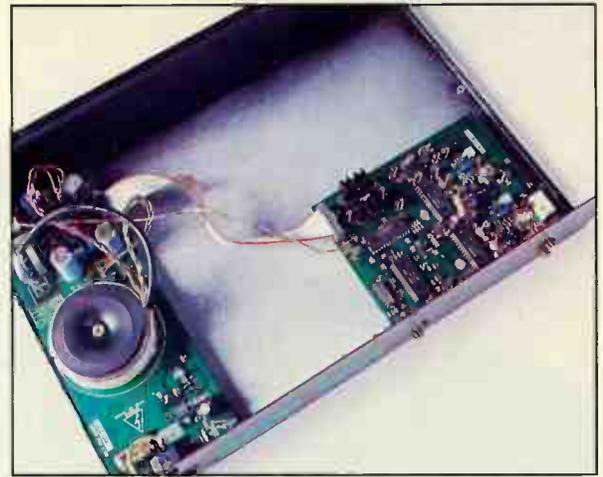
existence as an upgrade. The sound exhibited greater refinement and in particular appeared to have a stronger and better developed low frequency range. It went deep, yet the articulation on complex drumming sections was not impaired.

There was an air of civilised restraint about DAC60's presentation, yet the soundstage showed well-developed perspectives enhanced by good image depth, even though there was just a hint of ambience modulation. This was a subtle effect, where the low-level ambience appeared to vary in clarity according to the loudness and complexity of the main front image signal.

Stereo focus was very good however, and this decoder possessed a neutral mid-range, less forward than that of many rivals. I liked the treble range for its purity, precision and sweetness; Creek have succeeded in producing a well balanced sound.

Comparison with other worthy contenders, such as the Audiolab 8000 and the Audio Alchemy, suggested that the Creek had more rhythm and stereo depth than the 8000, but was smoother and more civilised than the Audio Alchemy. Ultimately it was preferable to both I felt.

Conversely, it did not stand up so well to the Micromega Duo, which is similarly priced. The latter sounded less well-ordered than the Creek but it had



"You get a nicer sound with more air..." says designer Keith Rogerson.

significantly greater insight into the musical performance and was found to be more involving.

The DAC 60 is a hair-shirt design in which Creek have omitted all the frills in the interest of sound quality: a sort of Lotus Super Seven class of DAC, if you like.

The result is a welcome uplift over and above the Creek CD player, which helps to justify its inclusion in the company's product range. Although it failed to rise to the standard of the Micromega Duo BS and other similar references, this converter was nonetheless clear of the lower group of DACs in its price range. It was a thoroughly musical sounding product which also performed to a high standard in laboratory tests.

Taken overall, the new DAC60 converter from Creek is certainly worth auditioning. It delivers a sufficiently good performance to receive a recommendation from me ●

### MEASURED PERFORMANCE

Here we find a clue to the relaxed tonal quality of Creek's DAC60. It has a significantly tilted frequency response, seen in the graph, with 0.25dB of bass lift. Or, put the other way, there's an equivalent mid-range and treble cut relative to the bass. Moreover, there was some treble roll-off as well, -0.3dB by 20kHz. Conversely when de-emphasis was active, the treble range was lifted by 0.35 dB.

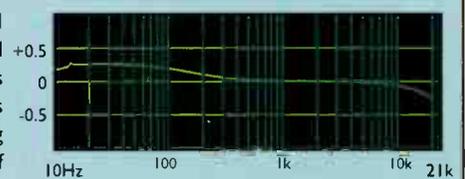
When A/B tests are involved, note the higher audio output of this design: 2.3V or 1.33dB high relative to the nominal 2v. Higher output always favours a product, seeming to make it sound more forceful and dynamic. The output was low impedance and absolute-phase correct. I noticed also that very good suppression of spurious and radio frequency products existed. No dc offset was present, so the servo-circuits work well.

Distortion was low throughout all frequencies. High linearity also resulted in a respectable distortion result - below 6% - for a dithered signal at the lowest -90dB level.

Channel separation was very good, as

was 'A' weighted noise which measured -109dB on both channels with emphasis and 105dB without emphasis. Since emphasis is rarely used, the latter figure generally applies and is a respectably low value, certainly making noise inaudible. The dynamic range figure of 109dB was impressive, giving a resolution close to that of the full 16-bit code. Intermodulation distortion products were also well suppressed, measuring close to -90dB throughout.

Spectrum analysis of a -90dB dithered test tone showed fine linearity with no visible distortion at 120dB below peak level, and a fair sinewave was seen in view of the inevitable noise component (Graph 2). Graph 3 shows the absolute error for the right channel plotted from -60 to -120dB modulation, which was verging on Sigma Delta or Bitstream linearity. At -30dB 1kHz, there was some third harmonic distortion, together with higher orders up to fifth, which together reached a modest 0.017% distortion in all, which was hardly significant I felt. The DAC60 produces little distortion, which will help it to sound smooth a free from digital nastiness. **MC**



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### TEST RESULTS

Frequency response	3Hz-21kHz	
Distortion		
-6dB	0.0076	0.0076
-30dB	0.015	0.015
-60dB	0.34	0.34
-90	19	19
-90dB dithered	6	6
Separation	left	right
1kHz	115	104
10kHz	96	96
Noise	104dB	
with emphasis	105dB	
Dynamic range	109dB	
Output	2.3V	

# DIGITAL EXPERIENCE



**Once someone who made bangs for seismic exploration, Keith Rogerson now designs Creek's digital circuits. He talks to Eric Braithwaite about digits, DACs and Greytak.**

Creek became part of the TGI group in 1988 and has become the electronics brand-name of the company. Two years later, Keith Rogerson, who designed the Creek DAC 60 digital-to-analogue convertor, joined the team.

*EB: You came from quite a specialised electronics background, I think?*

I'd been working for Marconi on digital signal processing in the Sonar division, on simulators. I'd come into that from flight simulation at British Aerospace, and before that I did a couple of years of on-shore seismic exploration - any excuse to let off some loud bangs!

*EB: Apart from being tempted to ask what influence that has on the Creek's bass response, does that mean digital signal processing (DSP) is on the horizon for Creek?*

Anything's possible. Obviously, as a group we're moving into DSP; Mordaunt-Short have their Surround-Sound speakers, of course, and there's a Dolby Surround Sound licence in the offing.

*EB: So the Creek DAC is a start?*

It's one step further in the development of the entire range of products in the digital domain. DSP requires quality digital to analogue conversion, obviously, and with DCC and Minidisc coming along the work can provide the basis for a lot more.

*EB: Why an outboard DAC, when Creek don't have a transport?*

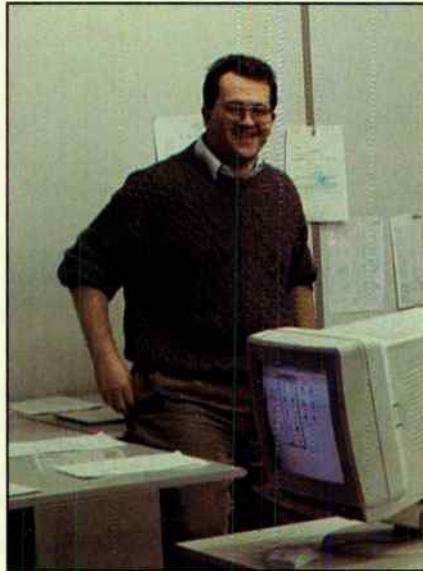
Anything's possible! We've had a body of requests and we're experimenting on those lines, but it's intended as a serious upgrade to the CD 60.

*EB: You chose multibit; you didn't think of using Bitstream?*

Yes... but I like that co-linear chip from Burr-Brown (PCM-63K). It's an excellent device; it's a thoughtful design, especially the way they've minimised the crossover point where they swap from zeros to ones. It reveals that much more, and I prefer the sound to single-bit at the moment.

*EB: How would you characterize the sound you were looking for?*

Obviously it had to be musical, with a certain warmth; ours is a relaxed sound,



nothing very forward about it.

*EB: It was designed to be synergetic with other Creek products?*

It had to be matched to the 'Creek sound' - but I happen to like that as well. It doesn't colour the sound in any way; it just doesn't try to bite your head off.

*EB: But it's not inexpensive.*

Part of the reason for the price is the 'K' grade parts; they're selected in the manufacturing process, with lower signal-to-noise and distortion than the standard production version. We've used audio grade electrolytic caps as well - and Bluetak.

*EB: Yes, the notorious TGI tweak. Why Bluetak? And why surface-mount components, both of which stand out when you open the DAC 60 up.*

Actually it's Greytak, the same that Tannoy use on their crossovers; it's stickier than Bluetak, but not as messy as Blacktak. There's a difference if you take it all off, but the individual effects are too subtle to notice. The caps it's put on are all surface mount ceramic devices - they're there for quality of response, but they're microphonic.

Surface-mounts, we find, are less microphonic. That's why we went for it - and you can get the components closer together when you need to. I don't know why microphony should affect the sound, but here's a guess. You get perturbation of the supply caused by the demands of

the signal going through the IC - say it's an op-amp - and that perturbation generates a mechanical movement in the ceramic which is re-injected as a signal back into the power supply. Even if the input is a sine wave, it re-injects it as broad-band noise, and increases the noise level.

By the time you get up to MegaHertz, the tolerance to high frequency broadband noise isn't very good. The point of putting Greytak on is to interrupt the process. Anyway, whatever's happening, it works.

*EB: What do you think is the sonic effect?*

Basically, the higher frequencies in the audio band sound more precise; the stereo imagery is improved and the three-dimensionality is increased. It's very good for getting rid of sibilant effects, where a lot of designs lose control. Ours should be very accurate - I think it was on Mary Black's 'Columbus' I heard an echo on the sibilance in the room, but I could be wrong! It's all there to improve the listenability.

*EB: You did the circuit design on a CAD/CAM (Computer Aided Design and Computer Aided Manufacture) program? Or was it partly 'suck it and see'?*

We have the tools - we have the capability! You can get the basic design, using good design principles, but you go through listening to two or three prototypes. Once you've got it on computer you can update the design and it will check for mistakes so you can minimise errors before they affect production. You don't want to discover a change has tracks shorting out.

One interesting thing that CAD/CAM led to was the need to terminate all the high-speed lines to prevent ringing. If you can minimise the way noise disappears into the ground-line you can also minimise the amount of rubbish floating about in the ground-line. It's a bit of a balancing act - you damp it, but not too much. But, again, it seems to make a difference.

On the production front we tried a smaller box, but we didn't like it. You get a nicer sound with more air around. It's probably the distances involved - you don't want these high frequency digital signals bouncing straight down into the analogue stages, for example.

*EB: And next?*

Anything is possible! ●

**A** lot of these valve (or vacuum tube) valve designs that seem to incorporate elements of space in the tube itself, there's a new trend developing in the integrated valve amplifier and Tim de Paravicini's Esoteric Audio Research Company is the latest to combine power and precision into a single, home-dynamically friendly package.

Not that the EAR 834 is reduced to the size of the Tinsel Eye Model; we look at the model's numbers refer to the eight ELHs that populate the top of the chassis. (Well, they should, but our sample was supplied with 6X6s.) With that away, you still need a certain amount of square footage. All the same, the 834 doesn't occupy much more space than my Gyrodec. It's also user-friendly. This valve amplifier, according to Tim, doesn't need any complicated fiddling with re-biasing and it has just two controls on the shiny brass faceplate.

**A Luscious Feel**

As always with EAR products, these controls have a luscious feel. The selector knob for the six inputs clicks smoothly round and the volume knob turns as though it has a traction engine's flywheel behind it. This sort of thing exudes quality and has the customer feeling his £1200 is well-spent on a product of rare quality.

There's always a quirk to Paravicini designs. This time it's the grilles which cover the bottles. The shape of the black metal grilles which protect the valves, Tim says, is based on the roof of King's Cross station. It's certainly more interesting than the square hamster cage that covers the hotter parts of many valve amps. I'd have gone for the Quai d'Orsay, myself,

# EAR HERE

**New out of the Esoteric Audio Research stable is an eight-valve integrated amplifier. Eric Braithwaite warms to a different sound.**



but at least we're lucky it wasn't Richard Rogers' Beaubourg or Lloyds building that caught his eye when he was thinking about the valve covers for the 834.

The grilles are normally fixed; a good thing because while those eight valves don't run hot enough for the central heating to be turned off, the 834 isn't exactly a refrigerator. It

needs a fair amount of space for convection above and around it. There's a small degree of hum from the mains transformer, which also makes it advisable for the

**MEASURED PERFORMANCE**

Esoteric Audio Research products are designed by someone I regard as the Patron Saint of valve design - Tim de Paravicini. Although - perhaps surprisingly - Tim has no inbuilt prejudice against the transistor and has produced many excellent solid state amps for others (e.g. Musical Fidelity and John Shearne) for himself he designs valve amps - and valve tuners, and valve stereo decoders, and valve microphones and valve cutting amps - and anything else to do with valves. He designed the renowned Lux valve amplifiers, when he worked for the company in Japan.

Like many dedicated engineers with a rare and deep specialist knowledge, Tim designs as much as possible himself. This includes the difficult but crucial output transformers of a valve amplifier, something at which he is an expert. Tim's

tranny's are special; I measure them and know well that they keep his valve amps a good nose ahead in the field by providing more output at high and low frequencies. Also, most feedback is taken from tappings on the primary winding. This means the load does not affect feedback behaviour, something that makes many valve amps sound awful with electrostatic loudspeakers. The 834 can drive electrostatics, being unaffected by difficult loads.

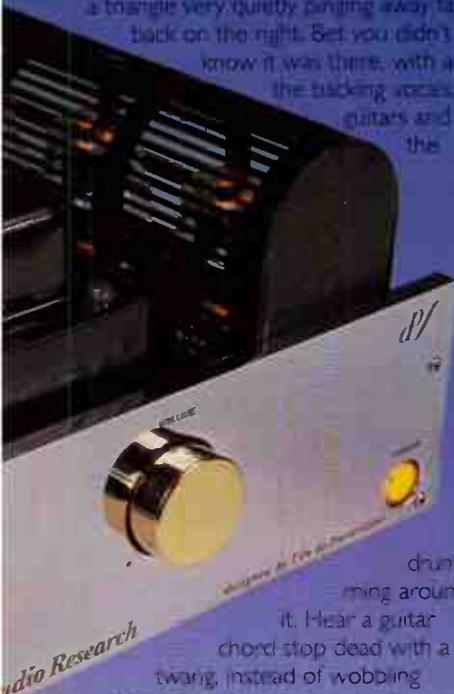
Which brings us to his new 834 integrated amplifier. The little tranny stacks at the back might suggest all sorts of limitations, like 20watts output maximum, with plenty of distortion. In fact, the 834 gives an easy 40watts per channel and 0.02% distortion (innocuous second harmonic), when delivering one watt of output in the mid-band (1kHz). This means it will deliver a clean, distortion free sound at ordinary volumes.

Valve amps do go a bit wonky at extremes of frequency and power output. The 834 is no exception; at 10kHz distortion rose to 0.4%, but mainly second harmonic, but with some higher order components too. Although the distortion is high, the type of distortion produced will not sound especially nasty.

In use valve amps stay clean and sweet sounding if they are not pushed too hard. Their innate smoothness and openness has nothing to do with distortion, as some would suggest. Mid-band overload produces progressively more muddle and confusion, rather than the hard rasping sound of a solid state amp. Treble overload is rarer, due to the energy distribution of music, but when it occurs even valve amps can rasp a little and the treble will get 'dirty' sounding. Transistor amps sound nasty immediately they overload; valve amps will take a lot more stick before they start to sound

amplifier to be sized well away from the listening seat.

There's a recognisable 'house-style' to the EAR sound, it's characterized by a very fine sense of detail, especially in the mid-range and treble - which is why you'll find EAR power amplifiers credited in the small print on the back page of a CD insert as being used by producers and engineers for mastering. As an example, on Paul Simon's *Graceland*, listen for a triangle very quietly ping-pong away far back on the right. Bet you didn't know it was there, with all the backing vocals, guitars and the



drumming around it. Hear a guitar chord stop dead with a twang, instead of wobbling indeterminately a way into background mush. Listen for a drum firmly and heavily thumped - and then a fraction of a second of dead, deep, almost anechoic silence.

These are some of the trademarks of EAR, along with a forward presentation that has instrumentalists and vocalists stepping out onto the carpet, well in front of the plane of the speakers. They make for a sound that is as tight as a guy-rope and as fast as

closing a local time.

Acoustic instruments, like particularly well, I was listening to Mary Black when I suddenly realised a deep into the performance that I was hearing a rather better quality of sound than I thought was there. It was broader and fuller - and reached very deep. That wasn't only in the notes, either, but in terms of physical size. Where my approach - a 'studio' presentation again - one I like, but might be too severe for some - is that the 834 focuses as much on a vocalist's microphone as her physical presence. Hearing a near-deconstructed head in front of the speakers on some close-miked vocal recordings is disconcerting, but the truthfulness of it can't be denied.

**Not a Comfort Blanket**

It's at this point that a warning note creeps in. If you want a tear-erking enhanced over-emotional experience in your living-room, then this EAR integrated is going to look you in the eye rather coolly and your hanky will stay dry. We're not in the business here of equating valve sound with a warm comfort blanket. On female vocals like Mary Black's, there is something of a cut-glass edge at times where other amplifiers of the valve persuasion will soften it with jeweller's rouge.

It was intriguing that friends more used to solid-state revelled in the clarity and the image precision, while others with more experience of valves were somewhat taken

aback. In a live performance - like a live-in-the-listening-room at speed in the final sign of dismount - some of one of the other found a lot more to know to do with. Another, used to a gentler top and bottom end, saw black shimmer and said the EAR was a valve amplifier for them lovers.

In some ways that's overstating the case, but the EAR834 is certainly powerful, precise, detailed and wide in common with other Paravoxi designs: it has a very tight grip on every kind of music and won't let go. Even down in the bass, it thunders away the sharpness of definition just a trifle looser than the extremely muscular solid-state variety, but far tighter and tauter than other valve rivals. It's beautifully made, too, with that thick gleaming fascia exciting unequivocal admiration. There's only one snag, much as it looks as though it will deal with those nasty panel-speaker loads that dip down to nearly no ohms at all, it's strictly for 8ohm impedance loudspeakers.

Several friends put it on their shopping list, so I suspect will many others.



The preamplifier valves, which run cool, are hidden underneath. Long drive shafts to the rear mounted potentiometers keep leads short.

nasty, appearing to go louder.

So the EAR 834 turns out 40watts per channel into eight ohms, but less into other impedances, since it caters only for eight ohm loudspeakers and valve amplifiers have to match their load for best power transfer. Connect up a four ohm loudspeaker and power will drop, unlike a solid state amp where it will rise. This is a property of valve amps in general I should point out, not just the EAR 834.

The output available is enough to make a normal loudspeaker go loud in any room of small-to-average size, but not very loud. The 834 is more powerful than most rivals, which commonly produce 15-30watts. I find low output valve amps frustrating in that they can sound superb at moderate volume, yet resist being turned up, at least with modern inefficient loudspeakers. The 834 is a little less restricted in this sense, although on a watts/£ basis, no valve amp

is a bargain, including this one.

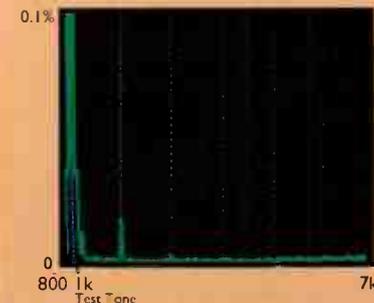
The CD, tuner and tape inputs all run through the selector switch straight to the volume control, as with most modern amplifiers. Frequency response was wide enough to complement CD, reaching right down to 5Hz. The upper limit was a sensible 35kHz. With noise down at -92dB and virtually no hum, the 834 is quiet, but this is to be expected from Tim.

Here's a straightforward, well designed valve amplifier, built like a tank, under-run to extend valve life and of very sound basic design. It has an excellent specification and offers usefully more power than many rivals. But of course, valve amplifiers are all about sound quality, something in which they vary widely. It has to be in this area that final value judgements are made and Eric describes his experiences in the main body of the review. **NK**

**TEST RESULTS**

Power	40watts
<b>CD/tuner/aux.</b>	
Frequency response	5Hz-36kHz
Separation	69dB
Noise	-92dB
Distortion	0.02%
Sensitivity	150mV
dc offset	none
Disc	none

**Distortion**



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# AN ESOTERIC EAR



Noel Keyword talks to Tim de Paravicini, designer of the EAR 834.

**NK:** Your firm would occasionally make amplifier designs, were you looking for them in 1970s or during the Seventies? Was the new 834 based on any of the ideas you developed there?

Yes, some of them. I wanted it to be a classic design within cost constraints. My usual designs work out more expensive. The 834 had to be affordable yet still very good. I haven't compromised on the transformers as much as people were prepared to do in the old days, or even these days, so you get clean bass at high volume. But otherwise, I was economical with the 834 and it is designed to have a long life and need no adjustment.

**NK:** It seems that in practice, when an output valve goes on many commercial power amplifiers, owners replace it themselves with an unmatched unit and the amplifier promptly goes off song and loses its magic. How about the 834?

Matched output valves are not needed. It has been designed to have good valve reliability and no user-adjusted goodies. The old term was 'automatic bias'. A single output EL34 can be replaced and it makes no difference. The amp will perform just as well.

**NK:** Where can people see these amps?

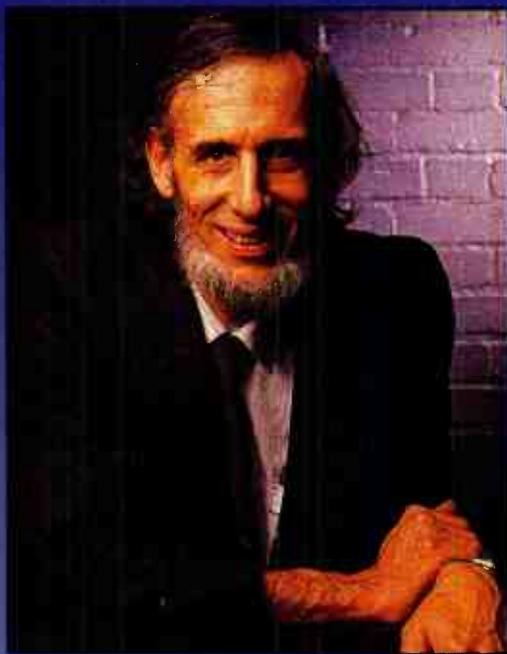
Radlett and Brentwood down South.

**NK:** You are happier with valves than transistors aren't you?

Yes. Most of my commercial design work is, inevitably, with transistors, but for my own I tend to stick with valves, but not always. I made a solid state equivalent to the Yoshino and I think it's just as good, even if it doesn't have the same appearance.

**NK:** And how about the Yoshino, which I can see sitting in the corner over there? It's an amazing looking device.

I built it to prove a point. I believe the way I have connected up the 211 gives better results than the Ongaku or the many other 211 designs that they have in Japan, where this sort of amp has cult status. It's what I call the 'bespoke' market. It's never going to be ordinary or everyday use, simply because the price is



Photograph: Paul Hartley

so high. Single-ended working with high output power means you need a huge transformer to avoid DC saturation.

**NK:** What do you think about the 211?

The 211 and 845 are very similar tubes. The 211 is a durable design but it needs a lot of voltage, which makes 211 amps for the home builder very dangerous.

**NK:** You prefer the 300B valve don't you?

As a reliable general purpose valve, yes. But the 300B is a much smaller power. It is 40W anode dissipation, whereas the 211 and 845 can dissipate 100W or more. They have a lot of surface anode compared to the 300B and their anode is carbon.

**NK:** Is there a problem with directly heated valves? How do you run the filament?

There can be a hum problem. You can't use DC, but it is possible to hum null and in my designs I get hum down to a millivolt or so; it's inaudible.

**NK:** We're straying from the 834! How did you configure the output stage? Does it use ultra-linear working, which conventional engineers believe is best?

No. The 834 has a conventional pentode output. I don't agree with screen taps.

**NK:** I can do that on feedback of the primary, then what I know is a distinguishing characteristic of all your valve amplifiers?

As in *Flamenco*, the two feedbacks from the anodes go back to the previous driver's cathodes. On my regular amps I do use transformer taps and take the feedback to earlier stages. On the 834 I apply a tiny amount of feedback from the secondary too.

**NK:** Oh! I thought you used none from the secondary. Will it drive electrostatic then?

Oh yes. It is unconditionally stable and my amplifiers can drive electrostatics, unlike many valve amplifiers. There's very little overall feedback from the secondary.

**NK:** You mentioned output transformers earlier and these are beginning to become a problem for many readers who want to build valve amplifiers. What do you aim for when you design your trannies? Do you use special core materials?

I use grain orientated steel.

**NK:** And C cores?

There are two problems: the shape of the bobbins and secondly they breach the important design rule of "maximum iron and minimum copper". In a mains tranny it doesn't matter so much, but in a C core or toroidal there tends to be a small amount of iron in relation to the copper.

The other trouble is you cannot control the gap inductance, so it's not as good at handling mismatched DC currents in an output stage, which a conventional design is superb at.

**NK:** You design your own output transformers and get them built for you?

Yes. I do all the design and wind all the prototypes and one-offs myself. This way I can verify their performance to my complete satisfaction. I started out designing transformers in South Africa, before I moved to Japan, and it has held me in good stead ever since. That's why the 834 is a wholly dedicated design; it isn't a compromise built around off-the-shelf-parts and old fashioned circuits; it's a modern classic ●

The first Cyrus I amplifier (nicknamed PODIT by members of the hi-fi industry due to its selector switch labelling) took the market by storm back in July 1984. Ever since, its reputation has grown. The Series 8 is the eighth, the latest, and certainly the best, building upon the strengths of the previous incarnations. It's the one we review here.

Over the years the Cyrus I developed a unique and distinctive sound of its own. It had evolved to being beautifully detailed and clear, with an exceptional midband, but a little light in its presentation. The latest Cyrus I has all of these qualities, very slightly more refined, having a faster and more tactile treble quality. In addition it now has a more punchy and solid bass performance which makes the Cyrus a more balanced performer, effectively distancing itself even further from most other £250 contenders.

In December 1987 Mission invested over £40,000 in a new casting that forms the base plate and heatsink of both the Cyrus I & 2 amplifiers. This casting is massively engineered and thus partially responsible for the weight and rigidity of the Cyrus amplifiers. Its generous dimensions make it an excellent heatsink, ensuring that the amplifier always runs cool, which in turn improves both sound quality and reliability. The control knobs and switches are well located and have a dependable and positive feel to them. The finish is of an excellent standard; joints in the metalwork are flush and tight fitting, input/output sockets are securely mounted and the screenprint labelling is professionally done.

Mission's quoted power output is 25watts, as it always has been for the Cyrus I, but strangely this model seems more powerful than its older relatives. Whereas before, the Mission

was running hard to produce decent volume levels with an insensitive loudspeaker, now it has a little energy in reserve, enabling it to cope better with strong dynamic attacks and, in particular, have a better grip on the loudspeaker's bass cone.

Partnering the Cyrus I is now an easier job because of this new-found ability. Taking its sound from the light and bright, to having an improved bass end and a more powerful output, opens up a whole new range of loudspeakers to go with it. Although not an obvious choice, due to their higher price of £350, the Epos ESI 1s I find form a sonic match with the Cyrus amp that is worth every penny of the £600 asked for this combination.

As with most British designed audiophile equipment, the Cyrus does not have any tone controls. Neither does it need them. Five inputs are selected via the rotary switch labelled 'listen'. For LP, both moving magnet

mark of Mission amplifiers is the right angle cut out of the back panel. This enables the phono and banana sockets to be mounted vertically, making the wiring-up operation simpler and the space consumed at the rear smaller.

One of the best parts of this Mission amp is its articulate and clean treble which is still one of the best in the business below £1000, I feel. Of the many albums I have played through the Cyrus I none have caused it any trouble, the treble being very slightly bright but fabulously detailed and never running into distortion. Stereo separation is good but not outstanding, which is to be expected from a £250 integrated amplifier. None the less with the Epos ESI 1s it managed to conjure up a large and clear picture of the band and their positions on stage, where the recording allowed.

Both of Mission's Cyrus amplifiers have the great ability to make music

# MISSION

**Mission's Cyrus I amplifier has gradually**

(MM) and moving coil (MC) sensitivity are switchable at the rear of the amp. There is also CD, Tuner, Video and tape. A second selector switch labelled 'record' allows you to record from any source while listening to another.

