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
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In every aspect of sonic performance, unique cabinet design and finely detailed construction, the Tannoy SIXES have won consistent praise from the international hi-fi press. Tannoy dealers have SIXES for you to audition now. If you'd like a second opinion however, we'd be delighted to send you a copy of the Press Reviews book which we assembled some months ago and to which we've added many more equally complimentary reviews which have appeared recently. You'll read, for instance, of the compact 603, 'A speaker this size giving that sort of sound is good'. Stereo Review (in March '92) wrote that the 603 'has all the details of musical programming'. The French Tannoy 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 'street 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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World Radio History
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.

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COMPETITION
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This month’s prize is Monitor Audio’s floorstanding MA 1200 Gold loudspeaker with glowing gold-anodised tweeter. Worth £950!

CONTINUED FROM PAGE 3
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KEF Audio (UK) Limited, Maidstone, Kent ME15 6QP.
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 JH1000 at £372 to the multiple-driver JH10K at £9,550.

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.

Upgradable Hardcore
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.

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.

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 18 watts 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 units 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.

Contact Boston Acoustics Ltd., 3/4 Montefiore Road, Hove, BN3 1RD. Tel: (0273) 202637.
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 LS7 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, Willochly 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, Deny 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 12 watt 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 Magnepan loudspeaker for 'music lovers who can’t afford high-priced, 'high-end' speakers" say importers Absolute Sounds.

The same size as the Magneplanar 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

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The HARBETH HL-P3 Hi-Fi/AV Broadcast monitor is the small speaker redefined (a revelation even to admirers of the HARBETH LS3/5A!)

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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 £359. 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.

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

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 £1,000 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 Gege'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 Shearme, Tesseract and others from Britain and Europe.

Divia Audio Fidelity, 7 Websb 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, l-3 Haywra Crescent, Harrogate, N. Yorks. HG1 5BG. Tel: (0423) 528537.
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 (Renumber 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 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 I had most enjoyment out of Minidisc.

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

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

PRESTIDIGITATION

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


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 disc 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
MEASURED PERFORMANCE

The ATRAC digital compression system of MiniDisc is so specialized 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 HP3561 A 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 -97dB (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 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.

NI

IEC Test Signal Energy

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

Frequency Response

Fig 2 - Frequency response from I2Hz up to 20kHz through the ADC and DAC, on Record-Pause. Some slight treble lift.

Fig 3 - Plateau treble lift above 1.25kHz of about +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.

HI-FI WORLD FEBRUARY 1993

17
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• PHASE 3 HI-FI (WORTHING) 0903 507077
• SEVENOAKS HI-FI (SEVENOAKS) 0732 459555
• ZEUS AUDIO 0232 323552
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 almost as though there were two one-inch thinners 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. A few notes below Middle C had a metallic tinge, while the bass was quite pronounced 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 dimmed 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. 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-I 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-I MiniDisc player.

So who's the guilty party? The A-D converter? The D-A converter? Are Sony's converters 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.
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 £100 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 medium? We've got replay medium. The product, we are being told that 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.

Granma Vishko, London W3.

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. Unfortu-
nately, 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, owing the Mk1 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 make-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 hardness. 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 OLIA. Initially used in a small closed box, the sound was quite remarkable for its size, though the bass did drop 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.

Send your letters to: Hi-Fi World Letters Page,
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 Elega/SME Ills 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

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 constant - 90-95% in favour of the LP.

The second was a documentation 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 de-rumbled (hopefully), dropped into a special plinth and fitted with a new 12in SME arm, the 312. This mouthwatering mechanism, once set up, can make a great 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
A mini-monitor loudspeaker from Harbeth, a company founded by a man from the BBC. Alan Sircom studies the quality of the HL-P3.

Harbeth'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. Spendor 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 1 10mm 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-dominess 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 ES 1. Of the two, the Epos offers the listener a more impressive performance, but it is one that is, ultimately, incorrect. The ES 1 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 ES 1'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 ES 1'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 HL 5. 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 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 - figures in about deep bass extension. Accurate portrayals of vocal detail was always higher up on the agenda, but even so the HL-P3s have a respectably extended frequency range, response being only -6dB 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 3.2 ohms 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 levels the low impedance may cause premature clipping with the wrong amplification.