The case is Mission's normal half-width size. It makes a nice change from the usual imposing rack-size black box and gives the Cyrus I a distinctive outline. Another trade

exciting again. All too often, designers go for the lowest distortion, the flattest response, the best channel separation and what have you, ignoring the less easily defined but arguably more important ability to involve or interest a listener. The Cyrus I doesn't fall within this design outlook, even though it does measure well. In fact, sometimes it sounds as if it is trying too hard to produce music in an exciting manner. Vocals fight

## MEASURED PERFORMANCE

Although built to a standard unmatched anywhere, at least in that the entire case is cast, Cyrus I still has limited output, unless used with low impedance loudspeakers. It produces 32watts into eight ohms. This rises healthily to 50watts into four ohms, suggesting the baby Cyrus can edge toward the big time if matched with a low load. Unfortunately, I can't think of many low impedance budget loudspeakers. British loudspeaker manufacturers are notoriously conservative about this property in contrast to their Continental cousins. Nearly every UK loudspeaker measures out at 10ohms overall impedance or more. Only KEF let impedance fall to 6ohms or less, and then only with more expensive models. It's a pity, because you can't get too

much volume from 32watts; it must be used with circumspection.

The CD/tuner/tape inputs all have low-ish sensitivity of 380mV. Whilst this is fine for CD and most matching items, there are one or two budget cassette decks and tuners that deliver 350mV maximum. With these, volume will have to be wound up very high. Nowadays, 200mV is a common input sensitivity, even though it is superfluously high for CD.

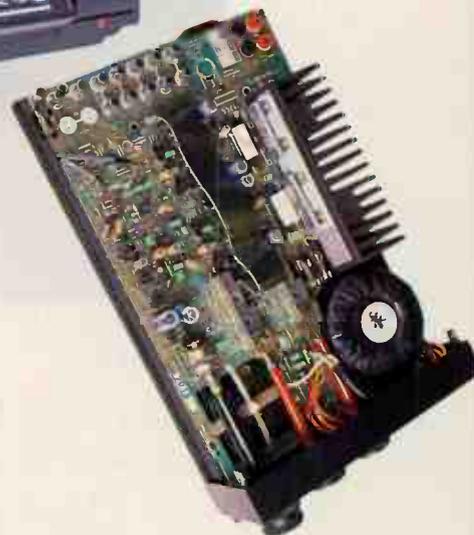
The moving magnet disc stage was, however, sensitive at 2.5mV and the moving coil option is pretty good also at one-tenth this figure, or 0.25mV. However, as I've noticed and noted before, selecting MC switches in x10 gain after the input stage, raising hiss by 20dB and leaving the MM input conditions (i.e. 47kohms load) unaltered. At -60dB, hiss becomes fairly

obvious, except with high output moving coil cartridges. Alternatively, the option can be used for low output moving magnet types.

Mission have given the Cyrus I a sensibly wide bandwidth of 5Hz-45kHz on CD, tuner and tape. A warp filter cuts off bass below 40Hz through the disc input and a slow roll off in gain below 500Hz down to the roll-off frequency enhances the amp's somewhat bass-light character.

This is a low distortion amplifier, as the figures show. Linearity deteriorates a little at very low levels (below 1 watt), but distortion rises to just 0.03% or thereabouts, with an extended harmonic structure.

The Cyrus I measures well; it's not a hair shirt design. In spite of its heavy weight and superb build, it has limited power output, so headbangers may steer



# MARKED UP

been refined over its eight years. Dominic Baker gives the Series 8 high marks.

their way up to the front of the soundstage and sing directly into your ears, cymbals are being hit hard and bass drums kick you in the stomach.

All of this can make the Cyrus I sound a bit uncivilised at times. But it does represent a nice change from the blandness of many competitors. I quickly discovered that the Mission is best suited to rock/pop music and even better suited to live recordings of such music. Simple Minds Live and

the Live at Berlin recording of Pink Floyd's The Wall sounded huge, even at low volumes. Electric guitars searching out at you, raw vocals and animal bass lines all collude together to create a rawly live performance.

The Cyrus I is not a softy Class AAA amplifier. It is quite tough and hard-edged in its presentation, which is not a criticism. In fact, to get as close to a live performance as possible the amplifier should be able

to reveal all the nasties as well as the pure music. The Mission doesn't blur over the music by making it sound artificially smooth - it lets you hear a recording for what it is.

Having mentioned earlier the better power delivery of the Cyrus I, feel I should put this a little more in context. If the Mission is driven hard, that is above what I would describe as being moderate, then it does tend to become ragged. It gets on top of itself, bass lines trample over the vocals and the treble loses definition. This is to be expected, as after all it is only rated at 25watts, which won't go far driving some of the more insensitive loudspeakers that are around today.

For £250 the Mission Cyrus I Series 8 represents superb value. It provides a level of excitement and detail to everything it plays that sets it apart. It can become rough and ill-controlled when pushed to its limit, but at moderate volume settings this latest version gives the listener 100%. Some care will need to be taken when finding suitable partnering equipment for the Cyrus I however, due to its slightly bright presentation and low power. But with care it can offer a level of performance that I feel is unrivalled at the price ●

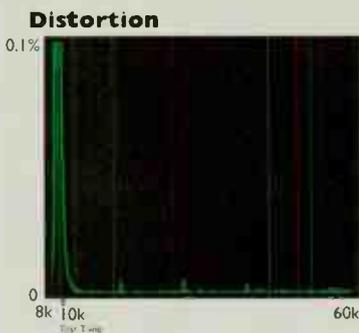
▲ The quality of the components used in this £250 integrated amplifier would disgrace most Oriental competitors. Holden and Fisher toroidal mains transformer, Slit-Foil power supply capacitors, Elna and Wima signal capacitors are all high quality items.

clear. I've always thought of the Cyrus I as a polite and civilised machine - and one that is superbly made. **NK**

## TEST RESULTS

Power	32watts
CD/tuner/aux.	
Frequency response	5Hz-45kHz
Separation	53dB
Noise	-100dB
Distortion	0.003%
Sensitivity	380mV
dc offset	-2/+1.6mV
Disc (MM)	
Frequency response	40Hz-36kHz
Separation	52dB
Noise	-79dB
Distortion	0.004%
Sensitivity	2.5mV
Overload	80mV

Disc (MC)	
Frequency response	40Hz-28kHz
Separation	50dB
Noise	-60dB
Distortion	0.004%
Sensitivity	0.26mV
Overload	8.5mV

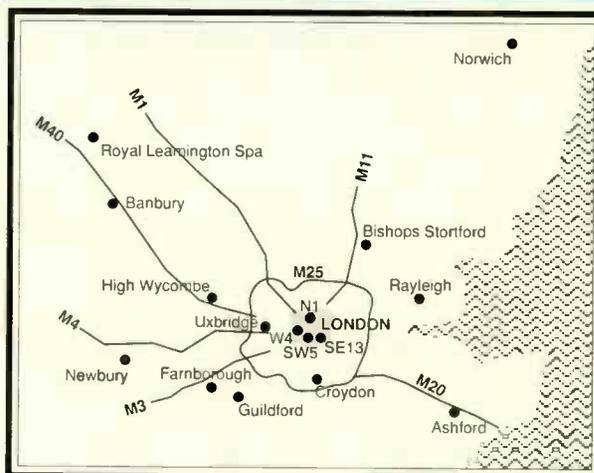


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# MISSION OF DISCOVERY



**Henry Azima, Head of Research and Development at Mission,**

**talks to Noel Keywood about the long-lived Cyrus I.**

**NK:** *When was the Cyrus I originally designed?*

It was around 1983. I think it was launched late '83 in as far as my memory can tell me.

**NK:** *I presume it was launched for the budget amplifier market.*

We had some expensive amplifiers like the 771, 772 and such like. Farad called me one day and said, "This is all fine but we are not selling enough volume around the world. We need to design a competent budget amplifier which we can sell in quantity, so we can reach as many homes as possible."

So that was the brief objective, but we had to meet cost constraints. We decided we had to make some capital expenditure to achieve this, so we put down a couple of tools for the front panel and cover, which were plastic mouldings, the idea being to make a non-ferrous enclosure (to prevent induced hysteresis distortion).

To make a product that was cost-competitive needed an alliance with a manufacturer. That is when we started to talk to GEC about assembling our boards for us, using auto-insertion machines, because we couldn't proceed with conventional manual labour. Quality and consistency are greatly improved when you manufacture like this and we almost met our original cost targets.

**NK:** *So the Cyrus I was one of your first cost-effective amplifiers, produced by automated manufacture?*

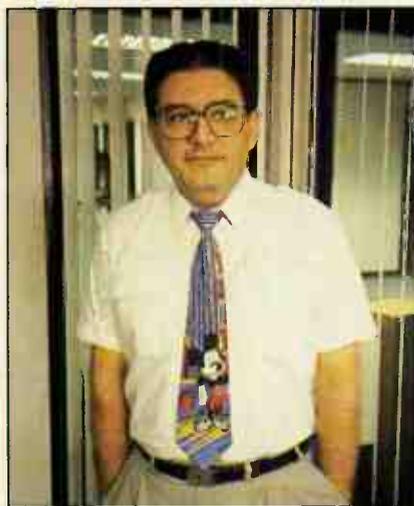
Yes. Absolutely. We went through so many problems before coming to fully automated manufacture as a solution. Also, we knew that you can be 99.5% sure that when you plug the amp in to the mains it will work. If there is something wrong, then the same fault will affect every item and you'll still know the nature of the problem and be able to cure it.

**NK:** *So the Cyrus was the stimulus for you to change from one form of manufacture to another more sophisticated type?*

Yes, it enabled us to sell around 20,000 amps a year and not suffer crippling returns problems from faults and random problems.

**NK:** *How did it find a market?*

It found one readily. It did meet a certain



amount of opposition after an initial surge of interest. This was possibly not helped by lack of a mono button or balance control, but people came round to its neat styling and small size, which make it fit into the home well. The latest Cyrus I has a mono button of course.

**NK:** *It was domestically very acceptable.*

Yes. It is a nice size, it is extremely powerful for that size and its sound has always been very, very good, something that is widely acknowledged. It was a slightly controversial product in the early years but it did manage to establish a niche for itself.

**NK:** *Is there anything radical about the electronic engineering?*

Nothing was invented in it. It is the application of good engineering from first principles that has served the Cyrus so well.

**NK:** *When did you adopt that huge cast base and why?*

That was again to make the product more consistent. We had a lot of mechanical problems with fitting the heatsink to the chassis and also fitting in the circuit boards. Farad said: "Let's look into die-casting the whole thing complete with all the fixings". It did put a little cost on, but it justified itself in the end.

**NK:** *I was surprised that you used a very expensive item, normally reserved for the front panel, hidden away underneath as a base.*

People's quality perception is not totally explicable. There is something that gives

humans a great power to perceive quality. Sometimes you can put it into the front so it shouts, but you can also put it elsewhere and it will also be perceived. I think people appreciate the fact that this complex casting with the Cyrus name on it has not been used with pretence, but where it was needed, not in a position that is just meant to contribute to appearance and nothing else.

**NK:** *When did you adopt this heatsink?*

In 1988 or thereabouts.

**NK:** *So it went for about five years before you adopted it?*

Absolutely. And rather than us sitting back and saying OK, we have an established product and reaping the profits we put more into it. That's why the Cyrus I has continued for so long. We also went to diecast top and front panels of alloy in 1988, dropping the use of plastics. Casting gives very clean lines and complex curves of course.

**NK:** *That's surely very extravagant.*

Well, yes it punished our margins heavily and we had to raise prices to cope.

**NK:** *But why did you do it?*

We wanted to push up the quality of the product. The circuits were there; we wanted people to get a great feeling of high overall quality. It's still a budget amplifier - it sells for £249.

**NK:** *On the latest model, what else is there you'd like to pick out as special?*

It has a balance control. We yielded under a lot of pressure! We have also re-specified a lot of components, especially slit foil capacitors. This has worked very well, improving the sound even further. We know well what to improve to affect sound quality for the better. We have tailored the sound and we can control its tonality. I can delve into the amplifier and change how you might perceive the sound, yet measured performance will not have changed at all. This is another benefit of having a design with which we are all well acquainted; it is a known quantity that can be manipulated accurately for better sound. We do not change things on a try-it-and-see basis, because we already know. I am still very keen on this amplifier. The Cyrus I is dedicated to quality, and it is now appreciated worldwide ●



# A Little Night Music

**From Pye's Mozart pre and power amplifier.**

**Eric Braithwaite tastes a forgotten Fifties valve vintage.**

**A**n amplifier named Mozart should have been reviewed in the year of Wolfgang's bicentenary. Though we'd heard intriguing reports of this forgotten Fifties valve pre and power amplifier, it took a little while to track one down. So, now it has been reviewed in Rossini's anniversary year. Pity Pye didn't make a Rossini amplifier.

What this Cambridge based company did make, however, before it was completely submerged by its parent company Philips, was a transistor replacement to continue the composer theme. "A hideous object" according to one knowledgeable informant, it was called the 'Brahms'. By some accounts it ought to have been christened the 'Brahms & Liszt' (cockney rhyming slang for, er, 'inebriated', I ought to add).

What I'm saying in my typically roundabout way is that the Mozart was thought to be pretty good in its

day, and like many good things it was superseded by something worse. It's all part of the game. The Mozart's day was the late Fifties: it was competing against amplifiers that have stuck more in people's memories like the Leak TL10 or Quad II. Such is fashion - Pye's power amp wasn't produced in anything like the same quantity, so it's always had a lower profile (literally as well as figuratively) and has never consequently been as prominent on the second-hand dealers' shelves.

No production records are left, so the actual numbers made are a matter of speculation. The serial numbers are coded, not running in sequence, so they offer no clue. Someone who worked in the Pye factory reckoned around ten thousand were built, but so few seem to be extant now that we suspect that figure includes the whole valve amplifier output from the Cambridge factory, including the mono HF10

Mozart it replaced, the tuners, and quite probably the push-pull Pye HF58 the Mozart superseded.

The mono HF10 was in production from 1956 to 1958; the stereo HFS20 - the one I played with - from 1959 to 1963. Pye were fairly quick off the mark in stereo. While Decca is rightly credited with the first release of serious numbers of stereo recordings in the UK, the first to appear on the market, by a month or two, actually bore the Pye label.

For what was effectively a mass-manufacturer of the period, Pye were markedly innovative. It's believed that the Mozart's associated copper-faced pre-amp was the first - perhaps the only one - to use ECC83 triodes and DC heating for the filaments, instead of AC and the EF86s that everyone else was using. If we're wrong, no doubt some erudite reader will correct us. Some Leak pre-amps had used triodes before, but used '86s in

the phono stage; as a result it's generally reckoned that the Mozart control unit's phono stage was quieter than equivalent amplifiers around at the same time.

With its diagonally-slanting control knobs, the Pye pre-amp, proudly labelled 'Hi-Fi Stereo', has an old-fashioned, but curiously attractive look. Where it does show its age is in the legends: the balance knob is engraved 'C' for centre, R, L and so on for left and right; bass and treble have 'L' for level, then +1, -1.

The selector switch has five positions: one for tape, one for radio and three for phono. Three for disc? Yes, this was the early days of vinyl, so you had to select different equalisations for 78's, mono LP and stereo LP. Mono LP is distinguished from Stereo by 'LPO' ('Old') and 'LPN' ('New'), putting the numerous people who were then filling letters pages insisting mono sounded better firmly in their antediluvian place.

Like the power amplifier, the preamplifier is a tiny affair, at least for eyes more used to modern valve behemoths that take up a couple of square feet of table space. It's only about ten inches long by four wide and deep. We are looking at a design for the days when you bought your hi-fi in separate bits and pieces and then installed it in a kind of custom-built sideboard. At its nadir this deteriorated into a 'music-centre', but in the Fifties we are talking much more 'high-end'. Vinyl source would almost certainly have been a Garrard 301, an early Connoisseur or Thorens, very likely with an Acos arm. We're pre-cassette, here, too, so the tape recorder would be reel-to-reel - a Ferrograph, Brenell or Revox. Radio broadcasting was in mono, of course, and therefore somewhat second best; Pye's own tuner, we're told, wasn't much better than a fairly basic radio.

**Earnings Related**

None of this was cheap. At the time the mono Mozart in chassis form cost £23 2s (£23.10); the mono Quad II fetched £22.10s (£22.50). Pye's stereo Mozart power amplifier cost £36 15s (£36.75), broadly equivalent to the Leak Stereo 20, which was £30.9s (£30.45) at the same period. The Mozart's control unit would set you back another £21. This was roughly equivalent to a month's average earnings at the time - we'd be in the £1,000-ish bracket now, I suppose, but it's an artificial comparison. Stereo listening in its earliest days was not for the hard-up; the cheapest power amplifier around was a Leak TL10 at £17, and in the regions where the pay packets were fatter and the atmosphere thinner, GEC were doing one at a stunning £60.

Pye's Mozart power amplifier also

had its interesting elements. Rated at 9 1/2 watts output per channel, the stereo version had a quoted response from 5Hz to 70kHz (only it was 'cycles' in those days), slightly worse than the mono, which was specified at 2Hz to 80kHz. Startling, eh? Originally the mono design involved three feedback loops, then called 'Positive Feedback' with a damping control; the notion was that this should be turned high until the amp went unstable (!) and then backed off. Speakers must have been made of tougher stuff in those days. Early

*"In tonal quality, especially on vocals, it was a real smoothy and a softie, sitting there purring at almost any kind of music"*

stereo amplifiers could be operated in 'grid bias' (fixed bias) and had, it's said, more bass than ours, which operated with 'floating' (or negative) bias.

I was very taken by this tiny Mozart; so much so that I hooked it up to my ESL-63s expecting either profound disillusion or a blinding flash of enlightenment - or just a blinding flash, since ours hadn't been touched since the day it was born.

Allowing for not being able to turn the volume knob more than half-way round without the most appalling distortions setting in - you name 'em, I heard 'em - I still achieved respectable moderate listening levels, with a good flavour of what an original Mozart must have been like. I was quite impressed. Most noticeable was a quite remarkable image precision

typical of a good amplifier, with well-embodied vocals and instruments and a more than reasonable depth and spread. In tonal quality, especially on vocals, it was a real smoothy and a softie, sitting there purring at almost any kind of music. While not up to modern standards of top-end clarity, or incisiveness, pretty well all the notes were there, from the faintest tinkling of a triangle to the rolling thwack of serious drumming.

Its bass department was a real thunderstorm - what seven watts or thereabouts lacked in push and shove it made up for by being all big, and warm, and very round. Too strong a bloom, maybe, for current taste - or perhaps the Mozart was showing its age - but it was very affecting and surprisingly tidy at time-keeping. My sample was best - very sweet-natured - with Folk and Chamber music, tuning a little muddled in the lower mid with a full orchestra. Nonetheless, dynamics, if a little subdued rather than crisp, would rate as pretty good, even by modern standards.

I grew fond of Pye's Mozart; a couple of visitors enjoyed it too. There's something about the design which suggests modern designers could usefully ponder it. Whereas Fifties valve pre-amplifiers are generally best forgotten, both line-level inputs and the disc stage performed far better than I expected, despite its age. It was, indeed, remarkably open and quiet, obviously with the potential to put a good many current budget and mid-market tranny designs to shame.

It's a pity I couldn't have heard a mint version; that went off to Germany and couldn't be retrieved (like so many old British valve amplifiers, which the Germans and Japanese snap up). Still, there was enough in my aged sample to suggest that a carefully reconditioned model might well not be ashamed in the company of its more respected brethren ●



▶▶ The single-ended EL34 output valves were mounted horizontally to make the power amplifier chassis compact.

**A SLICE OF PYE'S HISTORY**

Pye were one of the great originals, among the first of the electronics companies in Cambridge - the place that is home now to so many British electronics manufacturers. The name goes back to 1896 when William George Pye started a part-time business making scientific instruments for the University. The company did well, but the end of the First World War brought a downturn and wireless seemed a good area for expansion.

Whilst Pye's first receivers were elaborately designed and well-made, they were fatally insensitive. It looked as though the new venture would founder until William's son Harold (a science student at the University) took a hand, even suggesting cabinets made out of plastic instead of wood, something that soon became Ecko's trademark. By 1927 business was brighter, but W. G. less at ease. The business was ripe for sale and C. O. Stanley, Pye's advertising agent, negotiated with Philips. The Dutch company, however, proved not to be keen on paying a commission, so Stanley bought Pye himself for £60,000 - with £800 in the bank. Luckily, these were the boom days of the wireless and Pye Radio made money quickly enough for him not to sink.

In the depression of the Thirties, things were not so bright; but Pye Radio were to be found experiment-

ing with television. Their engineer was a young Peter Goldmark, who, nearly twenty years later, became famous as the originator of the Long Playing Record. The War put an end to television for the time being, but by then Pye had sold a couple of thousand TV sets. After spending the war involved in military manufacture the company came back to TV at its cessation.

In the Fifties, with the Festival of Britain spirit animating design, Pye

*"Some of their portable transistor radios in the early Sixties were truly pocket-sized - smaller than even a slimline modern Walkman"*

produced some plastics-based radios with very modern lines designed by a Robin Day - but not the one with the spotted bow-tie! Even with valves, many of the designs were notably slim and sleek - like the Mozart. It gave them something of a lead on the competition, for some of their portable transistor radios in the early Sixties were truly pocket-sized - smaller than even a slimline modern Walkman. I still have one, originally sold in 1961 - and it still works!

Curiously, Pye, and C. O. Stanley,

pursued an oddly wrong course at the early introduction of FM broadcasting, suggesting a much more complicated variant of AM would be preferable. Stanley thought the public wouldn't pay a premium for hearing the same programmes but with higher quality. To some extent he was right in the Fifties, and some would argue ruefully that - as far as sales go - he's not far off the mark still.

It was television that was in some respect Pye's downfall, despite some nifty work in developing one of the earliest true 625-line sets. Stanley retired as Chairman, at the age of 67, in 1966 as the Board's concern grew over the company's financial position. The company had poured money into the burgeoning TV rental business, but hadn't done its figures. By the end of the year Philips did what they had missed forty years earlier, acquiring a majority shareholding. However, they had to make an assurance that Pye's British identity would be preserved. Pye was completely taken over in 1977, but the name continued.

By then, the Japanese invasion was well under way. For over a decade Pye had been associated with radios and TV more than hi-fi. The famous logo slipped steadily down until, by the early Nineties, it appeared only on down-market products. The Mozart was one of Pye's most extravagant products **EB**

**MEASURED PERFORMANCE**

The Pye Mozart was a trifle novel in its own way. It was a single ended design using one EL34. The secondary feeding the loudspeaker also acted as a cathode load, applying feedback, and there were feeds back to the cathodes of the preceding valve, one ECC83. (Fig.1) There were three feedback paths in all, giving 34dB of feedback, Pye state in their literature of the time. The output figure quoted was between 8 and 10watts, according to limits used. At the time, record players gave around 3watts or so output, so whilst the Mozart looks feeble by current solid state standards (ours produced 7watts at 1kHz), it wasn't considered so in its time.

Our sample was a bit shaky, like most old, unconditioned valve amplifiers. Resistors and capacitors of the Sixties don't age too well; power on one channel was higher than the other. Distortion at just one watt of output was 1.2% in the mid-band and higher at more extreme frequencies. Although amplifiers like this commonly sound more pleasant than you might

expect, the muddle caused by the many distortions they suffer can invariably be heard.

Those tiny output transformers are where many of the problems lie. Today's valve amplifiers have much better designed and built transformers, but this accords with their specialised status. Frequency response of our Mozart had a +10dB peak at 15Hz, responsible for bass lift below about 1kHz - something the bass tone control could only partially correct I found. The original spec. quotes a 5Hz-50kHz bandwidth within 2dB limits for the 'main amplifier' though, so this is probably a characteristic of the preamp, or a fault in ours.

If there's a feature of this amplifier I love, it's the illuminated press-button power switch with PYE engraved deeply into it. Reminds me a bit of those illuminated radiator badges Wolseley cars used to have, and the illuminated QUAD legend that graced the 33 preamplifier. In terms of sheer functionality though, the Mozart is best not inspected too closely. It's cute, but it doesn't match up to modern practice or expectations. **NK**

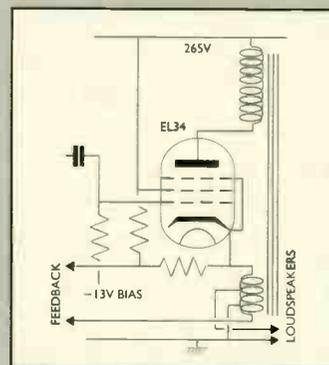
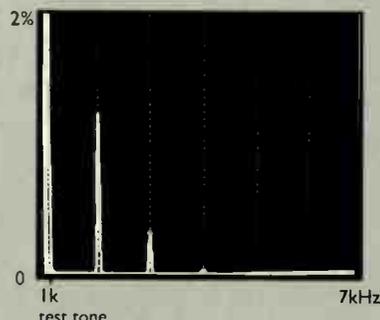


Fig. 1



Second harmonic distortion of 1.2%.

levels, and to level dependent behaviour in cone-and-box loudspeakers. Electrostatics suffer less from the effect. Loudspeakers with built in



"Vinyl v. CD - a no win situation." One of the last LPs to be pressed?

loudness compensation (i.e. bass and treble lift) also seem to work better at low levels too, but they are worse at high levels.

Paul Miller, Martin Colloms and I all believe that measurement is a necessary part of product assessment. It can explain a lot too, as well as help to find faults and problems in review product that might otherwise invalidate an assessment. It also removes us from the influence of manufacturers who would like and often seek to affect our judgement. Without technical knowledge and backup, a reviewer is left exposed to this sort of thing. **NK**

I agree on all counts! The kind of hi-fi system I've always looked for is one that would play all kinds of music realistically, and sensible use of the volume control is essential to avoid a harpsichord sounding as loud as a Heavy Metal band. Manufacturers do get a lot of stick, don't they? To be fair, budget CD players do produce a much better quality of sound than the fifty-quid record decks people with thin wallets used to have to buy. All the same, I am often surprised by people who criticise vinyl replay and turn out to be comparing their new £300 CD player with their memories of such a record deck. It's not the message they've been upset by, it's the quality of the replay medium, if you see what I mean.

Lastly, even if Our Price Records is now Our Price Music, I still think of music being on records - mind you, we do call the record reviews The Music Pages just to be on the safe side. **EB.**

### MEASURE FOR MEASURE

I was an avid audiophile about twenty years ago. I kept myself very busy reading hi-fi mags, listening to loudspeakers and trading equipment. Then, around 1976, I settled for what I still have now: Quad 33/303, B&W DM2, Technics SL110A direct drive turntable with Stax UA7 tonearm fitted with a Shure V15 Type III.

But black discs are no more and CDs are all around the place, so I decided to look at hi-fi mags again in order to know what kind of CD machine to buy. Well, I am rather amazed by what I read. I have read that measurements are somehow useless; I have read that if colorations (pardon me, 'colourations') are desirable in some equipment (Unisis amplifier, ProAc Response 1S) they are quite unacceptable in others (Mordaunt-Short Classic 20).

Frankly, I thought that the controversy between transistors and tubes (pardon me, 'valves') was long gone. As for the ProAc Response 1S, they exhibit a rising treble characteristic and an obvious peak at 150Hz. Measurements do not always tell the whole story, but in the case of



Mordaunt-Short's Classic 20. How acceptable is colouration?

the ProAc, it is very easy to find out where the 'warmth' and 'forwardness' come from. If it is what makes them musical, it seems to me that these artifices are far from being new.

I have not listened to the ProAc and I will not. I have calculated that I can fabricate myself a pair of boxes the size of the ProAc for a mere 600 Canadian dollars (vs. a hefty 2,400 for a pair of ProAcs) using exclusively Dynaudio components. Beside the cost difference, those Dynaudio speakers will better suit my taste as well as my concept of hi-fidelity, which I reckon is fidelity to the record-

ing. And with the money left I can get a nice equaliser so I'll be capable of tailoring myself all types of dips and crests in the audio spectrum.

Since my Nakamichi cassette deck is rather tired, Philips may count on me as a future DCC deck buyer. At least that one does not make my collection of analogue cassettes obsolete.

**Henri Noel,  
Boucherville,  
Quebec,  
Canada.**

**We measure most of the products passing through our hands and it is the experience of attempting to correlate measured performance to sound quality that warns us of the difficulties of coming to dogmatic conclusions about the whole business.**

We are not saying that colorations in themselves are desirable, but that in real life products invariably suffer from a variety of colorations/distortions, etc. and that when a choice is made, it is often in favour of the most amenable sounding combination of such blemishes. I liken box loudspeakers to musical instruments: you choose the sound that suits you.

Your hypothetical Dynaudio loudspeaker won't sound like a ProAc; it'll merely sound different. Nor will it be more accurate for not having a treble or bass peak, since there are a myriad of other imperfections loudspeakers suffer that you'll not be able to expunge, even with a graphic equaliser. How about a nice bit of wooden colouration for example? **NK**

### IMAGE PROBLEM

I write with regard to the review of our 103/4 in the December 1992 issue of Hi-Fi World, written by Alan Sircom.

We are bemused by inconsistencies between Alan's review of the identical product in the October 1991 issue. In that review, Alan wrote of the 103/4s that:

"Their imagery was always exemplary with a wide, deep sound-stage producing stable images that demarcate well. Imagery and detail are these loudspeakers' strongest points combined with their ability to play very loud."

He concluded by saying "on the end of a very well-matched system I feel that the KEF 103/4s are likely to sound better than many other £1000 speakers." Praise indeed!

In Alan's review of exactly the same speakers in the December 1992 issue, he writes:

"We had expected them to have excellent imaging due to the UNI-Q point-source driver, but when it came down to it, they were no better than other speakers in the group... This was quite a disappointing result, as the whole design philosophy behind the UNI-Q driver was to produce superior stereo imaging."

In the previous review Alan listed the system used to drive the 103/4's but in the December review, which was a group test, I



A Uni-Q point source driver.

couldn't find any mention of the system(s) used for the tests.

This leads us to believe that the poor sound-staging which Alan experienced was the fault of the system used to drive the 103/4s rather than of the speakers themselves. The fact that Alan found a "sameness" in imaging across the board in the group test adds strength to this argument.

In reviews from leading magazines all over the world, the 103/4s have always gained high praise for their stereo performance. We are fully confident that UNI-Q still leads the field in stereo sound-staging and we would encourage Hi-Fi World to revisit the 103/4s, perhaps with a more compatible system to drive them. The same could well apply to other products in the December group test.

**Roger Walker,  
Sales Director,  
KEF Audio (UK) Ltd.**

continued on page 50...

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Alan Jones, at left, is congratulated by me (Noel Keyword) for winning the 'Best Home Built' category with his superb Williamson amplifier.



Early Sunday morning at Southborough: whilst the sensible and somnolent are in bed, British Vintage Wireless Society members ferret for bargains.

# BRITISH VINTAGE WIRELESS SOCIETY

**Noel Keyword visits Southbridge to judge the Society's valve amplifier competition.**

What is it about valve amplifiers that makes them so attractive? Is it their comforting glow or apparent simplicity? I sometimes liken them to steam engines; both are early mechanical and seemingly animate technologies with which we can associate. After all, you can see inside a valve when it's working. There's no apparent mystery. Just look at transistors: blank, black blobs of plastic, usually found sitting inside an anonymous looking metal case. What does that mean to anyone?

No matter what their appeal, I am not alone in liking them. Realising that quite a few of their members weren't interested solely in the valve radios of their youth, the British Vintage Wireless Society (BVWS for short) recently held a valve amplifier competition. Knowing that valve amplifiers were a part of my youth, and that I had a great interest in them - old and new - they kindly asked me to judge the entries.

I knew this would be fascinating. I'm no expert on old valve amps; my experience was of building Mullard designs for my hi-fi system back in the Sixties. There was a lot of metal bashing, especially to get octa valve bases comfortably seated, plus of course the obligatory 'belts'. These were a means of horizontal propulsion initiated

by the application of 400volts to the body. Why and how human beings make valve amplifiers and survive to enjoy them is one of life's mysteries of course. The harder the journey, the more gratifying the arrival I suspect.

But the madness is universal and the results were to be scrutinised by myself at Southborough, near Tonbridge Wells, on a peaceful November Sunday. There were the members, up at the crack of dawn on Sunday, so they could scurry around the trestle tables before others, to get to that dreamt-of bargain. In the past, whilst they've concentrated on what's on the tables, I've been more interested in what's under them. This is where the hi-fi goes at BVWS 'swap meets', together with the old books containing all manner of circuits, from highly practical 3watt Mullard single-ended jobs up to GEC's 1250watt behemoth with its 2.5kV HT rail (no, we're not going to publish this design; your first belt would be your last and we want more readers - not fewer!).

This Sunday the emphasis had changed. Valve amplifiers had been given pride of place. When I walked into the hall, they were sitting in lines along tables skirting the edge of the stage. John Howes was revealing his own secret interest. Organiser of the South East BVWS meets, he

also builds valve amplifiers, having made a number of rare Williamsons. Two categories had been decided upon by John: Best Commercial amplifier and Best Home Built amplifier.

Being a fairly informal affair, and the first of such events too, we were bound to run into small difficulties. There were some beautiful Lindley modified Quad II power amplifiers, but these did not fall into either of the categories. With some regret, we gave priority to absolutely mint original-condition commercial designs, of which there were many, and to true DIY jobs.

Many BVWS members are hard-core experts on esoteric matters like old valve amplifiers. They can spot a Lowther LL10 from 300yards and tell you which day it was built. Excitement rippled through these seasoned onlookers; some superb rarities had been unearthed. A Lowther was one of them. Its green crackle-finish chassis and black transformers were almost mint, bearing just a few scuff marks. Undereath, all the original components were in place, with no sign of malingering spiders or past pyrotechnics. This unit, which delivers 10watts, looked about a year old, when in fact it was sold in the early Fifties.

There were a number of Quad II



...continued from page 47

Yes, Alan was complimentary about the 103/4 in the first solo review that appeared in our October 1991 Edition; he tried to find merit in any product.

In the second review two people listened, not Alan alone, as the attributions in the sub-head and the Sound Quality intro - "Our first impression" - make clear.

This review says that the 103/4s "give the listener the impression of a strong stereo effect", which is what Alan liked about them originally, but that "they failed to place the constituents of a performance with any sense of accuracy" and that "depth perspectives were disappointingly compressed".

There's no contradiction here. The "stereo effect" comes from good instrument separation (i.e. lack of muddle).

Placement accuracy and depth resolution are different subjective criteria.

Having listened in on both occasions, and knowing these speakers well, I endorse these observations. Luckily, out in the real world not everyone values imaging, so although we personally have reservations about the 103/4s in this respect, they can still validly be recommended for their strengths.

The system used in this instance was a sync locked Deltec Bigger Bit convertor coupled to Audiolab C8000 preamp and M8000 monoblocks, biwired with Furukawa. It imaged superbly. Please address Audiolab or DPA Digital if you'd like to question this.

I'm sure you're "fully confident that Uni-Q leads the field in stereo sound staging". Every manufacturer is fully confident their products lead the field. Try listening to Quad Electrostatics; you may change your mind. **NK**

**SWEET SIXTEEN**

I am writing in response to Alan Sircom's reply to Ray MacCormack's 16in transcription problem (Hi-Fi World, December). Earlier this year I contacted SME with the same problem.

They put me in touch with Terry O'Sullivan of Loricraft Audio, 4 Big Lane, Goose Green, Lambourn, Bucks. RG16 7XQ (Tel: 0488 72267). I purchased a



**KEF UNI-Q 103/4 loudspeakers. How well do they image?**

3012-R arm from SME and Loricraft completely and quickly rebuilt a Garrard 301 (3-speed, variable pitch) on a beautiful oak plinth with separate dedicated power supply. The cost, together with assorted appropriate styli from Expert Stylus Company came in at just over £1000 - not close to £3000 as suggested by Alan Sircom. A 16" platter is not necessary and I am able to play all my discs on this equipment with the utmost in musical and technical satisfaction.

**Anthony Barnett, Allardyce, Barnett, Publishers, Lewes, East Sussex.**

Somehow, we just knew there would be at least one of our readers out there who had a

collection of transcription discs. All the same, even £1000 is a lot to pay for Mr MacCormack to play one transcription record! **EB**

**NAIM GEOMETRY**

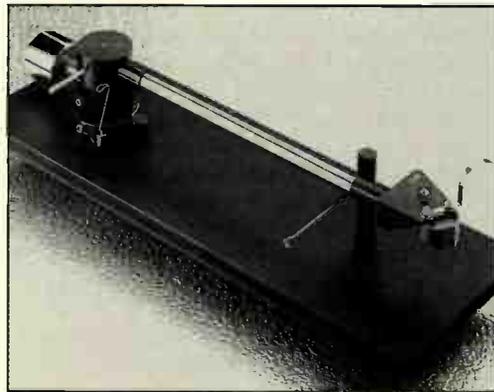
I read with interest the recent letter concerning cartridge geometry errors and Naim Aro unipivot tonearms.

Utilising your recent excellent give-away alignment protractor I confirmed that my Roksan Corus Black was indeed misaligned in the headshell. I calculated that to correctly align the cartridge it required repositioning along the headshell axis 3.25mm towards the unipivot.

Now this started to niggle me. Would this affect sound quality? Was I getting maximum performance from Roksan's already impressive moving magnet?

Being a Production Engineer by trade and having the necessary machinery at home, I manufactured tooling to machine, accurately, two additional mounting holes into the Aro headshell. (Note, you can't just bodge holes into seven hundred quids' worth of tone arm with a Black and Decker.) This would allow cartridges with conventional stylus overhang dimensions (i.e. 9.5 - 10mm) to be set up for optimum sound quality.

O.K., so how does it sound? Lowering the Aro into the groove I couldn't believe my ears. The Roksan, already a very good cartridge, was producing vast amounts of top end detail that just wasn't there previously. Voice detail improved to the extent that I could understand



**Aligning a Roksan Corus Black in a Naim Aro - a reader has a solution.**

phrasing and words where previously I could only guess at them or read the lyric sheet. Bass notes were also more clearly defined and tuneful. All this from a cartridge that is

approximately eighteen months old.

So to sum up; I definitely agree with Noel that correct cartridge alignment does affect sound quality, contrary to Naim Audio's statement, even on my modest LP12, Lingo, Nait, Ela system.

Now, I wonder, what the effect on sound quality the modified Aro would have on a really good moving coil? P.S. Has Malcolm Steward gone for good? I hope not.

**Mr M. Tracey, Chipping Camden, Gloucestershire.**

Other readers should be warned, as Mr Tracey points out, that drilling hopeful holes in a headshell could easily lead to disaster. Apart from anything else, it will also weaken its structural integrity. Those who feel confident about doing sums could buy a blank Linn armboard, and mount an Aro so that the geometry will come right with a non-Linn cartridge. Malcolm is still with us. **EB**

I spoke to Naim about this. They repeated the company view that, listening to a wide variety of cartridges in an Aro, they had found sound quality to be perfectly satisfactory. This is different from admitting that misalignment degrades sound quality. I think I am right in saying that they feel any degradation resulting from misalignment is not significant.

My experiences on this matter are mixed; I strongly suspect that sensitivity to alignment depends upon stylus orientation. Whilst high frequencies change, I have yet to hear the low frequency improvement others hear - including Eric. It's not something I dispute though.

Apart from redrilling the Aro headshell, the solutions are to move the arm back on the mounting board (or move the board itself back, Naim suggest) or use a cartridge with a 7mm stylus-to-mounting hole distance like that of the Troika for which the Aro was designed (the norm is 10mm). Ortofon 500 and OM series cartridges fit this bill, but their choice presupposes their sound is liked in the first place. **NK**



**A rare 912 Plus from Denco of Claccon - the coil manufacturers. It was based on a GEC 12watt design. This one had Partridge transformers, adding to its value.**

monoblock valve power amplifiers, which in their heyday turned out around 12watts. The Lindley-modified ones were repainted and rewired with modern components, looking especially smart and eye catching amongst the conservatively finished old timers. A sparkling Pye Mozart (9 1/2watts) caught my eye, sitting beside an HMV Stereoscope 555 (10watts) which included a cathode ray tube, as used in oscilloscopes, for channel balancing. A Denco 912 (9 octaves & 12watts!) appeared, a rare design we researched in response to a reader query. He'd picked



**An HMV Stereoscope amplifier, looking very modern with its enclosed one-piece chassis. In the middle is a tiny oscilloscope screen for adjustment of the stereo channels. Beside it sits a Pye Mozart (see p44).**

one up for a few pounds at a car boot sale; here was another, looking smart, even if its original styling was a little unimaginative. It is based on a GEC 12watt design. A dealer looked at it, spotted the name Partridge on the output transformers and muttered "that'll go down well in Japan."

I was looking for something a bit more dedicated and purposeful. There were numerous preamps and power amps in chassis form for radiograms, including another GEC 12watter with no name, only model number BCS2418A, betraying its radiogram role. An attractive Philips 2856R PA amplifier looked interestingly different, but the years had taken their toll. There were also good looking Avantics and similar Beam Echo models, based on Mullard 5-20 circuits I believe.

My eyes alighted on a superb example of an RCA New Orthophonic preamplifier, together with its accompany-

ing 20watt power amplifiers. The controls looked unused and moved with gratifying smoothness and precision. This was an almost spotless example of a complete valve hi-fi amplifier possessing a respectable performance even by today's standards. It got Second Prize.

A lot of excitement was generated by the appearance of a Tannoy Williamson preamplifier, bearing Guy R Fountain's signature on the front panel. It had an impressive row of front panel controls, including tone controls, filters and various LP equalisation settings. Behind it sat a Tannoy HF/200 AC power amplifier



**The mint condition RCA New Orthophonic amplifier that won second prize in the Best Commercial Amplifier category.**

which, being based on the Williamson circuit, would produce around 12watts per channel. Looking underneath the power amp I saw it was a spotless original, complete with early carbon resistors, paper condensers and impregnated cloth covered wires. In every respect, this example scored. It was rare, comprehensively equipped, possessed of a great pedigree and in almost mint condition. First Prize went to its proud owner, Mike Pointer of Station Sounds (to be found on the Down Platform of Worthing Central Station in Sussex).

The home-made amplifiers were a curious but interesting breed, largely built around old output transformers from makers like Partridge, Parmeko, Gardners and such like. Many were period pastiche, using early output valves; one had an



**First prize for 'Best Commercial amplifier' went to this superb and rare Tannoy 'Guy R Fountain' version of the Williamson circuit. Mike Pointer of Station Sounds (inset) submitted the unit.**

ancient PX4 triode. In the end, First Prize had to go to an enormous Williamson amplifier, delivering 12watts from KT66 output valves, entered by Alan Jones. Its chrome plated chassis might not reflect the period - 1947 - in which the original circuit was designed, but the high standard of finish, attention to detail and use of a little-known but seminal circuit that set 0.1% distortion as the acceptable limit for hi-fidelity all counted in its favour. This amplifier I felt was a worthy acknowledgement of Williamson's abilities and something of a tribute to him as well.

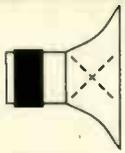
Second Prize in this category went to John Howes for his 'home brew' 15 watt Class A push-pull amplifier using 801A bright emitter triode valves. This had a period feel to it, with big black transformers mounted on a sturdy black chassis. I would have thought it was an old PA amplifier of some sort, but for the vivid blue plastic covering of the modern electrolytic smoothing and reservoir capacitors, which gave the game away. This amplifier was a fine example of how it was done in the early days. Having sat in front of an Ongaku, with its giant VT-4C directly heated, bright emitter General Electric triodes from 1918, I felt a strong



**The home built Williamson design submitted by Alan Jones. In front are two KT66 output valves. Behind, its modern transformers are huge in comparison to those of the period, meeting Tim de Paravicini's interesting design criteria of "maximum iron, minimum copper" (see interview on p39).**

affinity for John's amplifier. The Ongaku was pure magic, for whatever reason I don't know. I couldn't help but wonder whether this amplifier captured any of that magic, whether it sounded as smooth, relaxed open and atmospheric.

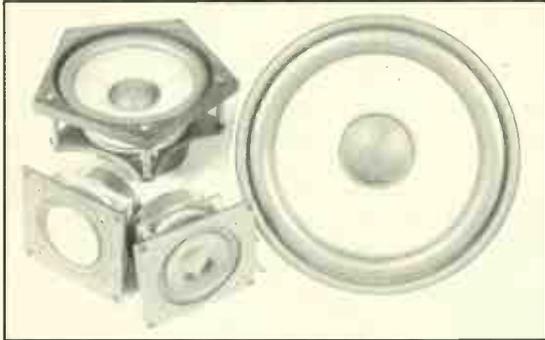
BVWS members dug out a superb range of fascinating exhibits for their first valve amplifier competition. Just as I had expected, there were amplifiers whose existence was unknown to me - and even unknown to most of the members too, which is surprising. It helped recognise important products that are part of our heritage and with which many people are unacquainted. At the same time, the DIY category showed that building period valve amps can be an interesting hobby too. I don't know what it is about valve amplifiers that makes them so attractive, but I was pleased to be able to judge such a wonderful line up ●



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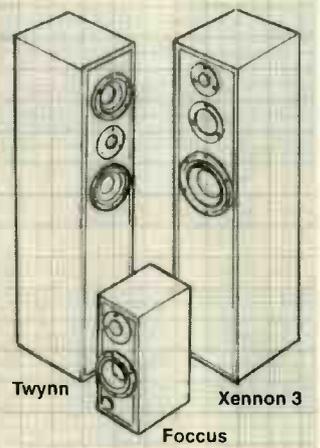
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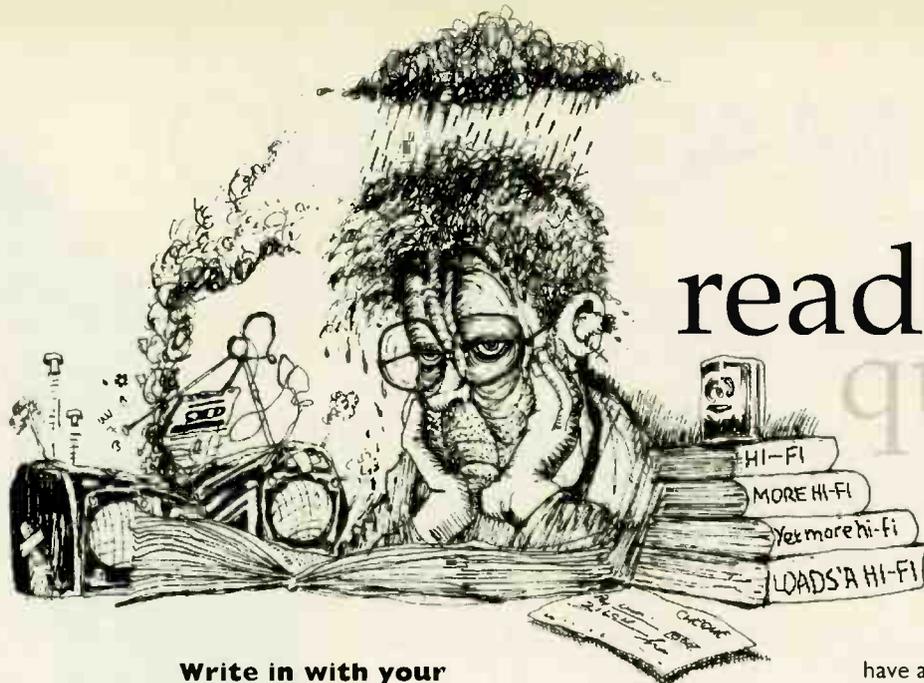
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# readers'

## queries

### SEXTET I

Thank you for your recommendations about loudspeakers for the Pioneer A-400 amplifier. I was disappointed that you wouldn't recommend Heybrook Sextets, but interested that Alan Sircom mentioned Townshend Glastonbury loudspeakers. Unfortunately, Townshend no longer make them, but the Sir Davids instead.

I was thrilled to discover that the ribbon tweeter used by Townshend looks exactly the same as the Tonigen ribbon tweeter used by Heybrook for their Sextets. If they really are the same, then I have found my ideal loudspeaker, for I really liked the treble sound of the Sextets, but the Glastonburys go down to 20Hz, lower than the Sextet.

Could you inform me more about the Glastonbury tweeter and publish a review of these and the Sir Davids? I believe the subject would be interesting for all those who own a Pioneer A-400 amplifier.

**Bulent Coskun,  
Hammersmith,  
London.**

You've raised some interesting points here. Whilst we all like the Pioneer A-400 and recognise its attractive qualities, it isn't an ideal price/quality match for new Glastonburys; Alan proposed this loudspeaker as a possibility that would seem to suit your tastes and might, now that it is out of production, be available second hand at a keen price.

Dominic has lived with Glastonburys and, like Alan,

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thinks they are a superb loudspeaker, unique in what they are and what they offer. Yes, the tweeter is the Tonigen unit from Japan, as used by Heybrook in the Sextet, but it is tweaked by Townshend. Heybrook don't use a standard unit either. They tell me theirs is specially modified by Tonigen to their requirements and is subject to tighter quality control for better pair-matching. So the tweeters are the same - but different!

Alan rather feared that the shiny upper mid-range and treble of the Pioneer would combine with a similar tendency toward forthrightness in the Tonigen, plus the ability of the Sextet to reveal a bit too much about inadequate sources, for the match to be made in Heaven. For this reason he felt the Glastonbury might be more suitable, although it was a long shot as recommendations go, assuming a pair could be had

at a bargain price. (Highly specialised speakers can change hands at very low prices, if an appreciative buyer cannot be found.)

I rather agree with Dominic's observation that all this over-rates the A-400 and gets it out of context. It is good at its price; it is not ideal for highly revealing, specialised and expensive loudspeakers like Sextets or Glastonbury's. I well know that when partnered with a mediocre amplifier the Sextets, which I use, can sound very flat, lifeless and brittle, but this is the amplifier, not the speakers.

Since you are set on a speaker with the Tonigen ribbon tweeter, perhaps you should get Heybrook Sextets and use them with an appropriate amplifier, typically the Audiolab C/P8000 pre/power combo. Biwire with something really good (I like Furukawa throughout), try solid core to the tweeter and keep the speaker leads as short as possible. Use a long, high quality interconnect between preamp and power amp if necessary to achieve this. Just remember that the Tonigen is brutally revealing; you have to pander to it. Every item in the signal chain must be suitable or you'll just end up listening to nasties.

Alternatively, for good everyday hi-fi keep the A-400 and match it with a less expensive and revealing loudspeaker. Epos ESI 1s might suit, but watch out for tubby bass, since both items

have a tendency toward this. Put the ESI 1s on open stands, away from the rear wall. You might also like to consider the latest Tannoy 605LE - another highly specific sounding loudspeaker, tuned up by Tannoy to produce a very challenging presentation - and priced correctly for the Pioneer too. Whilst this sort of system is excellent value, it is euphonic, not revelatory.

Only you can decide how far you want to go and what



**Tempted by a Tonigen tweeter  
as used in Heybrook's Sextet?**

you feel you can afford to get there, but my feeling is that the edge-of-the-seat drama and excitement that can come from Sextets or Glastonburys properly driven is worth pursuing. This is, however, very much a personal view and for everyone who likes the highly distinctive treble of the Sextets, there is another who doesn't. **NK**

**Continued on page 55...**

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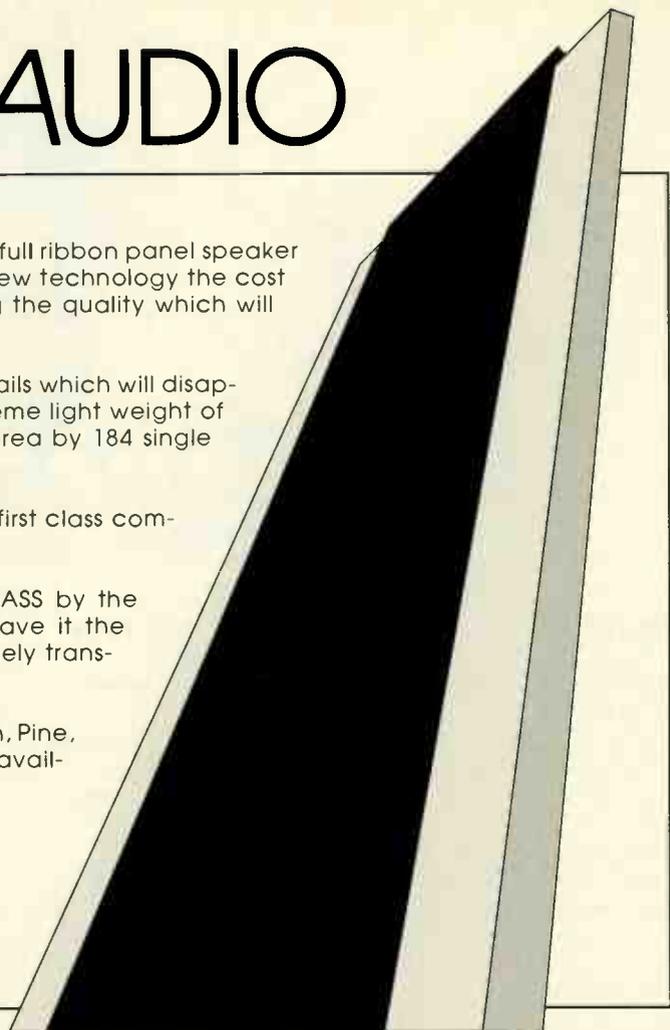
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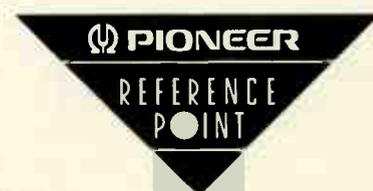
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Continued from page 53

## SEXTET 2

Regarding my shrieking Sextets! My system comprises Gyrodec with Helius Scorpio arm fitted with Goldring 1022 cartridge, Lynwood valve phono stage, Albany AP3 passive preamp, Albany 100S monoblocks and Heybrook Sextets. Interconnects are Sonic Link Violet and Heywire speaker cable.

The problem is that at times the upper midrange can become overbearing. I suspect the arm and cartridge as they would appear to be the weakest link in the chain and perhaps the cabling. I know from a test record that the cartridge mistracks on one channel on the more difficult grooves, but there is no bias adjustment on the Scorpio arm. What are your thoughts on changing the arm and cartridge to a better quality Helius arm, an SME3009 arm, a Rega RB300 arm and the cartridge to either a Shure VST-V or a moving coil; but this would involve the extra expense of a head amp.

What ideas do you have on cabling? What are your views on long (3metres) interconnects between preamp and monoblocks? This would solve the space problem as the monoblocks could be placed by the speakers. It would also drastically reduce the length of expensive biwire cable! Any other ideas would be welcome.

**N. Hodgson,  
Brighouse,  
W. Yorks.**

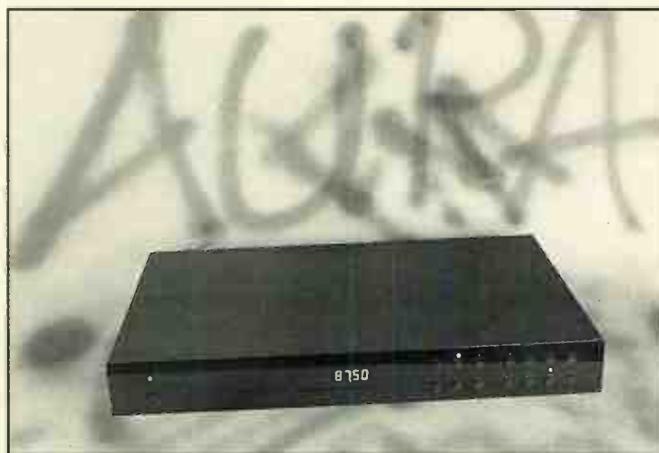
I suspect a conspiracy of factors is causing your problem. Superficially, you have a system that should, if anything, have a warm and laid back sound. The Albarrays are mild mannered and the Goldring 1022 veers toward warmth, except for a small top end peak. The arm is a weak point, but I still would not have expected it to be responsible for anything so obvious and disturbing as a 'shriek'.

What I suspect is that the somewhat forward and uncompromising manner of the Sextet's ribbon tweeter is showing up problems earlier on in the chain and, additionally, its sound may be upsetting you too. This speaker could be said to have an

"overbearing mid-range". Or in other words, the speaker is possibly not to your taste. People do initially criticise them for a hard, glassy upper-midband, though this impression commonly dies away after longer exposure, giving way to positive enthusiasm. However, perhaps not in your

freely - laterally and vertically. If it doesn't then the bearings are sticky or have dirt in them and are inducing mistracking. It may be best to get a new arm.

It may well be that the Lynwood valve preamp wiring, in conjunction with the deck's signal leads exhibits far too



A real steal: the Aura TU-50 tuner.

case. Have you auditioned the Sextet in another system where you liked its sound? Be certain that you really do like its qualities before ripping the system in front apart!

Additionally, I strongly suspect, like you, that the ribbon tweeter is revealing problems earlier on in the signal chain. Let's go over the possibilities.