The combination of low sensitivity, high overall impedance dropping to below 3.5 ohms 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.

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Frequency Response

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Response</th>
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</thead>
<tbody>
<tr>
<td>12</td>
<td>+5</td>
</tr>
<tr>
<td>20kHz</td>
<td>-5</td>
</tr>
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A raised mid-band.

Impedance

<table>
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<tr>
<th>Impedance</th>
<th>Resistance</th>
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<tr>
<td>Low</td>
<td>3 ohm DC</td>
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**PERFORMANCE ART**

TU 50 FM TUNER
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 I, 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 BC I 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, 1978, the BBC had found one of the originals, and to their horror discovered the current run at the time sounded different! KEE 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; 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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World Radio History
Three years of development have gone into Audiolab’s new tuner.

Eric Braithwaite has been waiting with baited breath . . .

It’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, when 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 its 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.
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, backlit 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 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 1.6uV 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 20uV for a -50dB hiss level on stereo, at 1.5uV 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 much as 50dB, 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 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 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 bandwidth (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 is definitely up there among time listening to top-ranking tuners and that 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 practically visible to every comer in the space. It’s unlike some others, however; there’s a gentle roll off at the top end that 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**

<table>
<thead>
<tr>
<th>Frequency Response (-dB)</th>
<th>3Hz-14.5kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Stereo separation</td>
<td>56dB</td>
</tr>
<tr>
<td>Distortion (50% mod.)</td>
<td>0.1%</td>
</tr>
<tr>
<td>Hiss (CCIR)</td>
<td>-74dB</td>
</tr>
<tr>
<td>Signal for minimum hiss</td>
<td>1mV</td>
</tr>
<tr>
<td>Selectivity (at 0.4MHz)</td>
<td>76/54dB</td>
</tr>
<tr>
<td>Sensitivity</td>
<td></td>
</tr>
<tr>
<td>mono</td>
<td>1.6µV</td>
</tr>
<tr>
<td>stereo</td>
<td>20µV</td>
</tr>
</tbody>
</table>

**signal strength meter**

<table>
<thead>
<tr>
<th>SEGMENT No (µV)</th>
<th>SEGMENT No (µV)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 1.6</td>
<td>6 160</td>
</tr>
<tr>
<td>2 3</td>
<td>7 1000</td>
</tr>
<tr>
<td>3 8</td>
<td>8 2200</td>
</tr>
<tr>
<td>4 32</td>
<td>9 2500</td>
</tr>
<tr>
<td>5 100</td>
<td></td>
</tr>
</tbody>
</table>

Slightly falling treble.

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 tuning knobs with tuning knobs on, but essential 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 wide variety of ancillary equipment.

**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!

**NI:** 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 converter that takes the signal, then turns it into digital. What we wanted was a direct, real-time readout; 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.
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Fuller's Audio, 20 Tunbridge Road, Southend-on-Sea, Essex SS2 6LT 0702 612116
After years of producing amplifiers and tuners at modest prices, the acquisition of Creek by the TGI Group (Goodmans, Tannoy and Morantaunt-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 resampling 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.

CREEK'S
CONVERSION

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

Martin Colloms tests the DAC 60.
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 undyed 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 ES11 and Spendor SP2-2 speakers together with a selection of amplifiers including a passive controller, the Passby Audio Synthesis, and Mendell 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 Mendall 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 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 convertor from Creek is certainly worth auditioning. It delivers a sufficiently good performance to receive a recommendation from me.

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**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 life. 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 0.35dB.

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 respectively 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 averaging 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 to sound smooth a free from digital nastiness. MC

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**TEST RESULTS**

<table>
<thead>
<tr>
<th>Frequency response</th>
<th>3Hz-21kHz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Distortion</td>
<td></td>
</tr>
<tr>
<td>-6dB</td>
<td>0.0076</td>
</tr>
<tr>
<td>-30dB</td>
<td>0.015</td>
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<td>-60dB</td>
<td>0.34</td>
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<tr>
<td>-90</td>
<td>19</td>
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<tr>
<td>-90dB dithered</td>
<td>6</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Separation</th>
<th>left</th>
<th>right</th>
</tr>
</thead>
<tbody>
<tr>
<td>1kHz</td>
<td>115</td>
<td>104</td>
</tr>
<tr>
<td>10kHz</td>
<td>96</td>
<td>96</td>
</tr>
</tbody>
</table>

| Noise | 104dB with emphasis 105dB |
| Dynamic range | 109dB |
| Output | 2.3V |