The Goldring 1022 is warm, fulsome and well defined, yet has a small treble peak. This should be audible as a tinselly brightness rather than a shriek, however. A shriek may come from two sources. Either the cartridge is damaged or mistracking severely, possibly because of something simple like tracking force being incorrect.

Alternatively, if the 1022 sees too much capacitance (400pF or more) its response will peak at around 8kHz, producing a shriek.

I suggest you start investigating the first possibility by inspecting the cartridge cantilever and stylus closely. Sometimes, styli drop out, or perhaps yours is wearing out. Make certain the stylus assembly is OK.

Then check the arm. Put the stylus guard on (or remove the stylus assembly altogether), remove tracking force to achieve balance and make certain the arm swings

much capacitance for the 1022. Checking this is difficult. If I'm right, then any moving magnet cartridge you try will be similarly upset, so cartridge substitution offers no solution, unless you can secure a low source impedance (not upset by capacitance), high output (works into an MM input) moving coil like a Sumiko Blue Point.

Alternatively, a moving coil working into a head amp would negate the effects of capacitance and possibly solve all your problems in one go.

On balance, I'd suggest you change to a Rega RB300 arm with a moving coil cartridge, possibly the Sumiko, if everything else is working properly.

Long interconnect between preamplifier and power amplifier is, fundamentally, preferable to long speaker cable. However, there are dangers too, which is why we usually fail to mention this option. It only works if the preamplifier can drive the capacitance of the lead at 20kHz, meaning success depends upon both the preamp and the lead used. In your case, 3 metres of good quality cable at typically 100pF/metre shouldn't be a problem and it's worth a try. Rob Watts of DPA Digital Audio says a good rule of thumb is you can use twice as

much interconnect than speaker lead for the same amount of degradation, assuming the preamp can drive the lead of course. If it can't, you'll get awful treble distortion. So my advice is to experiment; you should meet with great success. Speaker lead type becomes less critical as length shortens, but you should biwire. **NK**

## TUNER TROUBLE

I have a Tandberg TR2060L receiver which I've had for a few years, along with Sony APM10 loudspeakers, Thorens TD-150 MkII turntable, Denon DCD-560 CD player and a Maxview 3-element aerial which I bought after reading your articles on aerials.

I have been considering upgrading my receiver for something better. I have considered the Denon DRA-335 receiver, but would the TU-260L tuner and Denon PMA-450 amplifier be of better sound?

I have also considered the Aura VA-50 amplifier and matching tuner. I listen mostly to radio and classical music. I don't like a lot of bass, even though my present system has a lot of it, which I wish to tone down.

I have up to £500 to spend on a receiver and I don't want to spend this kind of money to hear no improvement.

**Richard Crowley,  
Warley,  
West Midlands.**

If you want to tone down the bass, you need to consider replacing the Sony APM10 loudspeakers. The Denon tuner and amp are fine, but they have muscular bass. The Aura VA-50 and Aura tuner offer lighter bass and a very smooth, refined sound. The tuner's a real steal at £200; it's one of my favourite budget designs. All the same, I'm not at all sure you'll be happy that the bass problem has been satisfactorily overcome. Either get an amplifier with good tone controls and cut down bass in this way (how about a Denon PMA-350?) or replace the loudspeakers. Or, if they are close to a rear wall, pull them forward and mount them on rigid, open stands. **NK**

Continued on page 60...

Kenwood's £199 KX-5050 cassette deck is in the new 'recession' style, with soft curves and radiused edges, barely a right angle to be seen.

Visually, it is very successful, though it does create a small problem. Splendidly bright and clear as the display window is, the display itself is set back behind the fascia, which means that only the lower half is visible unless the deck is placed at eye-level. That's a quibble, for there is more to this cassette deck than mere styling.

Kenwood, in common with others, have installed a powered cassette door: press Open and it whirrs outwards; touch any control key and it whirrs back again. New-style sophistication doesn't stop here, though.

If there's anything that is a pain in the proverbial for most cassette users, it's having to stick to a range of tapes for which the deck was set up at the factory. Kenwood have taken a step which will raise an eyebrow or two: the KX-5050 has automatic tape biasing.

User friendliness extends to large size control keys and a clear display. This can be switched off - either altogether or just leaving the tape counter on show. A bit of a gimmick this, I think; I would rather have had a back-lit cassette compartment, because, again, the curvilinear styling of the door makes it difficult to see the tape. To make up, there are facilities normally found at much higher prices. There's A-B programming, for example, and - borrowing the terminology from CD - 'Index Scan' which searches for blank spaces between tracks in the tape. Allied with an appropriate Kenwood CD player, 'Peak Search' will allow a maximum recording level to be set.

For the price, the new Kenwood's

# A Bias Towards Cassette?

**Kenwood's new KX-5050 two head cassette deck offers automatic tape biasing. Eric Braithwaite has it taped.**

performance is more than acceptable without being spectacular, but that said, its sound quality hasn't been swamped by money spent on gizmos instead of the electronics. Playing pre-recorded tapes produced no groans or instant desire to press the Stop button, something that comes easily to a long term Nakamichi owner like myself when faced with recorders of a lesser quality. Given good-quality tapes, there was an impression of splendid mid-range detail and forceful driving bass, if a bit unfocussed and slightly woolly. All the same, the all-important rhythms skipped along without the beat slowing with a reasonably honest tonal colour on Rock and Pop.

Turn to Classical, however, and while performances were pleasantly

engaging, a limitation became apparent, though since most buyers will not (unlike me) be switching between Compact Disc and cassette it's not one that would be disturbing. Putting on Mussorgsky's Pictures at an Exhibition, the tape demonstrated a convincingly wide spread with a good sense of three-dimensionality but in the final analysis lacking in perfect definition at the top end. Woodwind and lower strings were splendidly warm and full, as were most acoustic instruments on recordings of other genres, but upper string tone was limited in tonal colour with violins not totally distinct from violas and the brass sections not clearly distinguishable. For all that, the Kenwood produced a rousing performance.

Similar attributes were discernible

## MEASURED PERFORMANCE

Tape tune systems are normally to be found on three head decks only, because the sensing system can work from the replay head whilst the test tones go onto tape through the record head. This allows the whole tune process to take place in one pass.

With a two head deck like the KX-5050, two passes are needed. Such a system is slow; the Kenwood took 40 seconds. Once tuning has been completed the setting is remembered and displayed as Bias Preset legend, so having tuned the deck to particular tapes, there's no need to continually re-tune.

The basic default bias settings were OK with chrome and metal, but resulted in steeply falling treble with budget ferrics, but not with premium grades like TDK AD or Maxell UD-1. However, the Kenwood managed pretty well when auto-tuned to reasonably standard

commercial tapes like TDK AR ferric, TDK SA chrome and TDM MA metal. About 1dB or so variation in response above 5kHz existed after adjustment, a small amount.

The head could achieve respectable recording levels, but not high ones, before running into overload. Whilst some decks, like the better JVCs, Sonys and Denons, can reach +4dB or thereabouts (IEC MOL315) with metal tape, the Kenwood hit +2dB. Kenwood have not over set bias, however, as JVC and Sony are doing these days, in order to get higher mid-band overload (MOL315) at the expense of treble overload (SAT10k). This is one reason why the KX-5050 doesn't look quite so good. I'd label its head 'satisfactory'; it has a flat frequency response and gets healthy recording levels onto tape, if not exceptionally high ones. With 0VU (peak record level) set at Dolby flux, 2dB can be added to my IEC overload (MOL/SAT) figures to derive

display readings. For example, metal tape has a MOL315 of +2dB, which means music peaks can be taken up to +4 or thereabouts on the Kenwood display before serious overload starts to occur.

In practice I often find bass distortion, which results in soggy, slurred sounding bass, limits record level. Measurement suggested that this is likely to be a problem with the KX-5050, since it produces 6% distortion at 0VU with metal tape.

Without Dolby working, hiss measured a low -58dB (IECA weighted). Switching in Dolby B produced a -8dB reduction, which is too little; it should have been -10dB. Dolby C offered only -15dB hiss reduction, when it should have given -20dB. Kenwood need to see to this little problem before Dolby Labs tap them on the shoulder.

Treble output fell away fairly quickly above 10kHz on replay only. This will affect prerecorded tapes, not recordings



on recording. A slightly loose, unfocused bottom end, with tonal colours slightly limited towards the top were common to all tape types, but improving up the quality scale. TDK AD was a little disappointing, with female vocals on the hard side and a jazz trumpet grating on some notes. On the plus side was plenty of detail - catches of breath, elbows catching on cymbals, this sort of thing, which was well above average for the price. Solo instruments - especially flute, a tricky test - came over believably, without turning into kazoo or plastic toys, which is a fate too many cassette decks inflict on them at this price, albeit with an occasional touch of the collywobbles.

Move up the rungs of tape quality and recordings gain a tighter focus,

improved dynamics and a greater degree of clarity. Mary Black's voice, for example regained some of the sweetness and acoustic instruments lost a useful degree of their earlier harshness. Although ferric tape - except for TDK AR - tended to muddy complex mixes while keeping the rhythm going, chromes clarified the picture, with the mid-range detail snapping into the picture even more clearly. Orchestral music was full and detailed, and on both chrome and metal acquired a useful extra degree of zip and zest. Where metals scored over chromes was in improved definition at the top, giving the impression that upper notes were reaching into higher realms with greater ease than before.

Inevitably, in any deck around this

price there are compromises, but Kenwood's 5050 manages to steer clear of the worst effects. Where many cassette decks opt for a bland two-dimensionality, this one goes full out for a reasonable width and depth of stage. Where some offer a universally thin quality of tonal colour, the Kenwood attempts a richer, broader palette. If some abandon one tape type in favour of another, this one is honest with all of them. It's consistently enjoyable, it never gives up on any programme and it produces a sound that few of its peers can match. Above all, its automatic tape biasing makes life so much simpler that it's bound to become a trend with other manufacturers. It's not the ultimate in cassette decks, but nor should it be treated as a stop-gap ●

made on the machine, making them sound a little dulled. Because the rate of roll off was rapid, I suspect head azimuth error was the cause, due either to hurried factory set up or - just as likely - the use of secondary reference standards. The error wasn't great, but it was enough to make itself known subjectively.

The single capstan transport again reached 'respectable, but not exceptional' status. It suffered regular cyclic drift, a phenomenon that results in what is best termed 'watery pitch'. Notes don't quite seem to hit any stable frequency; they seem pitch-indeterminate. There was little flutter, as the speed stability analysis shows, and not a lot of capstan wow (which produces a fast warble that corrupts tonal purity). A servo-locked motor would probably have helped improve matters in this area.

The KX-5050 isn't trying to be a poor man's Nakamichi, but in its measured performance it does well in all areas. **NK**

## TEST RESULTS

### REPLAY (prerecorded tapes)

Frequency response (-2dB) 30Hz-14kHz

Speed accuracy +0.2%

Hiss (70uS, Dolby out) -60dB

### RECORDING (blank tapes)

Frequency response (IEC Primary Refs.)

ferric (IECI) 15Hz-19kHz

chrome (IECII) 15Hz-14kHz

metal (IECIV) 15Hz-19kHz

Separation (1kHz) -48dB

Distortion (315H) 1.1%

Hiss (70uS, Dolby out) -58dB

Speed variations (DIN total) 0.08%

Flutter energy (3-3.13kHz) -25dB

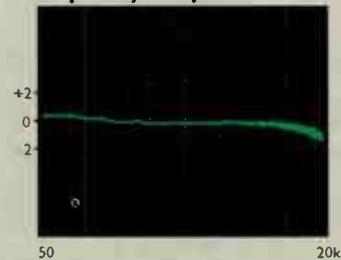
MOL/SAT (IEC Refs) 315/10k

IEC I (ferric) +4dB/-8dB

IECII (chrome) +1dB/-4dB

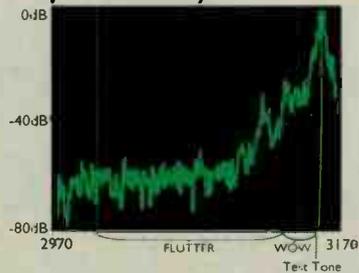
IECIV (metal) +2dB/+0.5dB

## Frequency Response



After auto tuning: slight treble fall.

## Speed Stability



Little flutter; poor speed control.

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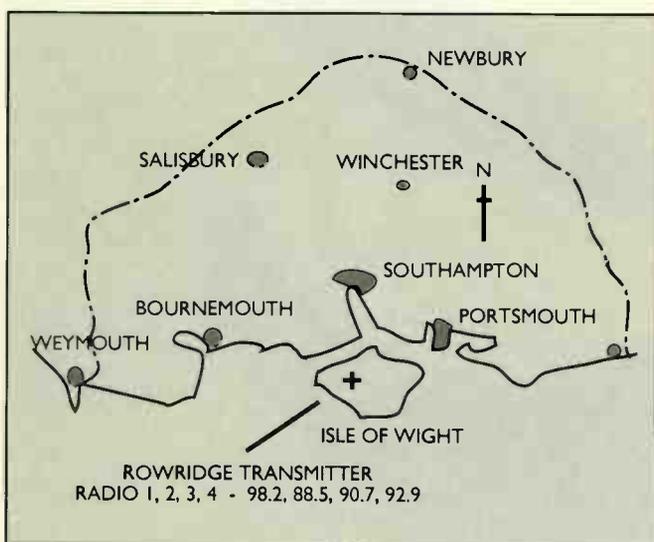
Continued from page 55

**TUNING IN**

I possess the following: Arcam Alpha CD player, Audiolab 8000A integrated amplifier, Denon DRM-710 cassette deck and KEF Q80 loudspeakers. The CD player is linked to the amp with Audioquest Ruby interconnect cable and the speaker cable is Monitor Power cable 2 x 2.55mm. The amp sits on a self-made unit of Melamine-covered chipboard, with the other units stacked above due to lack of space. The room is 14.5ft by 12ft and it is open-plan, linked to the kitchen and stairs, etc. My musical tastes range from Classical Opera through to

forms. Many cheaper stands seem to be pieces of hard-board resting upon metal supports. Is this really effective? I would welcome a space saving solution for my system.

And finally, I still possess a reasonably significant vinyl collection which I was happy to pack away, complete with crackles and pops, when I converted from midi system to separates. At a recent Penta show I was particularly impressed by one booth where, in a comparison, I preferred the sound of vinyl to CD, but it was an expensive deck. Considering my CD player, would I be disappointed with vinyl at £400-£500 in total for arm, deck and cartridge?



Where to point an aerial for FM reception in Winchester.

Jazz, Blues and Rock.

My next purchase is to be a tuner with the emphasis on listening to Radio 3 and 4. I have been interested in the praise heaped upon the older valve equipment, such as the Troughline, but recognise that a strong aerial signal is required. As my accommodation is rented I am unable at the moment to erect a roof aerial and would have to rely on one in the loft. I am used to hearing live music and would welcome realistic sound quality. I would be grateful if you could suggest one or two tuners worth auditioning and also an aerial that I could set up without too much difficulty.

What is the reasoning behind biwiring? Is it effective and would my cable be adequate? I have read that CD players and turntables in particular benefit from being placed upon isolation plat-

I look forward to your comments and as one of your female subscribers say that I enjoy your magazine very much, in particular for its technical aspects.

**Ms H.G. Bennett,  
Winchester,  
Hampshire.**

Your main BBC transmitter is Rowridge on the Isle of Wight (see our map), due South of Winchester and about 26 miles as the crow flies.

However, although Winchester is low, being on the river Itchen, there is some high ground between you and the transmitter, around Compton and Twyford, which will introduce some attenuation I suspect. So although Winchester is well inside the service area of Rowridge, I doubt whether you should begin to consider an insensitive valve tuner like the

Troughline, at least not without an outdoor aerial, as you rightly suspect.

A loft aerial is the best solution; point the sharp end South, so the narrowest 'director' rods face the transmitter. You should get enough signal to make a modern solid state tuner work well. Use 75ohm cable, preferably low loss. In town, where there's interference, try Uniradio 70, because it is better screened than the cheaper co-axials normally used. You may well like to get the DIY loft aerial Maxview offer, the Selfix 3, costing around £20 complete with 33ft of cable.

A fine budget tuner with very high sensitivity is the Denon TU-260L. For a clearer, more precise sound it is hard to beat the Aura TU-50 however, costing £230. This is an excellent synthesiser tuner. Should you want to get something that will last into the future, upgrades included, then you might even like to take a look at the attractive new Audiolab 8000T tuner (but don't look at the price!).

Equipment stands help reduce microphony and vibration, which often has a surprisingly audible impact. A stable steel structure with 'dead' MDF shelves is popular, but you could use an all-MDF structure. It's best to leave room between items for cooling and to lessen the influence of stray magnetic fields.

Biwiring effectively splits the signal currents between the cables, lessening muddle and generally producing better spatial definition. Use your Power cable for the bass; try experimenting with lighter solid core for the treble. The longer the cables, the more effective biwiring is.

A Rega Planar 3 with Arcam P77 Mg (warm sounding) or Goldring 1022 is a good choice, although the Rega must be mounted on a good table and well away from the loudspeakers. Alternatively, you could try the excellent Systemdek IIX-900 with a Rega RB300 arm. All are within your price range and will give fine results from vinyl, the equal of CD if your records are in good condition. Try for a demo first, all the same. **NK**

**VINYL UPGRADE**

My present system consists of a Rega Planar 3, Marantz CD50SE, Creek 4140 and Rogers LS4a loudspeakers. There are two bits of advice I would like concerning the system:

1) The Rogers loudspeakers are great for long, unatiring listening, but I would like to inject some more life into them. I've heard the speakers with a Pioneer A-400 which really did the trick, but as I'm an avid vinyl listener (and intend to upgrade my turntable, more of which later) I felt the phono stage not to be particularly inspiring. Thus some advice on a suitable amplifier would be much appreciated (a maximum of about £400 is available).  
2) I wish to replace the Rega with a turntable approaching the sound quality of the Linn LP12 or Pink Triangle Export.

However, I know these require careful setting up and maintenance and can be a little tricky to use. Now, as other members of my family may well be using it, can you recommend a turntable that sounds almost as good as the LP12, but is not quite so fussy. I would prefer a suspended deck, due to the fact that it will be used upstairs, which means creaky floorboards. I suspect that a suspended design would be better at isolating itself from floorboard movements (my parents won't allow me to use a wall mounted turntable shelf).

I have a maximum of £1000 to spend on turntable, tonearm and cartridge. I envisage this particular upgrade to be my last (due to CD) and so would hope for years of untroubled music playing.

I listen mainly to Rock and Classical music and look more for the emotional content of the performance than absolute accuracy.

**P Cawley,  
Tamworth,  
Staffs.**

If the Pioneer A-400 amplifier provided exactly the result that you wanted then I would suggest purchasing one would be your best move. Looking back at the measurements and talking to our other reviewers it seems that the A-400 has a reasonably good phono stage, if not wonderful, much as you might expect. However, if you

feel upon audition that it is deficient then there are a few alternatives, but they're expensive.

Lynwood Audio manufacture a very high quality phono unit designed to take an MM or MC input up to line level. This could be used instead of the A-400's internal phono circuit by plugging it into the CD input or any other line input. The Lynwood phono pre amp retails for £89 and uses polypropylene capacitors and Holco resistors.

If the above is not to your liking, then other line level phono stages you could consider are the Iso from Michell Engineering (£393) and/or a DPA Digital 50S disc stage with outboard power supply (£550 in all and not available for much longer) that will drive a long line, meaning the deck can be separated from the amplifier. Both items are expensive though.

Other amplifiers to consider are the Denon PMA450 (MM only), which is designed and specified in Britain, and the Mission Cyrus 2 (MM and MC). The Mission will certainly add the extra excitement that you are looking for and may be the best solution in the long run, as it can be upgraded with the PSX outboard power supply.

Nearly all suspended record decks require careful setup and subsequent care. One example that is suspended, very easy to set up; doesn't go out of tune quickly, is strongly built and fits your price range is the Michell Gyrodeck. Priced at around £800 complete with RB300 tonearm the Gyrodeck comes ready set up, if it has drifted slightly out during transport the manipulation of three knurled knobs will quickly and easily level the platter ready for use.

Other models to consider are the Systemdek IIX900 (£200) turntable without arm; it will take a Rega RB300. So will the Thorens TD-166 MkV BC (£279), another suspended subchassis deck that doesn't need continual readjustment. Both give very good results at the price and are well made and finished.

If you choose the PMA-450 you will only be able to use a Moving Magnet cartridge. In this case the Goldring 1042

should work very well. It may be a wise choice from the point of view of easy stylus replacement in the future. If the Lynwood phono input plus A-400 combination or the Cyrus 2 are used, then an excellent Moving Coil cartridge to try is the Ortofon MC15 at around £100. Alternatively, you could try two very good high output Moving Coil cartridges that have enough output to feed a quiet Moving Magnet stage direct, the Sumiko Blue Point and Denon DL-103. **DB**

**MOVING PROBLEMS**

I will be moving to a new home shortly and am looking for guidance on installing and upgrading my hi-fi. A plan of my proposed new listening room is enclosed. The system currently comprises a Meridian 206B, Audiolab 8000 C/P, Denon DRM-700, Kenwood KT-660L tuner and a pair of Tannoy DC2000s. All equipment is mounted on a specialist table and another will be purchased to accommodate proposed additions.

Interconnects are Audioquest Lapis (CD), Quartz (pre-power) and QED Incon (tape and tuner) which I want to replace with Ruby.

Speaker cable is Linn K20 for the bass and Mission Cyrus for the high frequencies. I plan to replace both with Audioquest Midnight or Sonic Link Grey. All detachable IEC mains plugs will be replaced, probably with cable from the Sonic Link range.

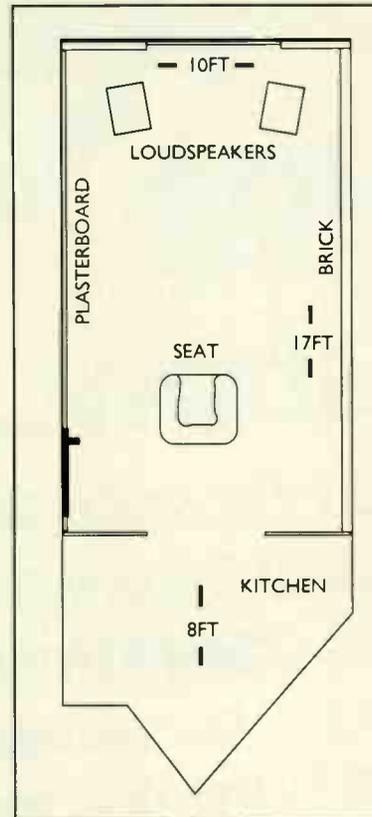
Hardware upgrades are to relegate the 206B to the role of transport and add a DAC, my current favourite being a Deltec PDM1 Series 3. I would also like to biamp the Tannoys with a second 8000P.

With the Tannoys firing down the room, what effect will the chamber of the kitchen have at the end? What effect will there be from having one speaker against a brick wall and another against a plasterboard one? What comments do you have concerning my upgrades?

Until normal domestic furniture can be installed, the new room will be far more live than my current listening room. What can I do about this?

**Nick Davis, Forest Gate, London.**

I have found the sync locking facility of the DPA Digital (ex Deltec) PDM 1 Series 3, which I am currently using very happily, is addictive. I tried to use it with an Arcam 170.3 transport the other day, which cannot be locked in, and had to give up after about ten seconds. Sync locking to reduce jitter really does have a very important effect with CD. It gets rid of upper midrange harshness and clears the air of residual nastiness, making for a leaner, cleaner sound that flows better. After



A live living room?

getting used to it, there's no going back.

In light of this, you can use the Meridian 206B as a transport, but I suggest you get it Deltran'd by DPA Digital in order to fully hear what this superb convertor can do. Then the Meridian will sync lock to the PDM 1 Series 3. Even without being locked, I believe you'll still appreciate the qualities of this DAC, which consist in outline of highly delineated and very precise treble, coupled with big bass and superb clarity and sound staging.

However, be aware that whilst the PDM 1 Series 3 will have you perched on the edge of your seat with your mouth

open, for some it's all too much. Eric finds the Sugden SDA-1 easier on the senses, for example, although since a Deltec convertor sounds like a Meridian done properly, you may well take to it all.

Audiolab amps, sounding smooth, are a good foil for the somewhat forward treble of the DC2000s. Try to make certain, if possible, that the PDM 1 Series 3 doesn't make the sound of the entire system just a bit too technical. Generally, I look for balance wrought by

opposites in hi-fi. With the DC2000s, the drama may just overwhelm you. I have slight reservations here, but they are a matter of taste.

Biamping generally makes loudspeakers sound cleaner and better controlled. You're obviously out to frighten the cat with this system.

Your room and intended layout look fine to me. The room at the end looks too asymmetric to act as any sort of cavity resonator, which can be a problem. It effectively lengthens the room to 26ft, meaning it will support notes down to 43Hz without attenuation, so you should get deep bass, but you'll need to move the seat back further to hear it fully. Don't move it too close to a rear wall however.

Watch out for flutter echoes down the bare side walls; they are very

close in. Damping pads disguised as murals or wall hangings can suppress this effect. Without furniture and with concrete floors you'll probably find the bass drones on too much. Heavy settees are a wonderful remedy. I would also put down very thick felt carpet underlay and carpet on top. The differences between plasterboard and brick are too fine to be of consequence. You'll certainly need to consider reducing high frequency reflections and overall reverb. time to some extent however, for best results from what could be an excellent listening room. **NK**

Continued on page 63...



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Mini Disc logo © Sony Corporation

Continued from page 63

### ITTOK OR ARO?

Being a Linn user I find that most hi-fi magazines are either totally for or against Linn products, with no middle ground. Your magazine seems to be a refreshing exception.

My present system comprises a Linn Sondek, Lingo, Akito and K9 on a Mana reference table, Linn Intek and Monitor Audio 9 loudspeakers connected with Linn K20 cable.



Want to fit an Aro? Blank armboards are available for the LPI 2.

I have around £800 to spend on an upgrade which will be my last for a while. I feel that the tonearm is the weak point of the system so I am considering upgrading this to a Linn Ittok with a better cartridge or a Naim Aro. Bearing in mind Jim Mansfield's letter to you in September's issue I am a bit wary of the Aro as I do not want to be limited to using only Linn moving coils in the future. Therefore, would an Aro with misaligned cartridge sound better than an Ittok with a correctly aligned cartridge?

I would appreciate your comments as the nearest Linn dealer is now over 100 miles from me, whereas there is a Naim dealer less than 10 miles from me and I may be on the wrong track anyway. If you feel that the Ittok would be the best bet, would you suggest a few cartridges to go with it which will fit my budget.

**Neil Cartwright,  
Paignton,  
Devon.**

I seem to have been here before. I don't care, I'm going to stick my neck out. My own view - and it's one that seems not to be shared much on this side of the Atlantic, is that absolutely precise alignment is essential. I'm not, therefore, going to agree that an out-of-alignment cartridge on an

ARO will sound better than one perfectly aligned on an Ittok. All the same, a long-lasting preference for the unipivot philosophy would attract me more to the ARO than the Ekos. The difficulty with the ARO arises when it is mounted on a Linn board ready for a Linn cartridge, these generally having a stylus-to-mounting distance of 7mm as opposed to the more normal 10mm. However, in your case the answer is fairly simple. While pre-drilled armboards are no longer available for alternative arms for a Sondek, blank ones are, and cost, Linn tell us, around £20. Fitting an ARO so that the geometry would be correct for a cartridge

other than a Linn would then be a matter of using the Naim setting-up procedure and an alignment protractor to work out where to drill the hole. This can be something of a tedious process, but a few hours' work is well worthwhile. As far as cartridges go, the world is your oyster - though reverting to one with an unusual stylus tip to mounting distance would involve another armboard. Any of the Lyras - the Lydian particularly - spring instantly to mind along with the Sumiko Blue Point, a cartridge people at Naim like. Naim also recommend - apart from the Linn Klyde and Arkiv moving coils - the Dynavector XX-IL, which they say works very well indeed. For the future - if you have a large enough record collection to be worth pampering, and win the pools - the Lyra Clavis and Transfiguration cartridges also suit well. **EB**

### UNRELENTING

My current system is as follows: Meridian 200/203, Audiolab C+P pre/power amps, KEF 104/2 biwired with monster cable (bronze). The interlinks between the CD player and amplifiers are QED gold plated. The listening room size is 18ft x 17ft and my taste in music ranges from Classical to Rock,

especially Country.

There are times when the clarity and depth of the sound is truly superb and I am generally satisfied with the system. However, there are also times when the sound is rather unrelenting and perhaps tiring to listen to.

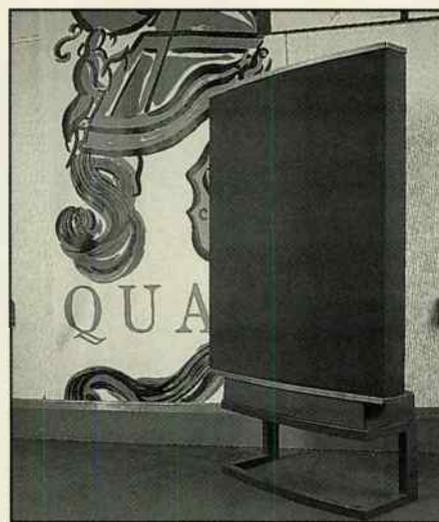
Do you consider an improvement could be gained by upgrading the cables between CD and amplifiers and possibly the speaker cable as well. Alternatively, are the KEF 104/2s too large for the room size; perhaps smaller ones would be preferable?

Some years ago my system included Spendor BC1s and I sometimes remember their smoothness and relaxing sound, from CD, which is missing from my current set up.

Your assistance and advice would be greatly appreciated.

**Stephen Pink,  
Farnham,  
Surrey.**

The source of your dissatisfaction is all too obvious, I'm afraid to say. As you seem to suspect, but seem a bit reluctant to admit, the KEF 104/2s are the main culprit. Changing cables may bring about small improvements,



Quad ESL-63: A high all-round standard of reproduction.

but nothing could cure the forward and aggressive upper midrange and treble of these speakers. They are unlike most other KEFs; for example the smaller but newer 103 is a much smoother sounding speaker. Additionally, the Meridian CD player is somewhat cool and, some would say, sterile in its sound.

The Spendor BC1s had some excellent properties; you dispensed with them in undue haste!

What next? Simple: Quad electrostatics! Anyone who wants that silky, natural smoothness that you have partaken of in the past, but who also wants a high all-round standard of reproduction not coloured by an enhanced disco presentation must eventually confront his audio destiny. It's an ESL-63, or if you're down on your uppers, then it might be an original electrostatic, possibly reconditioned by Quad and fitted with their latest diode bridge protection circuit. I've even seen serious headbangers (Richard Kelly) succumb to the charms of a Quad and believe me, once an electrostatic fan, it's difficult to regress.

The Audiolabs will drive Quads beautifully. All you have to worry about is whether they'll fit into your room. It's big enough. They must be kept well away from a rear wall (3ft) and preferably fire down the room. And ideally you should get them up from the floor on stands. This will damp down a somewhat contrived 'boom' in the bass

and give more treble, since the rather awful louvered aluminium grilles behind the cloth fire downwards toward the floor. You'll find a standard Quad sounds best when you lie down in front of it.

You can remove the cloth and grilles for a better sound, but they then become a trifle dangerous, with up to 5kV on the plates. Alternatively, a wide plastic mesh from

a garden centre could be used, but note that Quad use conductive aluminium and earth it, so that a child getting a knitting needle through might still survive the experience. I am sure effort in this direction will bring back all you are missing - and give more too. **NK**

# WIN A PAIR OF

**T**his month's prize is Monitor Audio's spectacular £950 MA 1200 Gold floorstanding loudspeaker. It's spectacular not only in its looks - the 'Gold' suffix denotes the shining gold-anodised alloy dome tweeter - but in sound as well. "A very fast-sounding loudspeaker" we wrote in our December 1992 review, "unveiling even the most complex of mixes with a surgeon's eye and hand."

A chamber at the bottom of the cabinet can be loaded with sand, lead shot or similarly dense material to improve bass definition and control. The drive units that allow the 1200 Gold to "reveal not just a little more, but a lot more information than its nearest rival" are Monitor Audio's own 165mm polymer-coned bass unit and 26mm anodised gold metal dome tweeter. We spoke to Mo Iqbal,

founder of Monitor Audio, about his design philosophy and the reasoning behind using a metal dome tweeter.

"For me, the mid-band is very important. If you can get the middle frequencies right, in terms of 'accurate' loudspeakers, you hit something which is beautiful. High frequency reproduction depends almost entirely on the design of the drive unit itself. When tweeters spit or sound hard, it is basically due to material break-up. With most metal dome tweeters, this happens at about 23kHz, creating a peak that can be up to 14-15dB. A dome made of a single metal will break up at that frequency, but an alloy dome breaks up at 28kHz. This break-up peak reflects back down to 24kHz, which means you can't hear it."

Mo Iqbal started the company in 1974, after working for the Medical Research Council from 1966. Monitor Audio quickly made a name for superb woodwork and finely veneered cabinets - all made in-house. The prize MA 1200 Golds are superbly finished in Rosewood.

A new service Monitor Audio intend to offer shortly is re-polishing the veneer: loudspeakers which have faded over the years can be taken to the plant for the shine to be put back.

A state-of-the-art, high-end speaker using all metal-alloy technology, with six or seven drive units each and two eight-inch cones firing into a rear transmission line is on the drawing board. This project, for 1993-4, Mo Iqbal confidently expects to take Monitor Audio into its third decade.

Please send your completed competition entries, to be received by 19th February 1993, to the following address:

**Monitor Audio Competition,  
Hi-Fi World Magazine,  
64 Castellain Road,  
Maida Vale,  
London W9 1EX**

We will endeavour to publish the results in the May 1993 issue. Audio Publishing Ltd. reserve the right to publish entries or parts of entries as the company sees fit. Entries must be made on the form printed; we regret that photocopies cannot be accepted. No correspondence may be entered into as regards this competition and the Editor's decision is final. Employees of Audio Publishing Ltd., Monitor Audio or their agents or dealers may not enter.

## MONITOR AUDIO 1200 GOLD COMPETITION ENTRY FORM

Please tick the box next to the answer that you think is correct:

- The MA 1200 Gold is so called because:
 

<input type="checkbox"/> It makes extensive use of gold-plate.	<input type="checkbox"/> The tweeter is anodised gold.
<input type="checkbox"/> It has won a gold medal for design.	<input type="checkbox"/> Mo likes big gold watches.
- Most alloy domes break up at:
 

<input type="checkbox"/> 23kHz	<input type="checkbox"/> 24kHz
<input type="checkbox"/> 28kHz	<input type="checkbox"/> 14-15kHz
- A chamber at the bottom of the MA 1200 Gold can be filled with lead shot or sand to:
 

<input type="checkbox"/> Weight the base for stability.	<input type="checkbox"/> Lower the tweeter break-up frequency.
<input type="checkbox"/> Improve bass definition.	<input type="checkbox"/> Improve cabinet rigidity.
- Monitor Audio began making loudspeakers in:
 

<input type="checkbox"/> 1992	<input type="checkbox"/> 1968
<input type="checkbox"/> 1974	<input type="checkbox"/> 1986
- Monitor Audio is about to introduce a new service for their customers. What is it?
 

<input type="checkbox"/> Loudspeaker cone polishing.	<input type="checkbox"/> Cabinet polishing.
<input type="checkbox"/> Alloy dome re-anodising.	<input type="checkbox"/> Cabinet chamber filling.

### TIEBREAKER Complete the following ditty:

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Mo drives every day.  
His car is worn out,  
But there's no other way.  
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Your advice will be heeded,  
What is it that you might say?

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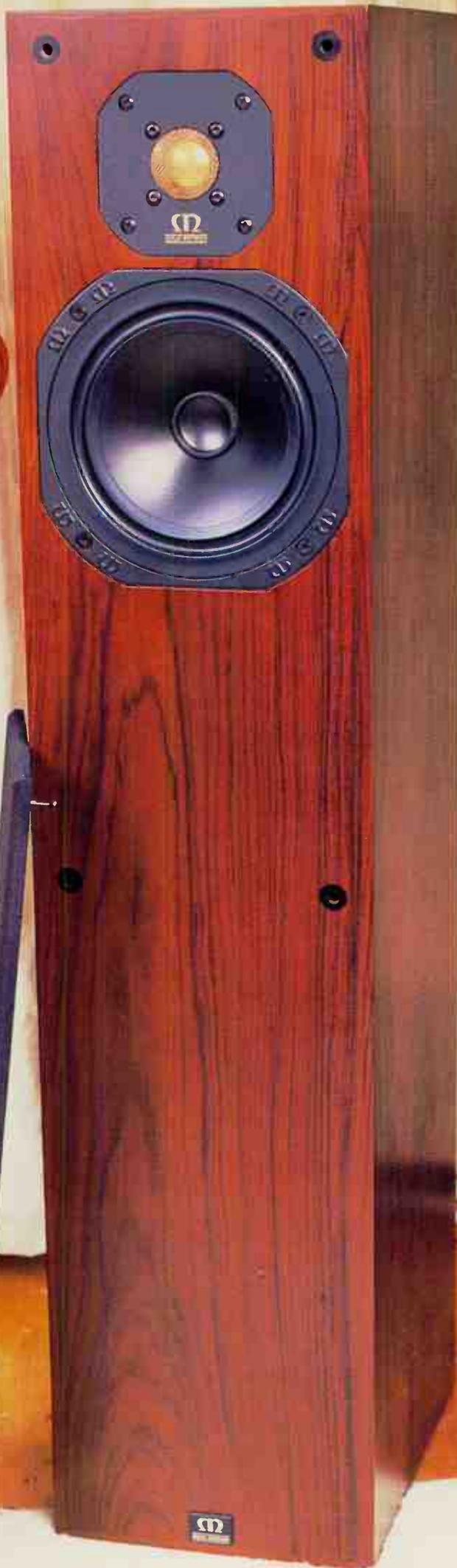
Postcode \_\_\_\_\_ Daytime Tel. No: \_\_\_\_\_

# MONITOR AUDIO 1200 GOLD SPEAKERS WORTH £950!

## STARTER SYSTEM WINNER

Judging by the number of entrants who thought they'd spend the cash they'd save on sending their wives away so they could listen to the starter system themselves, hi-fidelity is a sure path to infidelity. Many tried flattery - offering to expend their saving on subscriptions to *Hi-Fi World*. There was some confusion - we worked out £700 would have the postie dropping 382 magazines through the door. Choosing the winner, we also withstood bribery - offers of several hundred quids' worth of champers for the staff. (One generous entrant allowed just a pound to buy the three of us a drink - what's that? Half a glass of Malvern water and three straws?)

In the end, the lucky winner is Mr G. Sands of Carshalton, Surrey. Welcome to a new start in hi-fi!



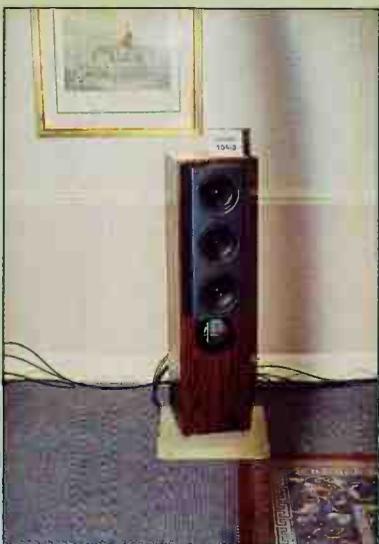
For Doncaster and Sheffield hi-fi dealers Sound With Style, the Yorkshire Hi-Fi Show on the 1st November was a first. Held in the attractive setting of the Doncaster Moat House Hotel, it proved equally attractive to exhibitors and public alike. The British were out in strength - all the big names through Arcam, B&W, Heybrook, KEF, Naim, Rega and Quad. Even Yamaha, demonstrating surround-sound, were using KEF Q90s as their main stereo pair.

The old Moat House proved a perfect setting, chosen for its solid walls and good acoustics. Exhibitors were delighted at discovering hotel rooms that, for once, sounded like real living spaces, as the KEF personnel happily demonstrated, bruising their knuckles on plaster instead of plasterboard. Despite a grey day, British hi-fi obviously has drawing-power: 2000 visitors poured through the portals.



### ARCAM

Arcam occupied a large area, with an impressive array of Alphas and Deltas powered up and working, including the new Delta Dolby S cassette deck and the pre/power amplifier first seen at the Penta Show. Word went round that they had the most comfortable sofas, too.



### KEF

KEF typified the friendly "We're all Brits, here" approach of the Show, powering their Reference 105/3 loudspeakers through Audiolab 8000M monoblocks, Arcam CD transports with Black Box 5 and, alternatively, Audiolab's own DAC.

# DONCASTER HI-FI SHOW

**Eric Braithwaite takes a trip North, to the land of his fathers - and a regional show.**

### CASTLE

Would it be a siege of Castles? Castle mostly played the Chesters in their room, but also demonstrated the new Yorks, in the centre of this line-up.



### HEYBROOK

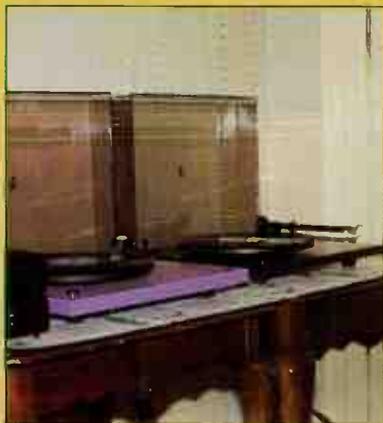
Heybrook showed their new small loudspeaker, the Quartet, along with matching Signature amplification to a continually packed room. Late in the afternoon, the Sextets provided an awesome - and very loud - demonstration of Telarc's recording of the '1812' which stopped a fair number of people in their tracks on their way up the staircase to the room.



### QUAD

Quad seem to be coming out of their shell after some years of avoiding shows; Doncaster provided a homely look for a pair of ESL-63's sourced by a complete 66-series set up.





## REGA

A number of people staggered out of Rega's room looking a little surprised after catching sight of both a pair of ELA's and a Planar 3 in shocking lilac, a new addition to the colour range which already includes a fairly eye-stopping green. Rega weren't commenting on which other colours from the paint catalogue Roy Gandy had in mind next. Some visitors stepped cautiously around the rug, presumably in case it turned out to be a dormant Old English Sheepdog.



## LINN

Taking over one of the largest rooms, Linn had a static display of their range of electronics, all with the lids off. Pride of place was taken by the first outing of the Aktiv Linn Keltik speakers.



## NAIM

Naim had their new 82 remote-controlled pre-amplifier, along with a pair of DBL loudspeakers, replaced after being seriously assaulted by a punter's Motorhead (or it may have been Metallica) album by a natty pair of SBL's finished in peach veneer. While Rega said anyone could have ELA's in lilac, Naim's peach, alas, was non-standard.



## DENON

In the Denon room, the new 'Lifestyle' 250 system - including, unusually, a separate power amplifier - was on show with Castle Trent speakers, and Heybrook's HBIs were to be found standing up front.

## MARANTZ

Marantz followed through the British theme with their best-selling PM40SE amplifier and CD52 MkII driving their new £200 small speakers, the two-way DS-110 on an early public outing. Marantz gained brownie points by having a 'Director's' chair outside their room complete with an illuminated sign.



## BOSE

A good deal of bass was heard issuing from the Bose room, apparently from tiny loudspeakers no bigger than microphones atop poles that gave the phrase 'satellite speakers' a more literal meaning than usual. Closer inspection revealed they were part of an Acoustimass system with the bass issuing from a subwoofer subtly hidden at the back of the room.

There was a sudden flurry of peculiarly British hi-fi products this month, so risking accusations of xenophobia, we thought it fit to bring them all together in a group and interview their designers as well. For there is something behind these products that links them, a common purpose shared by their designers, even though what they have designed differs greatly.

But what is a British hi-fi product, as opposed to an American or Japanese one? Our interpretation, for the purposes of this article, is one designed and built as much for its own sake as for commonly



## Reflections from Noel Keywood kaleidoscope

understood commercial imperatives. When I visited Mission's new factory, for example, nothing could seem more modern and dedicated to manufacture in the Nineties. Computer controlled machines were everywhere, the factory is environmentally whiter than snow and Research has the most advanced test equipment I have seen (and desire!). Yet Henry Azima, brother of the company's founder Farad, showed no concern about marketing strategies, nor about efficient build techniques. He was very happy - in fact proud - to admit that their budget Cyrus I amplifier was ten years old, on its eighth revision and built using the most costly manufacturing process going - casting.

### Alternative Approach

I loved every minute of this. Being painfully aware of how marketing often dictates that fundamentally good products have to be replaced regularly to renew demand - even if the outgoing product is superb and just needs a minor revamp - listening to someone blissfully ignore such modern wisdom, in favour of an alternative (and, I suspect, more worthy) approach, was a delight.

The simple truth is, there is a good long-term argument for building a product so well that it will keep on going and bring its owner due satisfaction. Superficially, it might not make sense, but sense can be made of it. Quad have built a tremendous reputation for product longevity and extended model lifecycles, as have Rolls-Royce of course. I keep hearing and reading how in the East the valuable brand name cachet of Western luxury goods is valued and cannot be mimicked. It surely can, but only when disposability is disposed of and long term quality gained.

### Peculiarly British

This is where I like to think we return to the band of peculiarly British manufacturers assembled this month. They're actually too proud of what they have created - meaning a lot has gone into it - to want to replace it with something new tomorrow. That would be an admission of creative superficiality, an outlook not one of them would be proud of.

In many cases, creativity seems to be the only interest, perhaps at some cost to commerce. This is certainly the

case with Tim de Paravicini, whose factory unit is right behind Mission's in Huntingdon. "Before I die," he once told me, "I want to have designed and built one of everything - and it must be the best."

When I was interviewing Tim about the EAR 834 his mind was, as usual, on something else. The conversation went something like this:

NK: "What made you decide to produce the 834 integrated valve amplifier?"

T de P: "This Studer C37 open reel recorder has got new crystal ferrite heads that I designed and had manufactured in the States and it runs at 30ips and uses one inch tape which gives more than 90dB dynamic range - which is much, much, greater than any modern digital system like these silly DAT recorders which don't work 'cos, as I keep telling everyone, you can't get all the information in an analogue signal onto a tape a few millimetres wide that crawls along slower than a worm and very soon the public will get fed up with this industry attitude and then they'll all realise that back in the Sixties Studer had it right all along and that a properly designed valve tape recorder with good heads is all anyone needs."

### Unique

Not all British manufacturers are so, er, unique, or ensconced in super-automated factories. Audiolab are just up the road from Mission and Tim. Audiolab amplifiers deliver superb sound quality and are super-dependable. The consistency of the Audiolab sound is one measure of how much control they possess over the design and manufacturing process, all of which is in-house. The 8000T tuner in particular we have been after for what seems like years now, knowing that it was in development and would be very sophisticated.

Audiolab are another company who seem only to want to produce a product so good that it will neither break down nor become obsolete. A Malaysian hi-fi journalist told me recently what a good reputation Audiolab had in his country. "When it sells it never comes back, it is so reliable. We sell a lot."

Harbeth have existed for years in quiet independence, never really bothering to speak to the UK hi-fi press where, even with a Press Release or two, they might get their products in front of the home market. We had heard good things about their loudspeakers, knew about the founder Dudley Harwood and his BBC background, but assumed this meant a studied aloofness was part of the management outlook. The truth now appears very different; what a poignant story Alan Shaw tells about Dudley Harwood. There must be many others in British hi-fi who have struggled to get what they believe is right out into the market where, they know, it will be justly appreciated. Sadly, life isn't like that. Yet Harbeth were always founded on knowledge of loudspeakers generated at the BBC's Kingswood Warren Research Centre and happily have not only survived but have gone on to prosper in overseas markets where that knowledge and its outcome is appreciated.

### Original Spirit

Of all the manufacturers in our group, Tannoy - who now own the Creek brand name - are the most conventional and, perhaps the most successful. I couldn't claim in this case that they were anything other than a modern company structured conventionally, running efficiently and doing very well, thank you. The Creek name is one associated with the small specialist manufacturer though, in this case Mike Creek, who we know well. Tannoy have sought to keep his outlook alive: the DAC 60 has been tailored to use modern technology but retain the spirit and sound of original Creek products, one that is characterful but commonly appreciated for its easy nature. Tannoy have retained the character of the Creek brand; DAC 60 reflects the traditional Creek outlook.

It's not often we get a spate of interesting, specialist yet sensibly priced hi-fi products from Britain's dedicated manufacturers. When we do it's worthwhile capturing the spirit that lies behind them. The little single-ended Pye Mozart shows that back in the Fifties there was innovation aplenty. It is still alive today ●



By the time this is published seven music-only media will be available in the shops. You will now be able to buy albums on LP, Cassette, Compact Disc, Digital Audio Tape (DAT), Digital Compact Cassette (DCC) and MiniDisc (MD). Not to mention the revival of laser disc and the expensive CD-R recordable CD machines. The question I would like answered is "Who decided that we needed DCC and MD to add to the already over-populated media market?" I think that I would be right in saying that it wasn't the consumer.

If you are not already confused about what to do



## Dominic Baker dB on the level

next you certainly will be within the next few months. What I will try and do now is think aloud on paper about the best way to deal with this mass of media. It is a problem that we are all facing: how do you make sure that what you are buying now will still be usable in a few years time?

Let me start with the earliest form of domestic music storage, the LP. Vinyl has been with us for around 35 years now, but unfortunately its death is imminent. If you do not have a large record collection or a passion for second hand vinyl then the good old record deck has to be discarded.

So what replaces your LP as a primary source? CD's "Perfect sound forever"? People fear it might be replaced by MD - so much for "forever"!

Let's consider DCC and MD. Which do we choose? Both can be used to make direct digital recordings but both also use data compression, which basically throws away the 'less important' musical information in order to save recording space. I think that if you look up the dictionary definition of high-fidelity there will be no mention of 'throwing away' anything.

DCC is Philips' Digital Compact Cassette system which uses a tape the same

size as the normal Compact Cassette (the official Philips name for cassette). This has enabled Philips to incorporate two mediums in one, allowing playback of analogue cassettes and digital recording and playback of DCC tapes. It's a clever move, but there are one or two little problems.

Firstly, because the digital recording is made on a tape it is liable to wear and will shed oxide on the transport mechanism. It is already rumoured that some DCC machines are prone to tape clogging.\*

Secondly, Philips were worried about the difference in sound quality between DCC and Compact Cassette. To lesser this difference the analogue tape playback section has been extremely well built and in fact sounds better than DCC in some areas, raising questions about the need for DCC. Perhaps a little more effort was needed with ordinary cassette?

MD is short for Sonys' MiniDisc, which is basically a miniature recordable CD housed in a plastic computer-disc case. Thus MD has the advantage of long life. However, at the moment the sound is far from perfect, with much work needed before it will be accepted by the average audiophile in the street. What

it does have in its favour is small size. The discs are minute, making it ideal for portable applications such as car stereos and Walkmans - exactly the market Sony have launched it into.

This makes a consumer's choice more difficult: neither DCC nor MD are capable of offering an acceptable solution to the list of requirements a modern user is likely to have, such as long lasting, high quality sound at a reasonable price. Fortunately there are other media to consider.

CD-R is a full size recordable CD medium, but the price of discs and the machines makes it domestically unsuitable, although subjectively recordings can sound better than pre-recorded Compact Discs.

Compact Cassette is still in the running but, sadly, pre-recorded tape quality is poor and not getting better and the wear suffered by analogue recordings makes it harder to consider seriously. As the market is heading firmly towards digital it would make sense to have your music stored in a digital format which will incur no loss when re-formatting.

What we need is a compact, digital recording system with the same quality as CD and a longer lifetime than analogue recordings. As far as I can tell, there is only one solution that will fulfil these criteria and provide a method for dealing with future record/playback systems.

The answer has been with us since 1988 when DAT was launched. To date it is the only medium that can record digitally to a high standard on comparatively cheap tapes, using reasonably cheap players. It can be used to record and store digital information, no matter what is introduced.

The only problem is the very limited availability of pre-recorded material. The solution? Accept that this is likely to be a general problem in future until the market sorts itself out. At least DAT can record from any source - it is not limited. For example, all your old analogue discs or tapes can be recorded - but without data compression.

CDs can be recorded digitally, again without data compression, as can DCCs and MD - data compression

included. In effect, DAT discriminates against no medium, nor does it possess serious drawbacks. It is as portable as MD, since Sony's little pro DAT recorder is no larger than the MiniDisc player we have just reviewed.

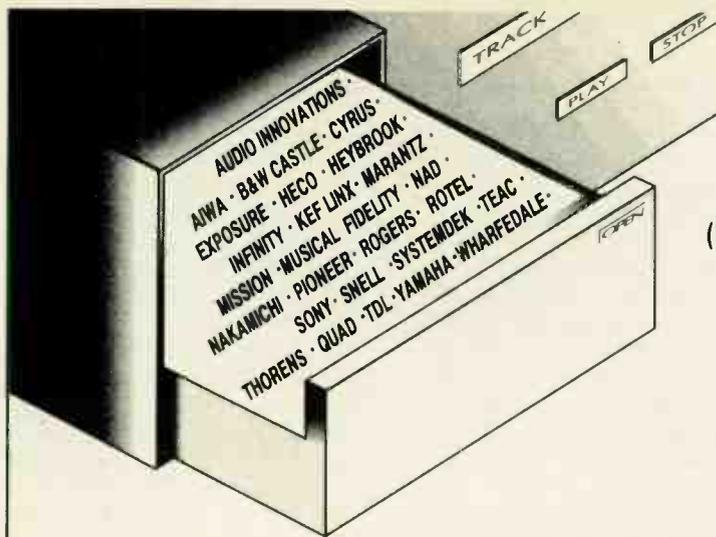
It will be a hassle to record everything onto one format, since you will have to be able to replay the various media in order to record them, which raises the difficulty of getting access to a record deck, cassette deck, CD player, DCC recorder and MD recorder (phew!), but I'll leave you to sort that one out. What did the Beatles sing? "I'll get by with a little help from my friends"! At least you'll end up with one format that'll take up little room and give excellent results. Being used widely by studios and the music biz. it isn't likely to fade away overnight either, as might the other media.

I don't know who it was that decided that we need DCC and MD. But as a result of all the confusion it has caused, we may well end up with DAT instead.

\* Rumours, rumours. Does DCC suffer from head clogging? I thought I'd ask dealers who stock and demo DCC to see what their experiences were.

- 1) Covent Garden Records - Very good sound, no reliability problems.
- 2) Hyper-Fi - O.K. sound quality, no reliability problems.
- 3) Studio 99 - Don't like sound, no reliability problems.
- 4) Sevenoaks Hi-Fi - Average sound worse than CD, no reliability problems.
- 5) Tavistock Hi-Fi - Very good sound, no reliability problems.
- 6) Hi-Fi City - Very good sound, no reliability problems.
- 7) Hi-Fi Centre - Good sound no different to CD, no reliability problems.
- 8) Mays Hi-Fi - Not bad sound, no reliability problems.
- 9) Paul Roberts Hi-Fi - Very good sound, no reliability problems.
- 10) Bartletts Hi-Fi - Philips DCC player sounds good but the Marantz is better; no reliability problems.

These results show that head clogging was purely a mischievous rumour ●



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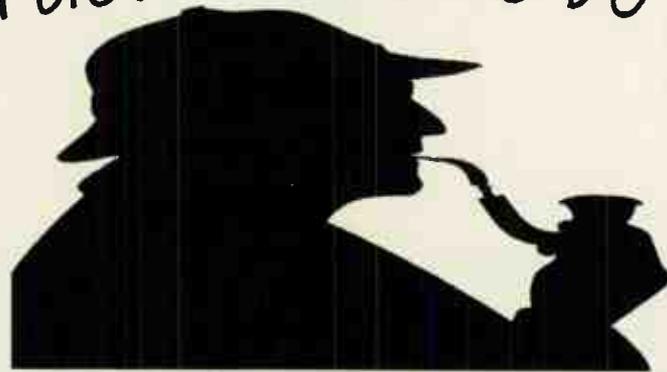
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Look around the other hi-fi magazines and you'll see the £200 Marantz CD-52 MkII is the CD player to own. I can see where their fascination with the player lies, but I also think that it is not quite as fantastic as my peers believe.

The CD-52 MkII is certainly packed with healthy amounts of bass. Few other players have such a deep, powerful low end giving a bass line that is so easy to follow.

Playing 'Going Down' by The Stone Roses on their Turns Into Stone compilation one would normally expect the muted-down bass guitar to sound indistinct. On the CD-52 MkII, the legato bass notes are tuneful and easy to follow. This disc, which borders on being poorly recorded, also shows up the other real benefits of the CD-52 MkII. Most of the tracks are too bright; deliberately so, to give The Stone Roses that distinctive Sixties sound. On many cheaper players, this will render the disc unplayable, but the gently rolled-off treble of the CD-52 MkII tames tracks like the opening 'Elephant Stone'.

This combination of laid-back treble and powerful bass made one of our reviewers comment that the player was similar to the bang and crash of the Philips CD 930 - except without the crash. I think that this is being a little unfair to the CD-52 MkII. I prefer to think of the CD-52 MkII's performance as more akin to an unsuccessful sponge cake; solid at the bottom, but lacking in substance at the top.

Its strongest point is the mid-band - definitely the jam in our sponge cake analogy. It displays a lack of graininess, together with a smoothness and sophistication typical of the Bitstream breed, but with an enjoyable rough edge. Enjoyable that is, until you try for silken strings and hear period instruments. Then, the rough edge strays too close to coarseness, but on most occasions this coarseness will only add excitement.

For example, those Mozartians who feel that the string quartet is the quintessence of taste will find the CD-52 MkII hard-edged. However, those who love Mozart for the Operas or his Requiem will enjoy the CD-52 MkII's presentation. As I favour the latter, I find the CD-52 MkII's balance about correct.

Imagery is a little soft-edged, especially with instruments that are dominant in the upper bass, such as the cello. In the upper registers the instrument is easy to place, but it readily blurs when the lower notes are played.

A good example here is the first movement of Gorecki's Symphony No.3, played by the London Sinfonietta on the Elektra Nonesuch label. This musical palindrome begins and ends with the cello and double bass playing the lowest registers alone.

passages there are quiet subtleties in the background which are never lost.

What did surprise me about the '52 was its sensitivity to mains polarity. Unlike an IEC plug and socket the figure of eight (Telefunken) plug and socket fitted to the rear of the Marantz has no earth and the live and neutral connections are effectively interchangeable. Once the player is run in there is a difference to be had by simply turning the mains plug over.

With the plug fitted incorrectly, the player sounds rather thin and lifeless. Fitting it the other way around fills out the sound in a manner subjectively equivalent to upgrading the interconnects.

Otherwise there is little else to tweak on the CD-52 MkII that hasn't already been done by Marantz. The original CD-52 was a part of their first low priced Bitstream-based range. It

## ROUND TWO

### The Marantz CD-52 has been tweaked into a Mark II

The CD-52 MkII adds power and weight to the instruments, but you have to wait for the viola and violin before most of the spatial information is disclosed. Once the music moves into the upper registers, it rapidly gains space and dimensions lost in the earlier passages.

Despite the caveats mentioned above, this is otherwise a finely detailed player. Gorecki's Symphony No.3 also highlighted the Marantz player's dynamic range. The music starts quietly and gradually increases in volume, yet even among the loudest

was felt that the '52 was worthy of some tweaking like the sixteen-bit CD-50 it replaced, so a batch was handed over to Marantz's 'Special Edition' arm, for a number of 'audiophile' modifications. This created the CD-52SE at a £70 price premium over the standard £200 CD-52.

It was later felt that these changes could be factory-fitted to the standard CD-52 without it becoming uneconomical to do so and thus the CD-52 MkII was born.

The internal changes, mostly involving better-specified components,

#### MEASURED PERFORMANCE

As part of the Philips group, but imbued with a slightly more audiophile image, Marantz commonly rework Philips products to obtain an alternative or improved sound. This machine is similar to the Philips CD 930 player I tested for our November issue, except for a subtle overall downtilt in its frequency response. From experience I know that, although apparently small in magnitude, the breadth of this trait means that the reduction in high frequency energy is greater than one might imagine and that it will be heard as a change in tonal character.

One of the psycho-acoustic mysteries of CD, for me at least, is why such small trends should always be so detectable. An imbalance that would go unnoticed in traditional analogue media is consistently

apparent in this digital one. In the case of the CD-52 MkII it will cause it to sound just a trifle less bright and forceful in its treble delivery than the Philips player, which we found to be a bit Technicolour in presentation. The Marantz has a small degree of bass dominance.

Even though the CD-52 MkII uses Bitstream technology, distortion at -60dB was on the high side. Similarly, at the crucial -30dB music level inharmonic products were a problem, as the spikes in the distortion analysis show. These are in fact down-band noise components, the CD-52 - like the Philips CD 930 - producing a lot of noise above 20kHz, due to the effects of oversampling and inadequate filtering. The noise components shown in the picture were equivalent to 0.12% distortion - a large amount for Bitstream. I expect to see no more than 0.02%

distortion, and around 0.06% from sixteen-bit. By producing more than twice as much 'distortion', the Marantz player was hardly impressive in its performance here. I would expect the sound to be tinged by an edginess or coarseness.

Channel separation was good, as it usually is with CD, this ensuring good stage width. Suppression of unwanted in-band alias products was good, being much like that of any competent modern design. The EIAJ (Electronic Industries Association of Japan) dynamic range test predictably came up with a mediocre result of 100dB, due to high distortion at -60dB, with products reaching down into the mid-band, within the span of the IEC A-weighting curve that this test uses.

Curiously, the measured noise level of the CD-52 MkII was also mediocre. This surprises me only because Philips



# TO MARANTZ?

version, to some acclaim. Alan Sircom tests its reputation.

have left the external appearance of the CD-52 MkII untouched. This is a shame as the player, with its overlarge LED display and fat CD drawer now begins to look somewhat dated. It could do with a stylistic overhaul, especially when it is frequently on show outside the specialist demonstration rooms. Compared to the sleek lines of some of its competitors, the Marantz may lose out to some more up-to-date yet sonically inferior players.

It also has a lightweight, plasticky feel that is not endearing. Buttons lack

a positive touch and the CD drawer is a bit of a clanker. It is more than well-laden with functions, however, with Favourite Track Selection, facilities for taping and easy track programming. In addition, the rear panel sports gold phonos for the analogue and digital outputs with standard phono sockets for the Marantz system connections. Two irritating factors involve the drawer itself. Whereas most players have an Open/Close button, for some curious reason the control on the CD-52 MkII, like that on its forebears, only opens the drawer. Closing the CD

drawer involves either pushing it or pressing Play. This is only a minor niggle I admit, but one that shows an odd sense of ergonomics on Marantz's part.

There is a lot to say in favour of the Marantz CD-52 MkII. As it is essentially a £270 CD-52SE for £200 and the CD-52SE was a successful and popular player, I'm sure that it will sell in droves. The praise it has received is largely well deserved but I suspect those who expect it to better players at twice the price will find that their idol has feet of clay ●

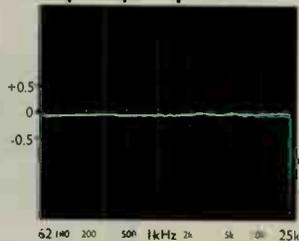
make their player mute at digital zero, in order to conceal its high supersonic noise output. This is one feature of the Philips player I would have thought Marantz would be happy to retain; perhaps the mute circuit has been eliminated to improve sound quality. The fact that at 2.4V output is +1.6dB higher than that of the CD 930 suggests the audio stages are modified.

In the CD-52 MkII there has obviously been some reworking of Philips' design formula, but unfortunately Marantz have been unable to reduce supersonic noise from this player - or its in-band spillover that masquerades as distortion. Ideally, Marantz would have been better advised to tackle the fundamental problems of the machine to gain an improvement, instead of tinkering with lesser factors in order to gain only a change. **NK**

## TEST RESULTS

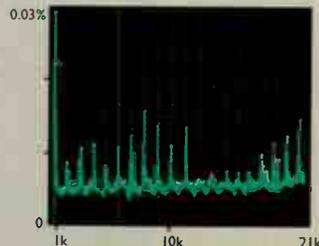
Frequency response	2Hz-20.9kHz	
Distortion (%)		
-6dB	0.006	0.006
-30dB	0.11	0.16
-60dB	0.96	0.96
-90	32	30
-90dB dithered	0.07	0.07
Separation (dB)	left	right
1kHz	111	113
10kHz	86	87
Noise	-102dB	
with emphasis	-103dB	
Dynamic range	100dB	
Output	2.3V	

## Frequency Response



Well maintained treble.

## Distortion



Down-band noise.

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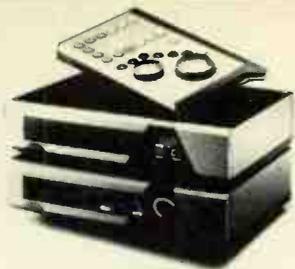
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# The Music Pages

Edited by  
Eric Braithwaite

Fans of music  
from far-flung places  
have a field-day this month,  
with albums from Seattle, Cuba . . . and Wigan.

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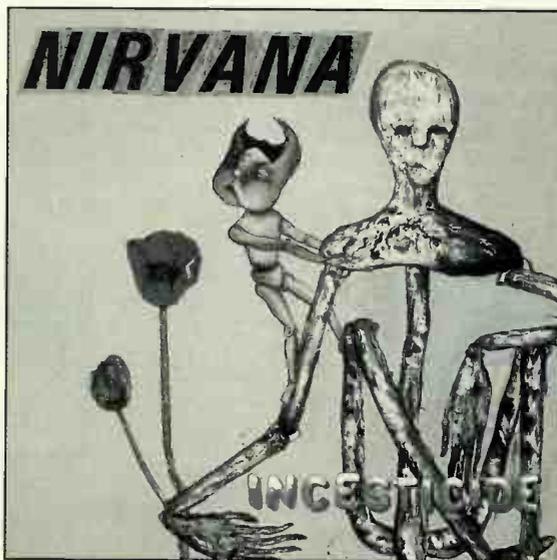
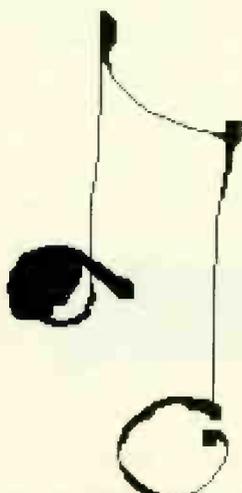
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### NIRVANA Incesticide

GEFFEN GED 24504-2

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● It's now been a good twelvemonth at least since the totally unprecedented and unpredictable success of the Nevermind LP not only put Nirvana but the entire city of Seattle on the musical map. Since then, we've seen the reissue of the band's previously cult-confined debut LP Bleach . . . and hordes of bootlegs combining live material and oldies. It's apparently to curb some of the bootleggers, that Incesticide has come into being, a collection that relies primarily on the band's back-catalogue for its content.

At the risk of repeating myself circa the Bleach review, I'll repeat my theory that the success of Nevermind was primarily due to a heady mix of

discipline and chaos. It's pretty evident which came first and the further back one goes into Nirvana's annals (oo-er, missus, stoppit, don't!) the crazier and wilder things get. For my part the excesses revealed by Bleach were a welcome antidote to the more polite tendencies evinced by the mega-album, and it's a position I retain for this newest collection. More to the point, let's make it clear

that Geffen (or whoever) ain't foolin' nobody, that it's obvious this stocking filler exists to replace the gap left by lack of new product. This is somewhat surprising considering the existence of a live Australian mini-LP recorded late last year and easily available on import. Still, Incesticide is what we got, so what do we get?

Fully paid-up Nirvana fan club members will probably have a fair few of the 'artificial' collectors' items, i.e. CD-only cuts from both Nevermind and the Bleach re-issue and various other official recording bits and bobs. That, happily, still leaves us with a good half-an-elpee's worth of radio sessions and demos of excellent quality sound-wise, even if an un-recorded song demo inevitably makes you wonder why it was rejected in the first place. Still, this is a fans' collection and it thunders in with the very familiar metallic angst of 'Dive',

an old Sub-Pop flip side . . . and before you know it, Kurt Cobain's delivering such immortal lines as "I got my charlie space", the sort of immortal versifying that made him an instant hit in *Weird Al* Jamkovich's parody-book. We're on more familiar verbal territory with the *Nevermind* bonus cut 'Aneurism', however. Kurt confessing "come on over and do the twist/love you so much it makes me sick", a couplet of Iggy and/or Ramones class. Speaking of Da Brudda's, there's more than a hint of their style in the breakneck alternate version of the last LP's 'Polly' - although if it weren't for the title and lyrics you could be forgiven for missing out on the fact that it is the same song. Similar feel to the Devo cover 'Tumaround', a two-year-old Peel session alongside a pair of Vaseline's songs - 'Molly's Lips' and the very, very excellent 'Son of a Gun' - all sparkingly recorded and displaying the tougher edges that make the band's live act such a plus after the relatively polite recorded version (i.e. *Nevermind*'s) with which most of us first became familiar. Of the half-dozen demos herein, I was particularly taken with the very typical grinding chords and muto guitar solo of Beeswax, to single out the best of them.

There's heaps more, as they say, but why spoil it for you? An intriguing X-ray of a great pop band in the making and a respectable-enough water-treader until the much-awaited third LP. GD

surprise therefore to find guest spots including a couple of Sonic Youths, J. Mascis from Dinosaur Jr and Nick Cave's bassman Martyn P. Casey, to name just a few.

It's a pleasant surprise to discover that this is by no means a drummer's album (whatever that might be) with percussion fitting neatly into what's essentially a collection of mournful tributes to - I'm guessing here - one, or several, love affairs. Epic refers to one such in 'Ruthless' - about a girl named Ruth. "You used to be ruthless and now so am I." Neat. Not that it's all maudlin. 'Fallin' Down' is the sound of a man putting a brave face on things, its nicely quirky arrangement leading out with a truly bizarre pop soup of a coda. The extended epic(!) 'Big Apple Graveyard' is Epic's gentler, less cynical, version of Lou Reed's 'Street Hassle', its quiet meandering perfectly evoking crack-of-dawn city loneliness.

If anything lets Epic down, it's a certain weediness vocally. When he tries a Nick Cave-style melodrama (and his co-producer did do Cave's 'The Good Son') as on 'She Sleeps Alone', he has trouble being convincing, ditto for 'Sad Song', a nod in the direction of the Lou Reed of Berlin. However, when the material falls more toward the Syd Barrett/Robin Hitchcock quirky-nutcase English pop madcap style, as on the opening 'Fallen Down', or where the Caveisms are part of a tongue-in-cheek lugubriousness of delivery, then Epic's talents as no mean spinner of melodies come through crisp and clear. Of course, if your ideal record is a strung-out suicide note,

then we're probably listening to different tracks and ignoring others. An interesting selection, but it'd be even more interesting to hear Mr Soundtracks when his heart isn't in smitherens. GD



**REM**  
**Automatic For The People**  
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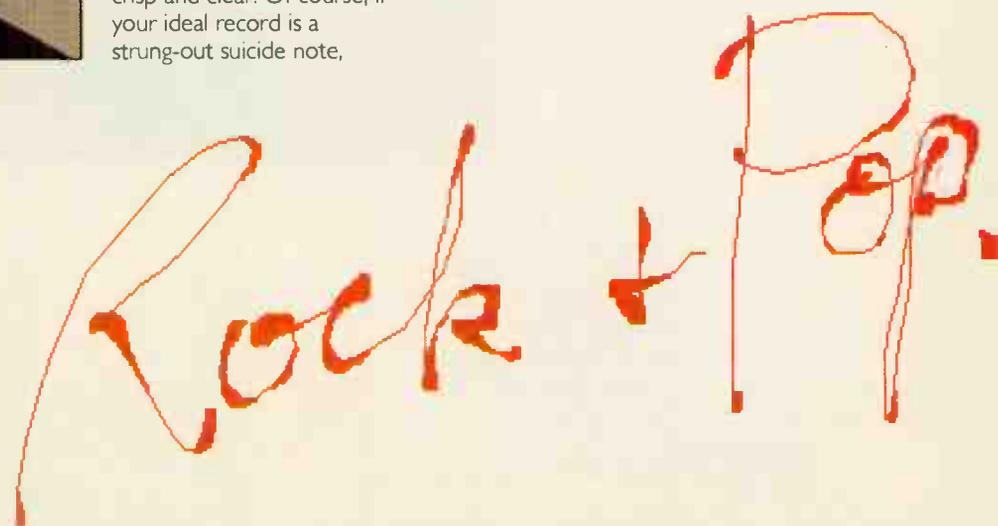
● There's a perverse side to REM and, like their eminently re-watchable and invariably screwy videos, it's a large part of their continuing charm. Who else would saddle one of their most sublimely catchy, chart-smashingly lovely pop tunes with a clumsy joke-title like 'The Sidewinder Sleeps Tonight'? Deep down, one can't help feeling Michael Stipe and company aren't just a little bit embarrassed at their knack for glorious tunes. Not that they have anything to be ashamed of - it's hard to think of many other recent tunes that are both as commercial, while at the same time idiosyncratically quirky, as 'Drive'. But then, that's REM's continued appeal - not least to the jaded and ultra-critical hacks of the pop press, among whom some of their biggest fans continue to be found.

Superficially, this is no way as easily ▶



**EPIC SOUNDTRACKS**  
**Rise Above**  
ROUGH TRADE R293-2  
Also available on LP

● Solo album debut from drummer Epic S, whose twenty-year pedigree (hard to believe in one so young-looking, but then his age was still in single figures when he first got on-stage) includes Swell Maps, Crime & The City Solution, These Immortal Souls and more. He's picked up a few good buddies along the way, and no



Rock + Pop



accessible/ultra-commercial as the last couple of REM albums, but this turns out to be a godsend when its beauties aren't all revealed in the first several plays. We still get the guaranteed hits - and not just the two cuts already mentioned. But there's room too for the subtler strains of 'Nightswimming', a song built on the simplest of piano phrases with only the very occasional hint of an orchestra to nudge through between Stipes' altercation with the keyboards. Or 'Try Not To Breathe', its suicidal lyric carried by a folksy vocal filled - like the startling opening falsetto of the ensuing 'Sidewinder . . .' - with subtleties of nuance and surprise. Of course, if it's the overt pop side of REM that baits your hook, then go directly to 'Man In The Moon', a ready-made classic with a heart-grabbing chorus and a lyrical cast that teams up Moses, Newton and Charles Darwin in what could just be an inquiry into the nature of faith as well as REM-pop at its most typical and sublime. Rock n' Roll's magic realists are back. Enjoy. GD

more than teeth, tongues and tonsils. Glottal acrobatics, you might call it. (Despite their name, there isn't a sample anywhere in sight; they're an a cappella group, and superb.) Another delight - despite rather dodgy sound quality - is singer/songwriter Carlos Varela's chansonnier-style 'Guillermo Tell' which - judging by the audience reaction - has an elliptical political meaning underlying the well-known story.

Apart from the hot fusion of Yoruba rhythms, Salsa and Rumba, refreshing in itself, there are two oddities on this album: a fetching Cuban Reggae, would you believe, from a little known - even in Cuba - group Los Blues and, of all things, Heavy Metal from Havana band Zeus. It was taped on a four-track using second-hand East German tape, but thrashes nicely though it's startlingly out of context with the rest of the tracks. Be warned - it's the last one; programme it first, then re-adjust to this wonderful display of Cuban music. MR

**THE TANSADS  
Up The Shirkers**

**MUSIDISC 10985-2**

**Also available on LP**

● Wigan hasn't had much of a press, what with cracks about Wigan Pier (thanks, George Orwell, and 1984 wasn't all it was cracked up to be, either) even though Wigan Casino spawned Northern all-night Soul back in the Seventies. Now it's produced The Tansads, who up in the No Man's Land of Wigan, Warrington and St. Helens that some dam' fool left without a geographical identity by chopping up Lancashire into Greater Manchester and Merseyside, regularly play to Casino-size crowds.

The eight-strong band are fronted by Kettle brothers guitarist/songwriter John, vocalist Andrew and mandolin-player Bob. Anybody who braved Glastonbury last year would have

heard them - or should have.

For their second album, due to hit the racks at the end of January, along with up-beat rhythms and some nifty guitar thrashing that really does remind you of the best of The Pogues and The Levellers, The Tansads have come up with some sharp-edged wit in the words.

They don't mind what they take on - or who they take off - from trite tabloid sermonising, small-town small-mindedness, to any mindless attitude. Hence the title - they've some sardonic things to say about the unacceptable face of these Lamontable times inside some

**DIABLO AL INFIERNO!**

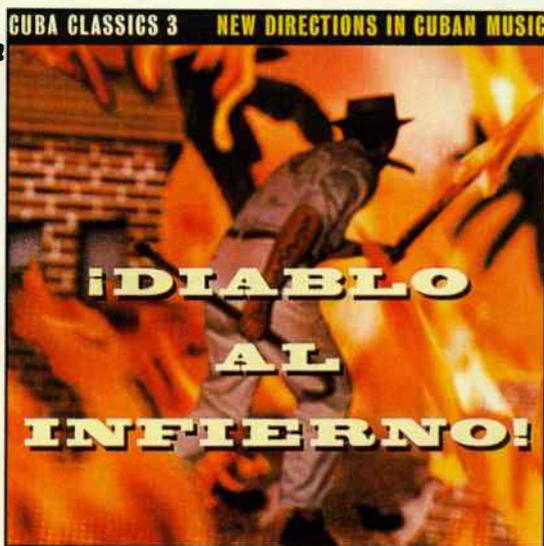
**Various Artists**

**LUAKA BOP/WARNER**

**BROS. 9362-45107-2**

● This old hack is not a fan of "World Music" - note the quotes. All too often it's a label for ripped-off ethnic styles stitched up - the phrase is used advisedly - with whatever Rock or Pop style happens to be in fashion. Luaka Bop, however, is one record label that has been about listening to what the real guys play at home and on this third CD of Cuban musicians the results are fascinating.

For a start - and it is, it's the first track - who could resist the high-gloss, fast and sparkling jazz/dance style of Irakere? Especially the ceremonial bata drumming, which slots in neatly behind a number of the bands on this CD. Speaking of percussion, the Grupo Vocal Sampling produce amazing rhythms and sounds any drummer would die for, using nothing



Rock + Pop

deceptively naive lyrics. They can twist a tail very neatly - classic trad Folk tunes and phrases are taken up-beat and every now and then outrageously beaten up - 'The English Rover' for instance. Hear that and you'll never be able to cope with the more pretentious thumb-in-the-ear and finger-in-the-nose brigade again.

This band, and especially joint-vocalist Janet Anderton, can satirize anything - even tabloid tales of New Age Travellers and magic-mushroom festival get-togethers. Come to think, Anderton is the name of Manchester's crusading Christian Chief Constable - that could explain it. It's lively, it's refreshing, there isn't a dull track. If you still think Folk is Aran sweaters, beer-guts and beards, forget it and try it Tansad-style. MR

Townshend - no-one else - like 'Pure and Easy', the theme song from the ill-fated LifeHouse project, are 'Time is Passing' obviously under the Dylan influence, but a good folky ballad all the same, and the lively 'Sheraton Gibson'. The latter's words might not be up to much, but the music is Townshend at his best. If you want some Renbourn-style instrumental guitar, go for the superb and highly accomplished 'His Hands'.

Now, Who Came First was tied up with Townshend's renunciation of drugs and discovery of Indian mystic Meher Baba, to whom some of the tracks on this album were dedicated. The six bonus tracks are from the 'tribute' albums Townshend and others made for their guru, which

explains a couple of near-disasters except for the initiated. One is Townshend on piano, mixing up Cole Porter and Liszt. Still, those tracks include a pretty fine, delicate, song, 'Love Man' to make up for it.

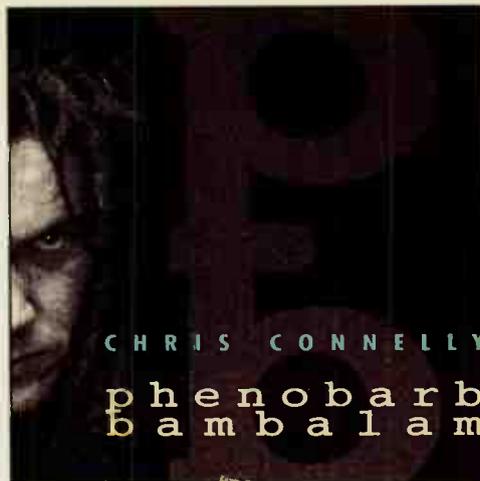
There are enough tracks on this issue no Who fan should be without - and the Ronnie Lane song 'Evolution', the only one

Townshend didn't play on, but engineered - to make up for the few lapses in taste.

Of the 'Baba' songs, 'Parvardigar' is the best; 'Content' suffers from lack of it, proving that good musicians can mistake trite versifying for poetry.

If you buy the 'Deluxe Edition' the CD comes with a jewel-case sized 64-page book, which includes a sometimes mystifying introduction by Ira Robbins which delves into the Townshend/Baba Meher relationship and Townshend's own article on the mystic published in Rolling Stone in 1970. Well worth it for the fan.

Townshend, by the way, is still a follower; this disc is his remastering and some of the proceeds will go to the cause. In the States Ryko have a big following among the holistic spiritual movements - the catalogue's, to us, weirder releases like The Sound of the Timberwolf or Sounds of the Brazilian Rainforest are in all the health-food shops and suchlike. If you're wondering, this spiritual connection is why this label is Who Came First's last home. MR



**CHRIS CONNELLY**  
**Phenobarb Bambalam**  
**DEVOTION DVN13**

● Chris Connelly's second solo album is a surprisingly laid-back, melodic, pleasant, even almost easy listening. Surprisingly, because if Connelly were to compile a CV, it would include a large part of the most hard-edged, ear-assaulting and mind-altering music of the last decade. Scotsman Connelly has been/is a member of The Revolting Cocks, Fintribe, Pigface and Ministry, and like Steve - Big Black etc. - Albini, has become a figurehead and spokesperson for a generation's musical angst.

Phenobarb Bambalam is a catchy, hi-tech pop album with just a few hard edges lyrically and musically, an eclectic gathering of musical influences which rewards repeated listenings. The opening 'Heartburn' is a haunting piece, the tale of a deserted house which recalls broken promises, infidelities and guilty secrets, all pushed along by majestic drums and piano. 'No Lesser of Two Evils', 'Ignition Times Four' and 'Souvenir From A Dream' are pure pop, catchy, commercial, though undermined by some truly hideous synthesiser sounds. 'Too Good To Be True' might not be out of place in a cocktail lounge as Connelly's vocals go into cruising overdrive to a cool, jazzy tune.

But the standout tracks of the album, 'Dirtbox Tennessee' and 'Come Down Here' offset these aberrations. 'Dirtbox' is the closest thing to Connelly on vintage form, an alcoholic frenzy of fellatio, in-breeding, infidelity and other jolly pastimes, all delivered with a painful push. In a sane world, this would be a hit single; but this is the Nineties, with the charts full of cover versions, re-releases and old farts, more's the pity.

If you don't mind taking a few listens to warm to an album, then Phenobarb Bambalam (what does it mean?) is, just some reservations aside, well worth the effort. TB



**PETE TOWNSHEND**  
**Who Came First**  
**RYKODISC RCD 20246**

● First out, post Tommy, on The Who's own label and on Decca in the States, Who Came First became something of a collector's item. Since this re-issue is CD and Cassette, not vinyl, it's not going to have traders at Record Fairs leaping out of tenth-floor windows, but it's welcome to the rest of us.

Slap my wrists if you don't agree, but if it was Daltrey's voice that made Tommy, then it was Townshend's guitar that drove it. It's odd that you have to listen to the Rock Opera on The Who's own label to hear the full flavour - his musicianship is somehow diminished even on the CD. Here, though, is the full relish of Acoustic Townshend, respecter of John Fahey, John Renbourn and Bert Jansch, recorded in his home studio and showing he's up there on the podium along with the three of them.

Here among the Who cuts, pure



The proliferation of interest in the odiously-termed "World Music" over the last half-dozen or so years - and the profile of those musicians involved in, er, proliferating it - might well have led eager music followers to reckon that the preservation of all the world's wonderful indigenous musics is best left in the capable hands of a coterie of right-on Rock stars, and that, egg-head ethno-musicologists aside, the only listeners with any interest in, say, Pakistani Qawwali or South African township Jive, would ordinarily bliss out to the sounds of some dodgy old rock cobblers.

Which is nonsense, of course (although not untypical of mainstream Rock music's tendency to self-aggrandize). There's a long and venerable tradition of cross-cultural pollination in Jazz that extends from Dizzy Gillespie's love affair with Cuba, through John McLaughlin's melding of North Indian Classical music and electric Jazz, right up to Herbie Hancock's collaborations with the West African kora player Foday Suso. As ever, Jazz music's been there, seen that, done that. And on the evidence of two records here still does, and how.

*Simon Hopkins*

**JAN GARBAREK/  
USTAD FATEH  
ALI KHAN**  
**Ragas and Sagas**  
ECM 1442

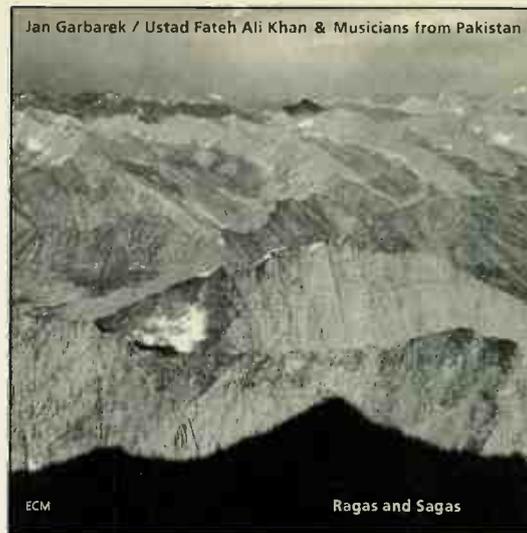
● The Norwegian tenor and soprano saxist is one of this column's faves. He's also no stranger to World Music collaborations (no doubt pop music geographers would think of Norwegian Jazz as 'World Music' in any case) from Indian music played with the likes of flautist Hariprasad Chaurasia and violinist L. Shankar through to the Mediaeval-Folk explored in the company of the stunning vocalist Agnes Buen Gamas.

Garbarek met the Pakistani vocalist Ustad Fateh Ali Khan tabla player Shankat Hussain and sarangi player Ustad Nazim Ali Khan, when they performed in Oslo. The meeting led to this session, during which they were joined by vocal student Deepika Thathad and, on one track, the Garbarek-penned 'Saga', French-African drummer and (getting back to right-on Rockers) Peter Gabriel sideman Manu Katche.

The result is some very beautiful music. Garbarek's plangent vocal tone is the perfect complement to the swooping, virtuosic vocal improvising of the singers, and despite the daunting prospect of a Norwegian-Pakistani Classical-Jazz collaboration, it's a very accessible affair. Only the afore-mentioned 'Saga' is slightly marred by some truly out-of-place (and understandably uncredited) synthesizer. Otherwise, a corker.

**MARILYN MAZUR**  
**Future Song**  
VERABRA VBR 21052

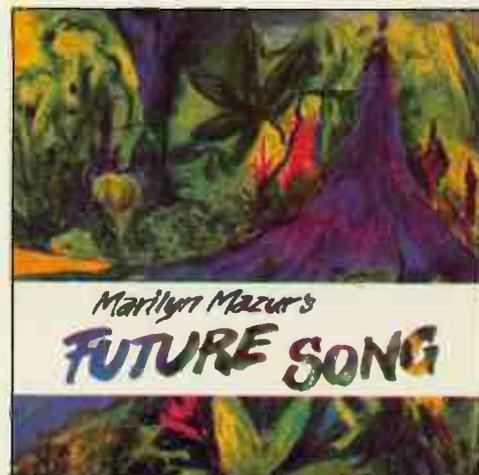
● And talking of Garbarek... The percussionist Marilyn Mazur was recently in London performing in the Norwegian's band as part of the capital's 'Tender is the Night' festival of Scandinavian culture. Despite performing alongside world-class Eurojazzers like Garbarek, Weber and German keyboardist Rainer Bruninghaus, and despite astonishing vocal cameos by the aforementioned Agnes Buen Gamas and the Lapp performer Mari Boine, it's nonetheless safe to say that Mazur, with her combination of traditional kit drums and a huge array



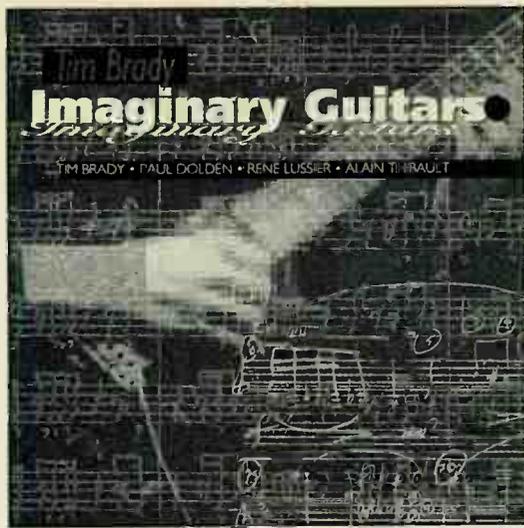
of ethnic percussion - bell trees, talking drums, thumb piano - pretty much stole the show.

On 'Future Song', she leads a mostly Scandinavian sextet through a set of her own compositions (with the exception of one group improvisation). The pieces are, again, pan-global in orientation and philosophy, although less specifically than the Abou-Khalil and Garbarek album. The result could tend towards New Ageyness, but the good taste of the musicians takes the music elsewhere; its icy tones and dissonantly-inclined harmonies even recalls some of the classic Seventies ECM albums by the likes of Terje Rypdal, Bill Connors, and Garbarek himself.

Aside from Mazur's own gripping percussion work, the stand-out playing here is from trumpeter Nils Peter Molvaer, a young master of a post-Seventies Miles icy-blast approach to the horn, making welcome use of some heavy duty effects to enhance his strident tone. Perhaps not as essential as the other two worldly-inclined sets here, but well worth checking out.



As well as being Scandophile, this column's also not an un-fan of new guitar music, so here's a trio of wildly differing jazz guitar records.



**TIM BRADY**  
**Imaginary Guitars**  
 JUSTIN TIME JTR 8440-2

● The Canadian guitarist and composer Brady is another kind of musician not unknown in this column - a jazzier by association. Over the years he's performed alongside, and composed works for, such jazz notables as fellow guitarist John Abercrombie, Kenny Wheeler, the West-Country baritone and soprano saxist John Surman and European double-bassist Barre Phillips. All, incidentally, are ECM recording artists, appropriate given that Brady's marrying of jazz improvising and Classical composition has long been a project championed by the record label's prime-mover Manfred Eicher.

Imaginary Guitars is a collection of pieces that happily use whatever compositional and recording techniques come to hand: twenty-two overdubbed guitars on the title track; midi-driven samplers and synthesizers on 'Incertain Pourpre'; spoken-word samples à la Steve Reich's 'Different Trains'; and on and on. When the sleeve notes claim that Brady finds his 'inspiration in the diversity of contemporary musical media' they certainly mean it.

On two tracks, 'Physics of Seduction', 'Invocation #1' and 'Roche Noire', Brady is joined by, respectively, Paul Dolden and Rene Lussier. Both Canadian guitarists are known for their work on the improv/avant-rock border, and Dolden in particular turns in some cool guitar here, screeching away over massed tracks of digitally layered sound. Apocalyptic stuff.

**ALLAN HOLDSWORTH**  
**Wardenclyffe Tower**  
 CREAM CR310-2

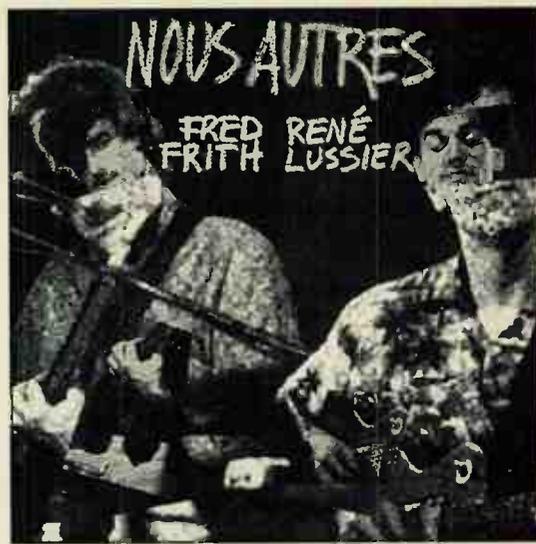
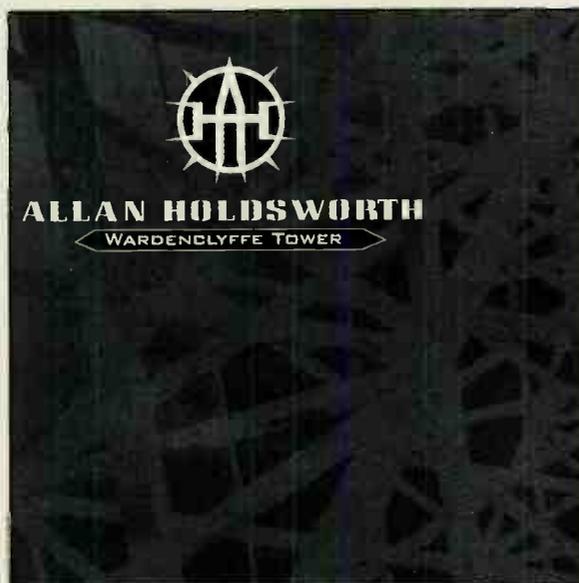
● One of the most consistently disappointing musicians on the planet. The British-born, California-resident electric guitarist Holdsworth emerged

from a late Sixties-early Seventies prog-rock/jazz-rock axis that took in the Soft Machine, Gong, through to the towering reformed Tony Williams' Lifetime. (His previous incarnation included that other great British jazz-rock guitarist John McLaughlin.) He's the possessor of one of the world's most sought-after and (generally badly) copied techniques, alternating between harmonically-advanced, pianistically-voiced - and physically nigh-on impossible -

chording, and fluid, legato, distortion-soaked soloing that has earned him public plaudits from no less a rock idol than Eddie Van Halen. Basically, the sort of guitarist the muso-mags fight to the death to interview, or just wax lyrical over. Lauded. Analysed. Plagiarized.

And the maker of some truly tedious records, among which Wardenclyffe Tower is no exception. Holdsworth is joined by a team of regular sidemen; bassist Jimmy Johnson and drummers Chad Wackerman (great name for a drummer), Gary Husband (not a great name for anything) and Vinny Colaiuta. And they all plod their way through eight thoroughly unremarkable jazz-rock (dare I say 'fuzak?') tunes that do none of them any favours. Even Holdsworth's use of the incredible (if hideously-named) Synthaxe is lacklustre.

I hate to say all this; Holdsworth is genuinely one of the world's most advanced guitarists, both technically and theoretically. Furthermore, for heaven's sake, he's a beer-drinker and a fellow Northerner. But records like this do neither him nor his sidemen any justice. Guitar fetishists will want it; otherwise, steer well clear.



**FRED FRITH AND RENE LUSSIER**  
**Nous Autres**  
 VICTO VICTO CD 01

● So let's end on a brighter, if brief, note. Fred Frith: ex-Henry Cow person, guitar-abuser, improvising innovator, Naked City bassist. Rene Lussier: the afore-mentioned avant-guitarist, long-time Frith associate, leader of les Guitaristes de L'Apocalypse Bar. They're joined by, among others, Japanese vocalist Tenko and Fred's old drumming mucker, all-purpose rocker-in-opposition, and all-round bon oeuf Chris Cutler. Together they romp through the usual mash of C + W, garage-punk, free improv, songs about the apocalypse, with all the verve and excitement you'd expect. Jazz guitar from the very edge. Fred and Rene between them probably have a hundredth of Holdsworth's ability, but this set's more enjoyable than big A's entire Eighties output. Buy it.

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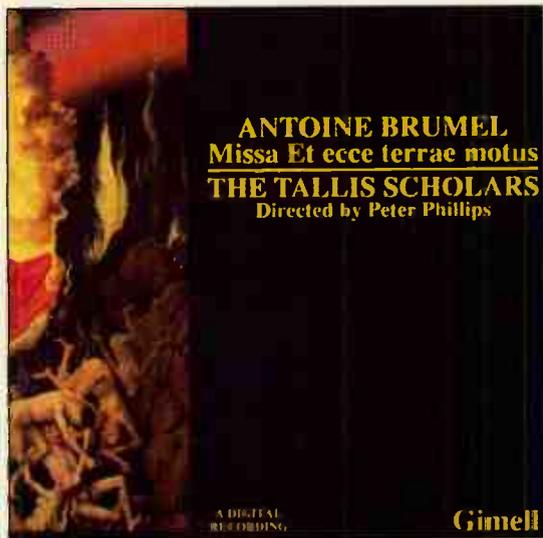
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# Classica

Peter Herring



**ANTOINE BRUMEL**  
**Missa Et ecce terrae motus/**  
**Lamentations/Magnificat**  
**secundi toni**

The Tallis Scholars; director, Peter Phillips  
**GIMELL CDGIMO26 (DDD/72.56)**

● Antoine Brumel (c.1460-c.1520) was a pupil of Josquin and, like his teacher, became a court composer to the d'Este family at Ferrara. These fifteen-or-so years were the highpoint of a career which began in the cathedrals of Chartres and Lyon and, in 1498, saw the French-born Brumel employed at Notre Dame in Paris. His life seems to have had its share of problems - he was twice dismissed from posts - and he became something of a journeyman composer in the way of several others of the period. He almost certainly worked in Geneva and possibly Rome before joining the retinue of Alfonso d'Este I in Ferrara.

Brumel's most celebrated composition is the principal work recorded here, the Missa Et ecce terrae motus, or 'Earthquake Mass', which, in its use of devices and effects, is utterly unlike anything else composed at the time. Additionally, its use of twelve voices for virtually the entire span of the Mass is matched in its density of texture only by Tallis's 40-part motet Spem in Alium. While much admired for its technical brilliance, intricacy and grandeur, this - for its time - astonishing musical experiment remained very

much a one-off. It exercised no substantial influence on contemporary composers, although it would be said to have pre-empted the polychoral style of the late Sixteenth century. This recording of the Mass took place at the scene of many of the Tallis Scholars' most successful recordings, the church at Salle in Norfolk, with the choir doubled to twenty-four singers. Yet, for once, this may not have been the right choice of acoustic.

There is insufficient 'light' between the vocal groups and the contrasts are blurred.

**JOHANN SEBASTIAN BACH**  
**Tocatta and fugue in D**  
**minor BWV565/Aus tiefer**  
**Not schrei ich zu dir**  
**BWV 1099/Concerto in G**  
**Major BWV592/Trio Sonata**  
**No1 in E flat BWV525/**  
**Pastorella in F Major**  
**BWV590/Erbarm dich mein,**  
**O Herre Gott BWV721/**  
**Fantasia and Fugue in G**  
**minor BWV542**

Kevin Bowyer, organ.  
**NIMBUS NI5280 (DDD/67.11)**

● There was a time when every Nimbus recording was made, so to speak, 'on the premises'. The onetime ballroom of the label's country house overlooking the Wye valley was the studio. The tape machines and editing suite were on the first floor, the mastering and pressing was done in an adjacent building. Now the company is international, with as strong a base in the United States as it has in Britain. Yet the principles governing performance and recording which the label set down twenty years ago still apply: editing is a facility for correcting performance, not producing it. You might not like the end result - and Nimbus recordings have always challenged the cosy preconceptions of critics - but you cannot deny its integrity.

**Bach from Denmark**  
**and a musical**  
**earthquake from**  
**Norfolk - no, it's not a**  
**turkey! An**  
**opportunity also to**  
**celebrate with the**  
**Lindsay String**  
**Quartet, not just live**  
**but living the music.**



That integrity is still to be heard in recordings made far beyond the ballroom at Wyastone Leys: this Bach recital, for example, made on the Marcussen organ of the Sct. Hans Church in Odense, Denmark. The instrument itself is both warmly expressive and brilliant, and - as in all Nimbus recordings - the superb acoustic is allowed to play its part.

This is the first in a projected Bach series by Kevin Bowyer and I was surprised to find that it opened in most un-Nimbus-like fashion: being predictable. However, I daresay there are sound marketing reasons for including the Tocatta and Fugue in D minor, even if its authenticity is now in doubt. Overall, though, the programme offers a good cross-section of the Bach oeuvre, from simple chorale



preludes through the sublime Pastoral BWV590 and the Italian-influenced G Major Concerto BWV592 to the virtuosic E Flat Trio Sonata and the grand Fantasia and Fugue BWV542. I hope the rest of the series continues

this pattern of a varied offering rather than the unimaginative lumping together of half-a-dozen preludes and fugues on one disc. Kevin Bowyer's playing combines all the necessary technical skills with an obvious love of

the music; the playing has a spirit and vitality not always encountered in those excessively reverential Bach recitals, but with great fidelity to Bach's intentions - as far as anyone can deduce them.

**RECORD OF THE MONTH**

It was characteristic of the Lindsay String Quartet to mark its twenty-fifth anniversary not with an album of popular chamber works but with recordings of four little-known ones which it has championed over the years, all composed within the last sixty. The Lindsays have never been content to rest on their laurels, although with acclaimed recordings of Haydn, Beethoven and Schubert, to name but three celebrated composers of chamber music, they might be excused if they did. Not for them a cosy career playing the classics before audiences of chamber music devotees.

For the Lindsays, increasing the awareness, and appreciation, of the chamber repertoire has become something of a crusade. They have recognised that not only do the programmes they play have to be attractive and stimulating, so does their presentation. To that end, they have dispensed with much of the ritual formality of concert performance; they even talk to the audience about the music it is about to hear! They further break with convention by often playing 'in the round' and changing places between each work, so giving the audience different perspectives on the performances.

It works, too: one of the Quartet's 'family concerts' last summer attracted sixty children under fifteen in an audience of 250. Its Haydn series at London's Wigmore Hall remains one of the great musical experiences of the Eighties. And the enthusiasm to explore new avenues remains, both in terms of repertoire and presentation. At recent concerts, you could have heard the Lindsays playing four-part fantasias by the Seventeenth century composer, Henry Purcell, alongside the latest work by Sir Michael Tippett, his Fifth String Quartet, the latest flowering in what has proved a very fruitful relationship with this most distinguished of living British composers.

All lovers of chamber music will surely wish 'happy anniversary' to the Lindsay String Quartet, both for its exhilarating concert performances and its many treasurable recordings. As with the Wigmore Hall Haydn series, this new issue from ASV combines both, drawing

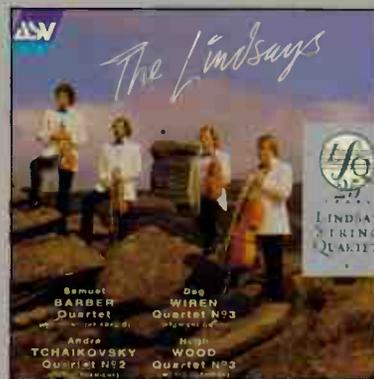
as it does on master tapes of Radio 3 broadcasts. Looking ahead, I see that the Quartet is adding Shostakovich to its repertoire, along with the rarely-performed quartets of Tchaikovsky; its 'Bohemians' series is to embrace the piano quartets of Dvorak and Martinu (with Peter Frankl at the piano) and there are plans to record, among others, Elgar and Walton. Commentators - myself included - often refer to the 'energy' of the Lindsay's playing, which is always apparent even in studio recordings. The players argue that, whether it be Beethoven or Bartok, that energy is already there in the notes; their role is simply to tap the energy and give voice to it. May they continue to do so through many more anniversaries.

orchestrated to become what is now the most famous piece of music by this American composer, the Adagio for Strings. It's revealing to hear this movement in its true colours - and context. Sombre, yes, but not the lachrymose utterance so many performances make it out to be.

But there are other, more rewarding discoveries to be made here: the Third String Quartet of Hugh Wood, just sixteen minutes long but bursting with ideas, each of which is developed within the tautly constructed whole. If ever there was an instance of the Lindsay Quartet tapping the inner energy of a work, it is here: the playing simply sizzles.

Another recent composition is the Second Quartet of Polish-born Andre Tchaikovsky who was perhaps best-known as a concert pianist before his untimely death aged forty-six in 1982. He wrote just seven works, three for chamber ensemble and, on the evidence of this intense, highly-personal quartet, it was truly a case of a talent lost. An understanding of the quartet medium is evident throughout, with much elaborate counterpoint and taxing part-writing, and a virtuosic role for the cello in the outer movements. The glory of the work, though, has to be its majestic passacaglia.

The Third Quartet of the Swedish composer Dag Wiren was also new to me and emerges as a work of delicious, captivating themes in a vigorous, well-constructed neo-classical style. Like the other quartets here, it is played with a degree of commitment and involvement that first arrests the attention and then persuades the ear and the intellect. The communication could not be more direct, and the sound has an immediacy and excitement to match, faithfully capturing the natural spikiness of the quartet sound, as well as its smoothness. With so many of today's recordings possessed of a synthetic quality born out of the safety of the studio and the digital editor, I am more than happy to exchange a little unevenness here and there for music-making that is so clearly being made by living, breathing musicians.



**DAG WIREN**  
**String Quartet No 3 in D minor Op 18**  
**ANDRE TCHAIKOVSKY**  
**String Quartet No 2 in C Major Op 5**  
**HUGH WOOD**  
**String Quartet No 3 Op 20**  
**SAMUEL BARBER**  
**String Quartet Op 11**  
 Lindsay String Quartet  
 ASV CD DCA 825

● A programme which reflects not just the capabilities of its performers, but the potential that still exists within that most uncompromising of musical mediums, the string quartet. All are broadcast performances taken from BBC Radio 3 masters, three made at St John's, Smith Square, London and the fourth - the Barber - at BBC Manchester. The Barber is especially interesting because its slow movement was seized upon by Toscanini and

*Lindsay*

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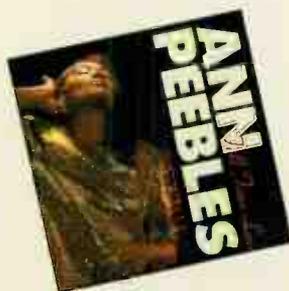
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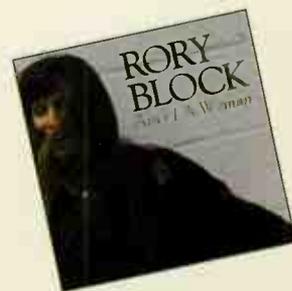
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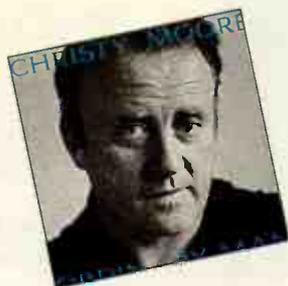


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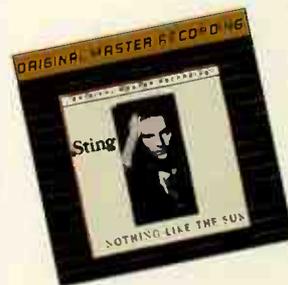
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Comprising high quality, calibrated measuring microphone flat within +/-1dB limits from 20Hz-20kHz, preamplifier and phantom power supply, plus CD with third-octave noise bands and sine wave tones, together with full instructions. Provisional price is set at £380.

This kit, in conjunction with an audio dB meter like the Leader LMV-181A, enables acoustic frequency response measurements of excellent accuracy to be made on loudspeakers. Since professional measuring mics cost around £2,000 and third-octave spectrum analysers cost even more, our kit is something of a bargain! And from experience we can tell you how to get accurate results without an anechoic chamber.

Still under development, but nearing completion, there will be more details in the next issue.

**DENON AUDIO TECHNICAL CD**

**DENON AUDIO TECHNICAL CD (C39-7147)**

# Coming in our March issue!

**SILVER NIGHT** - Are triode valve amplifiers the sweetest sounding of all? At last, we review a new triode design based on the famous Western Electric 300B valve - the Silver Night from Alema (UK).

**CHORD SPM 1200** - A compact solid state power amplifier capable of delivering 250watts into eight ohms - and more into less! Superb sound quality from a novel, top-of-the-line amplifier.

**MOREL BASSMASTERS** - Speakers that produce superb bass. But do they offer anything more?

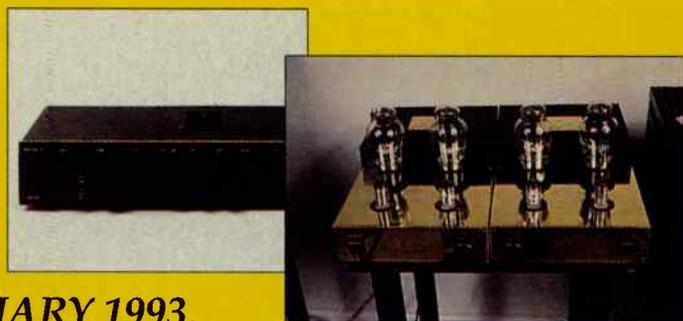
**ARCAM REMOTE CONTROL AMPLIFIER** - A power house with plenty of facilities and remote control. But does it have a good sound as well?

**PREAMPLIFIERS AND POWER AMPLIFIERS** - We test models from Quad, Sugden, QED and Marantz.

**MISSION 763i** - A budget floorstanding loudspeaker costing £299.95.

## PLUS OUR BUDGET SECTION

**AND ANOTHER SUPER COMPETITION PRIZE** - DPA Digital T1 transport and Bigger Bit convertor. Win one of the best digital convertors available!



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We are now offering back issues of Hi-Fi World. Unfortunately, all issues prior to September 1991 are completely sold out, but subsequent issues are available for £2.00 including postage and packaging. Issues with Compact Discs (Oct.'91) are available for £2.80.

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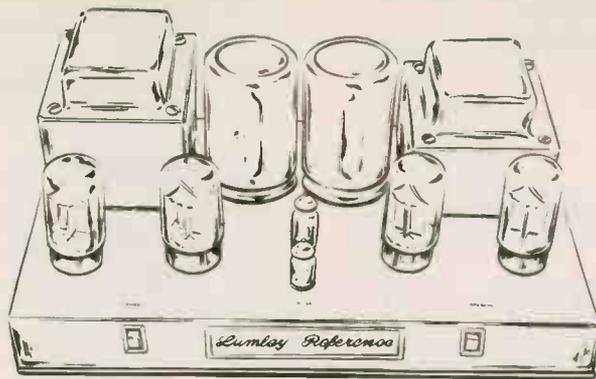
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Spikes are essential for speakers, but - contrary to popular belief - are not the solution to equipment isolation. More vibration is fed into the equipment from so-called 'ground' than is taken away. Reviews to date have shown that the *Seismic Sink* outperforms Sorbothane, cones, MDF, glass and *all* spiked tables. The acoustic open circuit afforded by the *Seismic Sink* eliminates structure-borne vibration, dramatically improving the performance of your CD player, turntable, amplifier (especially valve kit), Laser Disc, VCR - even an outboard DAC.

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# FINISHING TOUCHES

Last month Dominic Baker covered a variety of products that would fine tune the performance of any system. The majority of the items were aimed primarily at Budget set-ups. This month he continues the trend with a range of goodies that are equally good alternatives but intended for slightly different situations.

## EQUIPMENT SUPPORTS

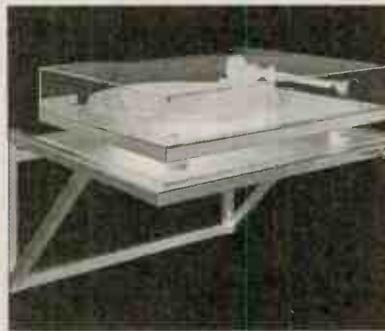
The benefit of using a properly designed dedicated hi-fi support was explained last month. To follow on from that, alternatives to floor-standing racks are wall shelves.

These come in several different guises with some having one specially isolated shelf and others comprising multiple platforms for the mounting of hi-fi separates.

A wall shelf works in much the same way as the floor mounting version which sinks unwanted vibration energy into the terra firma. If however your terra is not quite as firma as it should be - e.g a suspended wooden floor - then a wall shelf may provide a better alternative.

When screwed strongly to a concrete supporting wall any vibration will be transmitted directly into the foundations of the house. This constitutes a much improved mechanical ground in comparison to mounting a table on the wooden trampoline below your feet.

Sound Organisation's wall shelf, £54.95.



## SORBOTHANE CD FEET

Sorbothane is made up from a material which is in a semi liquid state. This material has the ability to turn vibrational energy into heat energy. Thus it makes it an excellent break in the path of the vibration that you wish to stop.

Suspended wooden floors are not ideal for the mounting of hi-fi racks. If, however, sorbothane feet are placed under each piece of equipment, then it is effectively decoupled from the floor.

Audioquest make sorbothane feet, designed for audio equipment. They come in two sizes, the smaller ones working best with less than 1.8kg placed on each foot. Used in fours, as recommended, they will be plenty large enough for all budget equipment. Retail price is £27.95 for a pack of four.

Audioquest sorbothane feet.



## LOUDSPEAKER WALL STANDS

Many people like to have their loudspeakers mounted upon a wall for convenience.

The normal approach is to nip down to B&Q, buy a couple of 'L' shaped brackets and a bit of wood and set down to the job. However, a floppy wooden shelf is not the best answer.

A rigid steel frame will clamp the loudspeaker firmly to the wall and in addition keep it stationary in relation to the room. Such wall brackets are in most cases less visible than the wood shelf and 'L' bracket approach. The Apollo CWB1 is suitable for mounting any budget miniature loudspeakers and retails for £40.



Tandy Patchwire.

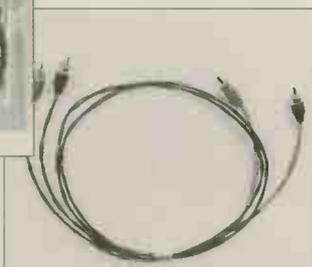
Campaign Audio Design Interconnect.

## INTERCONNECT

If the music signal is corrupted on its way to the amplifier then the benefit of any expensive source is lost. The amplifier, no matter how good, will not be able to retrieve that missing information. A good quality interconnect can ensure that the minimum amount of detail is lost on the journey between source and amp.

When most people in the hi-fi industry hear the name Tandy they cringe and then stop listening. However, Tandy's patchwire shows many others a thing or two. It is well made with good quality cable and gold phonos. The 2 phono/2 phono set is £5.99 and the 4 phono/4 phono set is £9.95, making them an absolute steal.

Campaign Audio Design have really caught my attention with their range of sensibly priced high quality products. The interconnects start from £8.99 and steadily increase in price and performance.



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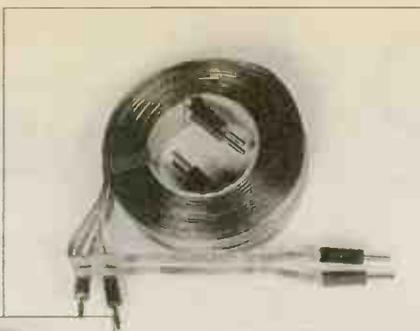
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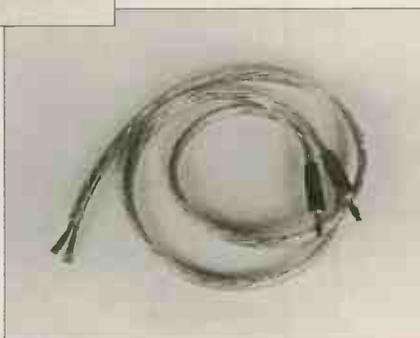
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Rega's loudspeaker cable is copper stranded and comes as a flat ribbon so that it can be hidden under carpets. Rega Cable retails for £1.58/m or £31.28, £37.60 and £43.92 for 3, 5 and 7m stereo terminated pairs.



Rotel Supra has been around for a long time now but is still going strong. Supra 4mm retails for £2.50/m.

Monster's Original cable comes attractively packaged in a clear sleeving. Retail price is £3.50/m.



## LOUDSPEAKER CABLE

The quality of the speaker cable that you use will determine how well the loudspeaker and amplifier interface. It's a little silly to spend good money on an amplifier and a pair of loudspeakers, only to string them together with bell wire.

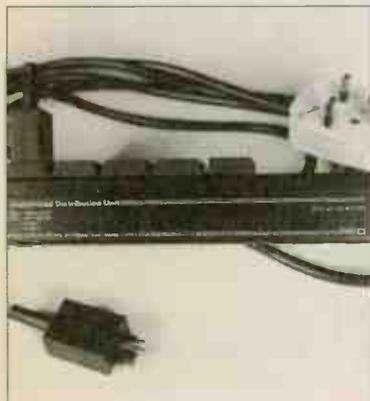
A few golden rules are in order:

1. Spend between 1-2% of the price of your loudspeakers on each metre of loudspeaker cable that you buy. Therefore if your loudspeakers cost £100 the accompanying cable should cost in the order of £1-£2 per metre. If they cost £200 then £2-£4 per metre is in order. Obviously, if you wish to spend more then do so, as it will save you money in the long run if you intend to upgrade at some point.
2. Buy equal lengths of cable for each loudspeaker. Even high quality cable has some resistance and an imbalance will result in one loudspeaker sounding slightly different to the other.
3. Use good quality connectors. If they are the kind that clamp onto the bare cable you will need to strip it back to reveal fresh copper every few months or so. Copper quickly corrodes, forming a dirty oxide coating on the surface of the cable. This oxide is a poor conductor and will degrade performance.

## MAINS DISTRIBUTION

Last month I wrote about the excellent Campaign Audio Design 4-way mains distribution block. This is possibly the best distribution unit I have seen for the price. However, some people would rather have a black unit or one which can power six pieces of hi-fi.

The QED DU4S and DU6S four and six way distribution units are both suppressed, which comprehensively protects against both symmetrical and asymmetrical mains-borne interference. Thus, a balance between performance and convenience is met.



The DU4S retails for £25 and the DU6S for £35.



## LITTLE THINGS

Tandy's Femite rings are designed to clamp around a cable and reduce RF interference. They are only suitable for small cable diameters but are a fraction of the price of those from certain hi-fi manufacturers.

The Monster bananas named "Tips" are £14.95 for two pairs. The Supra gold plated bananas are £15 for a set of four.

## SILVER SOLDER

If you intend to terminate your own cables with soldered joints to the plugs there are a few tips to bear in mind. One is the wise old saw: preparation is nine tenths of the job. It will largely determine the final quality of the contact made.

Before the cable and the respective plug are joined, each should be properly tinned with high quality solder. To do this, heat the bare cable with a suitable soldering iron and after a few seconds melt the solder into it, ensuring that it has soaked right through to the centre.

The plug should be treated in a similar manner, except that only a surface coating is required. This solder coating must be firmly attached to the plug surface, ensured by removing any grease with white spirit and then pre-heating the plug surface first.

Both cable and plug can now be joined by heating the solder coating on the plug whilst pushing the cable firmly onto this surface to create a good mechanical bond. A small amount of extra solder added when both are molten will give a stronger weld.

The best solder to use has a small amount of silver added which makes the join stronger, less prone to dry joints and is also a better conductor than normal solder. Additionally, it is cheap in the kind of quantities needed for making up cables.

Silver Solder is available from Audiokit, RATA, etc. at around £4/m.

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## AVI CD PLAYER

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The 'Good News' is that by the time this advert gets out, their new CD player will be available and matches all the other units. Priced at only £999, it uses the Philips CD Engine (with CDM9) transport, plus D/A conversion with Burr-Brown PCM 63 20-bit multibit converters (2 off), and 8 times oversampling. Full remote control and friendly usability will delight the wives. PTFE gold-plated sockets for digital out (no optical) and 2 volt audio. The only other players using these expensive chips that we are aware of are the Linn at £3.5k and the Mark Levinson at £12k. Need I say more! The phone number is above.

Those who keep insisting that they cannot enjoy CD sound owe it to themselves to give the AVI an audition!

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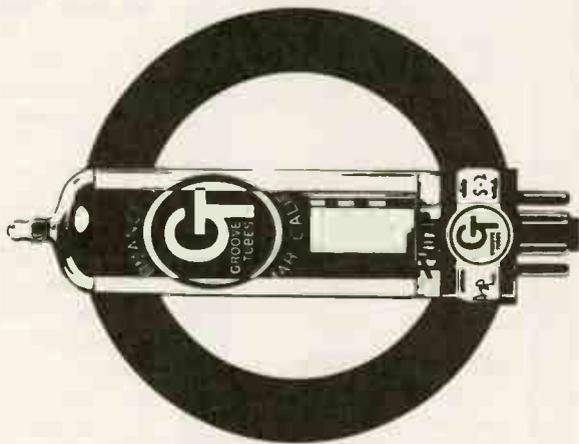
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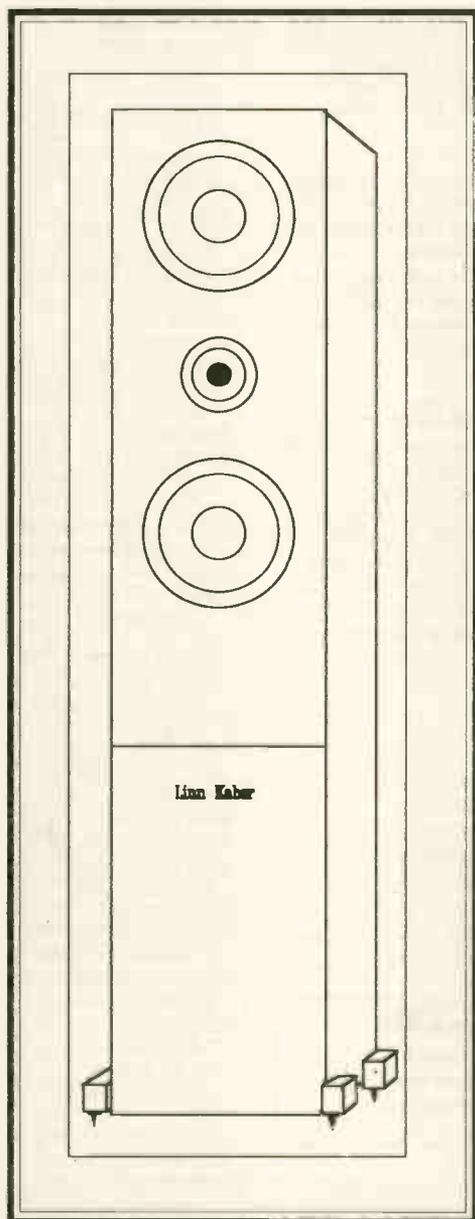


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	AN 5/6/7/10/11/30/35/8745	£ 7.80		P 77	£ 53.95	£ 42.75
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-  Dedicated listening rooms allow you to appreciate the quality before you make your decision.
-  Comprehensive after sales service. We can, where appropriate, deliver and install your equipment and we have our own service department at Sevenoaks.
-  Real value for money. Our prices are highly competitive and our 'Added Value Offers' famous throughout the industry.

## 0% Finance

We offer 0% finance on selected manufacturer's products where there is no cash discount available. These are:-  
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We carry a comprehensive range of superb interconnects. Choose from **Audioquest, Monster, IXOS** and **Furakawa**. There's one ideally suited to your system. We also stock a complete selection of Speaker Cables.



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22 Branches Nationwide



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Open 28-31 Dec & Sat 2 Jan  
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  - Arcam Delta 1202 £179.95
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  - Audiolab 8000P/III £299.95
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**22 Branches Nationwide**

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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-965BX	£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 TD166/VI/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 LPI2.	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

## TO NEARMS

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 VST-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	£299	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
AUDIIONTE 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 4225	£160	Warm sounding, but detailed budget AM/FM tuner. AM poor, looks dated.	Jun 92
ARCAM ALPHA 3	£199.90	Excellent vocal clarity and decent sharpness; good for Rock.	Dec 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 52	£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	Genre 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.	May 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

<b>PREAMPLIFIERS</b>			
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

<b>POWER AMPLIFIERS</b>			
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.	Jan 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	50W 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. 549	£4372	Massive 200watt valve monoblocks. Awesome sound, uncanny solidity of images, hard treble.	Nov 91

<b>LOUDSPEAKERS</b>			
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 unsubtle.	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 FOCCUS	£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 PETITTE	£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 1 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 I200 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

<b>MISCELLANEOUS</b>			
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
FRANCKSTEIN	£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.	Jan 92
KONTAK	£22	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
SONY ICF-SW7600	£150	Superb 'world' radio. Good reception, simple to use, even has a clock!	Aug 91
SONY WALKMAN WM-DD33	£90	Simple to use, high-quality playback only Walkman. Excellent, stable sound quality.	Aug 91
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
SONY WALKMAN TCD-D3	£500	Better known as the 'DATMAN', this small, sophisticated DAT portable is a technological wonder.	Aug 91
TECHNICS SL-XP330	£129.95	Ignore the price tag for this is one of the best sounding portables around.	Dec 92
TECHNICS SL-XP700	£200	Portable CD player. The thinnest and most stylish of the breed, just happens to sound the best.	Nov 91
TDK NF-C09	£10	Designed to lessen Radio Frequency Interference in cables. Works too!	Feb 92

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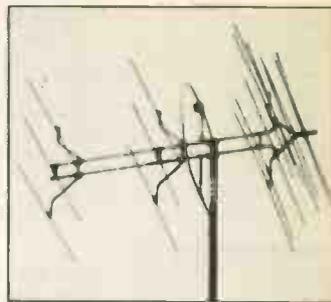
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# WHY A HI-FI TUNER NEEDS A GOOD AERIAL

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 aerials 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.

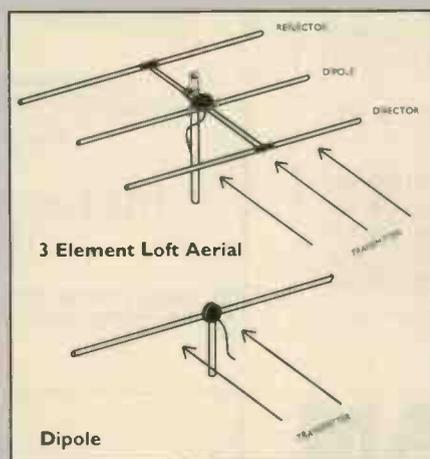
It is often possible, if a little difficult, to wall-mount an aerial on a stub mast outside a window, but you may need consent to do so. Hanging out of a window can be dangerous, so consider using a professional installer. And make sure the wall faces toward the transmitter of course.

## 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 aerial 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.

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The CAI has a countrywide list of aerial installers who are members that abide by the rules below.

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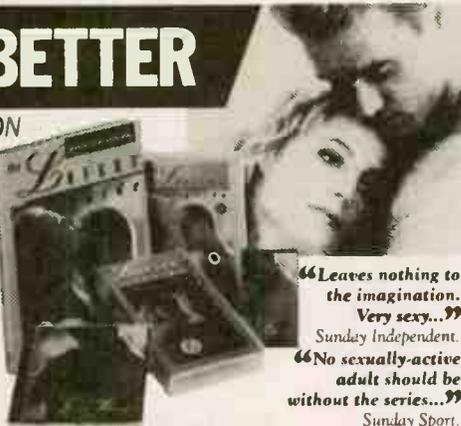
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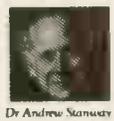
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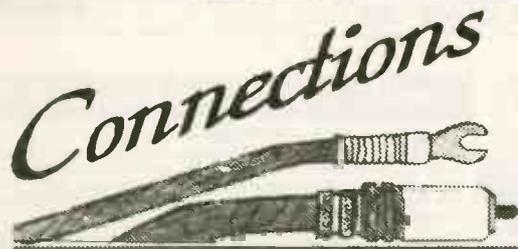
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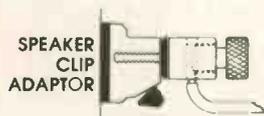
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# A SHORTER MORDAUNT-SHORT

**Dominic Baker listens to the modestly sized MS 5.10 budget loudspeaker.**

The first impression of the MS 5.10 loudspeaker as you slide it from its carton is of the handsome visual appearance presented by the baffle design. This is an injection-moulded affair finished in a textured grey which has two flush mounted circular grilles embedded in its surface producing a clean, simple and elegant picture.

Mordaunt-Short's specification for the 5-Series range of loudspeakers includes features such as POSITEC Protection, Mordaunt-Short's own overload protection system, metal dome tweeters, mica-filled polypropylene front and rear baffles and shielded magnets on the drive units enabling the loudspeakers to be placed next to magnetically disruptable equipment such as televisions.

Unfortunately a bi-wiring facility is not provided on the bottom-of-the-range £119.95 miniature reviewed here although it is standard on the remaining five models. However, good quality chunky gold-plated banana sockets with holes for bare wire connection are provided.

## Innovation

An innovative process for attaching the bass cone to its surround has been employed. This involves creating a one-piece cone and surround by first injection-moulding the cone and then immediately injection-moulding the surround onto the still unset cone. This method produces an unbreakable join and dispenses with the need for adhesives. As would be expected Mordaunt-Short have patented this process.

The cabinet is made of 12mm high-density particle board with injection-moulded mica-filled front and rear baffles. These are stiffened by the application of high tension rods linking the two panels, serving to lower the resonance of the box.

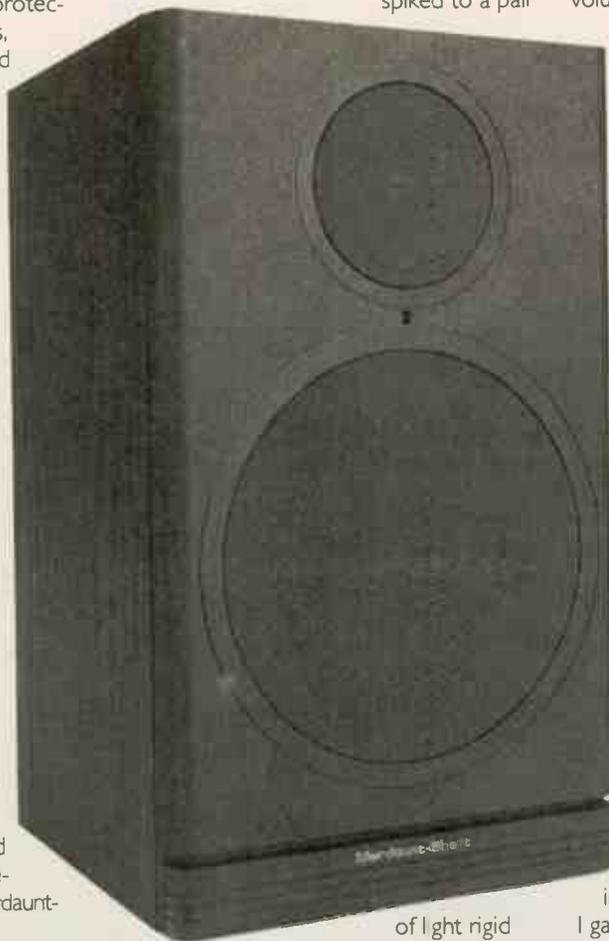
The crossover is about as simple as they come, with a good quality inductor for the bass and capacitor for the treble arrangement.

The MS 5.10s were given the recommended ten hours of warm up period to enable them to reach their optimum

performance level before listening commenced. This running-in time is necessary for the previously unused stiff rubber surround to become supple and allow the cone to travel freely and also to let any electrical components settle.

The MS 5.10s are not ideally suited to bookshelf mounting, having what seems to be a somewhat overlarge rear firing port for their modest size. This makes them best suited to free-space mounting on stands. In fact when top and bottom

spiked to a pair



of light rigid stands and placed in free space, say three feet from the rear wall, two feet from the side walls and toed in slightly towards the listener, they sound coherent with an almost BBC monitor style presentation. The mid-range sounded strong, almost nasal, but clear and the bass rich and full but rolling off fast before any really deep bass entered the equation.

Sadly, here the similarities end. The best comment that can be made about the treble is that it is adequate enough to convince you that it actually exists.

Whereas the bass and mid are both strong performers, being both clear and tuneful, the treble is lacking in detail, precision and the all-important sparkle needed to bring music to life. The bass is melodic and the mid-range well focused, but the high frequency output sounds positively weedy and ill-defined in this kind of company making the two units sound almost mismatched for each other.

The MS 5.10s are quite sizable beasts for a budget miniature, with an internal volume of nine litres which enforces their preference for open space placement. However even when treated in this manner the bass could occasionally sound bloated and slow on some material, but this was only a minor problem that would remain undiscovered in the majority of listening environments.

## Instructive

Imagery and separation were both good but not outstanding. This, I'm sure, is a trait of the high frequency unit which produced an overall feeling of lack of interest in the loudspeaker as a whole. As a demonstration of this, whilst listening to the MS 5.10s I found myself reading the owner's handbook, the speakers playing at a moderately loud volume but going unnoticed as I read on. Surely it's a bad sign when an instruction manual becomes more interesting than the product it is describing?

A possibility would be to remove the grille over the tweeter, but it is described by Mordaunt-Short as being acoustically transparent and additionally obviously not intended to be removed. There are no instructions detailing the operation and I gave up trying to do so myself through fear of damaging them.

I found the MS 5.10s disenchanting. Styling and overall presentation was excellent but I was disappointed by the lack of action in the high frequency range. In the end however the Mordaunt-Shorts will sell because of their fine mid and bass performance and it has to be mentioned that I am in my younger years and my high frequency hearing is going to be more complete than that of the majority of listeners. Perhaps they won't miss anything? ●

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**IMPEDANCE WORRIES**

I have just bought a Yamaha RX550 receiver (55W) and a Yamaha CDX660 CD player, the latter on your good report.

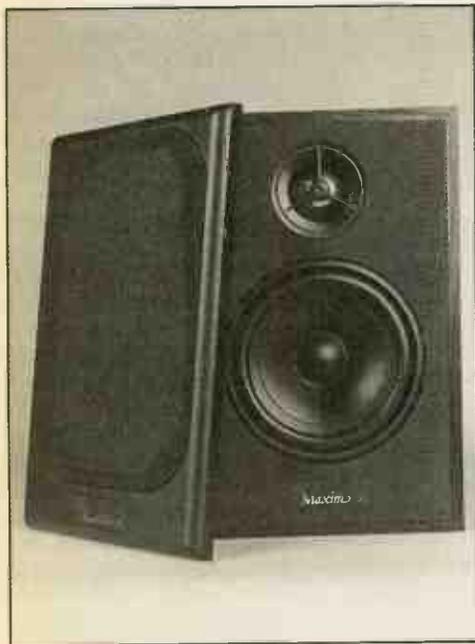
But I have no good speakers! I want to pay up to £180 and so it seems I have a good choice. Do you agree I should listen to the following: Mission 760i or 761i, Tannoy 603 or 605, KEF K120 and B&W DM600?

I gather that there is quite a difference in sound between different speakers of similar price so I do realise a lot depends upon personal choice and I will listen before I decide. However, I do want to ensure that what I ask to listen to really does electrically match my equipment. Clearly, speakers of, say, 150watts would not be suitable for my 55watt Yamaha, but would, say, the Tannoy 605 be OK?. Also, would they give better sound than the 603 because they are larger? Ditto the Missions? I find it difficult to start!

The instructions for the Yamaha RX550 say "for speaker impedance A or B  $6\Omega$  min./speaker, A+B  $12\Omega$  min./speaker". Room is L shaped, biggest area 18ft x 11ft. I only listen to Classical music and would greatly appreciate your comments.

**Mr D. Goodier,  
Ripon,  
North Yorkshire.**

What Yamaha are trying to tell you is that their amplifier will not drive loads that dip below  $6\Omega$ . Two pairs of speakers will be run in parallel, as usual, meaning the load seen by the amplifier will be half that of each. Thus if you connect two



# BUDGET QUERIES

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pairs of loudspeakers and operate them both at the same time, they must be  $12\Omega$  minimum so the amplifier will still only 'see'  $6\Omega$ . As far as I can tell you wish to have only one pair of loudspeakers connected so this is not a problem.

Looking back at the impedance measurements we took when reviewing Missions 760i + 761i and Tannoys 603 + 605 it appears that none of them

should pose a problem to the Yamaha. This would be expected as they are all mass-market designs and thus must be compatible with mass market amplifiers. The KEF K120s have not been reviewed by us but they have a nominal impedance of  $8\Omega$  and are not one of KEFs low impedance models. The B&W DM600s are just about to be updated to the "DM600



improved" status and thus we are unable to comment on these.

Basically any modern loudspeaker will be compatible with your amplifier. The only incompatibility that may exist will be between their sound and your ears. Even speakers rated at 150w are suitable; how much power they will take does not directly determine how much power they will work with. Just be assured that modern transistor amps are pretty robust and so are modern loudspeakers. Such matters only start to become a bit critical if speakers are to be driven to - or past - their operating limits.

The Missions are a lively loudspeaker in a Rock/Pop kind of manner and the Tannoys are on the smoother side, but not quite so energetic.

You say that you listen to Classical music only, in which case I would recommend something completely different. Either try some Goodmans Maxim 3s with good quality cables and stands such as Furukawa FS-2T07 and Target HS stands. This will give you a high quality, accurate and detailed sound which takes some beating. Additionally, if you or a friend is competent with a soldering iron you could try the modification that we did in the December issue which would further improve the Maxims to an unapproachable level even at twice the price.

Or, if you do not need stands and are intending to mount the loudspeakers on a bookshelf then you couldn't do much better than the Rogers LS2a2s. These are a little more expensive than the others that you mention but I think you will

find them to your liking. If you do go for the Rogers, peeling off the little rubber feet and Blue-Taking them to the shelf will produce the best results.

Whatever you decide to do, audition all the options carefully, because as you rightly point out, it is a personal choice. **DB**

**DEAR DOCTOR**

I have enjoyed your articles on Budget Systems and am in a position to buy such a system item by item. I have got my eyes set on one, but am writing to see if it would be compatible, because I am a novice about hi-fi.

I have already got Goodmans Maxim 3 loudspeakers. Would the following link up with them with ease? Sony TC-K470 cassette deck. Harman Kardon 6150 or Denon PMA-350 amplifier, Denon DCD-890 CD player.

Would you give advice on a tuner too? Which would be best suited to this system at around the £200 mark?

**Stephen Hardman,  
Bacup,  
Lancs.**

The Denon DCD-890 and Harman Kardon 6150 form an excellent combination and you would be pushed to find better. Their all-round abilities make them deserving of the best loudspeakers available within reason. Fortunately you already have such a pair in the form of the Goodmans Maxim 3.

The Sony TC-K470 again is an excellent piece of equipment and in fact sounded better than the more expensive three-head TC-K490 we recently reviewed. The '470 gives smooth and confident results with TDK's



AR, which is a bonus as these are relatively cheap tapes. The TC-K470 also has a superb motorised door which will provide hours of entertainment on one of those many dark winter nights with nothing to do.

You have jumped the gun a little by asking for tuner recommendations which formed the Budget Systems

available. The Cornholme relay is partly hidden by the hook of the hill and is only a 20w fill-in relay. This then leaves only the Haslingden transmitter in clear sight, at least as far as we can tell from our offices! This is approximately 30 miles away and has a transmitting power of 83w. It is due West from Bacup and has vertical polarisation. Thus I would recommend a four element aerial which should have enough gain to pull in a strong signal. The vertical polarisation



section in the January issue. You will have already seen my budget tuner selections by the time you read this. However, just in case you miss the Jan '93 issue (God forbid) they are the Aura TU-50 and the Denon TU-260L. Both are excellent, but if your budget is strictly £200 I would recommend the Denon plus a good aerial.

Looking at both a geographical map and the BBC map of transmitter and relay station locations I see that you are in an area with lots of hills and thus many relay transmitters. Your two closest relay stations, Todmorden and Walsden South are both behind the hook shaped hill that runs along the right hand side of Bacup. This hill screens them from you. That leaves the Cornholme and Haslingden transmitters

requires the aerial to be mounted on its side with the elements vertical than from horizontal. **DB**

**STUDENT PLANNING**  
My present system is: Pioneer A300 amp, Philips CD604, QED Digit, Cambridge Audio CT50 Cassette deck, NAD 4225 tuner with QED gold interconnects and Mission 760i speakers with Cyrus cable.

As is clear, I have accumulated a system on the basis of the most reasonable Best Buys available. I have no major complaint about the performance of my system but, being a student, I need to plan my future expenditure quite far ahead. At present my shopping list includes the QED Positron power supply to go with the Digit.

My problem is that I would

very much like to improve the sound I am getting from my CD. At the moment it is rather lacking in bass clarity. I have considered buying a CD transport but the price seems a little excessive. I am considering the Nakamichi CD4, Marantz CD52II and Philips CD850II. I can get any of these for about £200. Could you please recommend a player which will improve the

transport which my Digit has to work with.

**David Yelland, Nottingham.**

It does seem a bit unnecessary to buy a complete CD player when all that you need is a transport. You may like to consider buying one second hand which would enable you to pick up a good condition Arcam Delta 170 or the Kenwood DP-X9000 for around £250. Both of these, although now superseded by the current models, will produce much better results than any of the players that you mention.

The other option open to you is to take your current player to its limits. Firstly, try some of Campaign Audio Designs-Silurian digital intercon-

nect which costs £40 for a 3/4m length. This should clean up the bass a little, adding focus and solidity. Then add some of their screened mains cable with a VDR which removes mains spikes and a mains conditioner such as those from Lynwood Electronics. The Lynwood costs £49.95 for the basic model which has a power rating of 500w. Hence, it will be powerful enough to supply the CD player, convertor, cassette deck and tuner, improving the performance of the whole system. I would advise against using a mains conditioner with the amplifier because of the larger power requirement which it has. The mains conditioner should help remove any coarseness and further clean the sound.

As a final touch use either Audioquest Sorbothane CD feet or Michell Tenderfeet to support your CD player. You will have to experiment with both to see which will best suit your situation, but as a rough guideline if the player is on a wonky support the Sorbothane will isolate it from the worst. If you have a stable equipment support, then Michell's tenderfeet will be your best bet.

The digital interconnect, the mains conditioner and the isolation feet will cost around £100, which will make a large difference to your system at half the price of the new players you are considering. This will leave you £100 to purchase the Positron power supply (£85), which is said to further improve the already excellent QED Digit, and add a new CD to your collection! **DB**



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