"You get a nicer sound with more air..." says designer Keith Rogerson.
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 Blakatak. 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 Megal-Hertz, 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 CADCAM (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 CADCAM 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 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 valves, Tim says. is based on the roof than my Gyrodec. It's also the same, the 834 doesn't gone for the Quai d'Orsay, myself. It's certainly cover the bottles. The shape of the designs. This time it's the grilles which of King's Cross station. It's certainly occupied more space than my Gyrodec. It's also customer feeling.

There's always a quirk to Paravicini - and anything else to do with valves. He himself he designs valve amps - and valve patron saint of valve design - Tim de 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 Musical
Amplifiers credited in the small print style' to the EAR sound. It's characteristic of valve amplifiers to be a little less restricted in this sense, 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, Paul Simon's Graceland, listen for a triangle very quietly ping-pong away far behind which is why you'll find EAR power amplifiers especially in the mid-range and treble design, where they turn up the volume control, as with most modern amplifiers, with an approach 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-roped and as fast as a triangle with a warm comfort.

Not a Comfort Blanket

It's at this point that a warning note creeps in. If you want a tear-jerker, enhanced over-sentimental experience, in your living-room, then this EAR integrated is going to look you in the eye rather coolly and your hanky will still dry. We're not in the business of equating valve sound with a warm comfort. Instead, 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 varieties in the clarity and image precision, while others with more experience of valves were somewhat taken

The test amplifier, which runs cool, are hidden underneath. Long drive shafts to the rear mounted potentiometers keep leads short.

**TEST RESULTS**

<table>
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<tr>
<th>Power</th>
<th>40 watts</th>
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<tr>
<td>CD/tuner/aux.</td>
<td>5 Hz-36 kHz</td>
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<tr>
<td>Frequency response</td>
<td>69 dB</td>
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<tr>
<td>Separation</td>
<td>-92 dB</td>
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<tr>
<td>Noise</td>
<td>0.02%</td>
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<tr>
<td>Distortion</td>
<td>150 mV</td>
</tr>
<tr>
<td>Sensitivity</td>
<td>none</td>
</tr>
<tr>
<td>Disc</td>
<td>none</td>
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**Distortion**

- 0.1% 0 Hz
- 800 Hz: 7 kHz
- Second harmonic distortion at 0.02%.
"ASTOUNDING"

DIGIT THE DAC
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AN ESOTERIC EAR

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

NK: Your last word design of power amplifier designs were for Lux, when you worked for them in Japan during the Seventies. Now is the new 834 coming on of 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 compensated for 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 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 Ongaki 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 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: 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...
MISSION

Mission's Cyrus I amplifier has gradually

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 25 watts, 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 ES1 Is 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 audophile 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 (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 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 £1,000. 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 ES1 Is 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 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 32 watts to eight ohms. This rises healthily to 50 watts into four ohms, suggesting the baby Cyrus can edge toward the big market. 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 100ohms overall impedance or more. Only KEF let impedance fall to 600ohms or less, and then only with more expensive models. It's a pity, because you can't get too much volume from 32 watts; 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 superflusly 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 noticed 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
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' 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 oass lines all collude together to create a rawly live performance.

The Cyrus 1 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 1, 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 25 watts, which won't go far driving some of the more insensitive loudspeakers that are around today.

For £250 the Mission Cyrus 1 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 1 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, Elma and Wima signal capacitors are all high quality items.

Domestic Baker gives the Series 8 high marks.
Remember the best hi-fi equipment is only available from the best hi-fi shops

Our job is to give you the best possible sound; so we choose the best sounding equipment. You won’t get better performance and value anywhere else. Our hi-fi is well built, with a long life and an easy path to further upgrades, if required.

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Take the risk out of buying hi-fi
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 competitive 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 cost base and why?

This 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: Why did you adopt this heatsink?

In 1988 or thereabouts.

NK: When did you adopt this heatsink?

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 the 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

NK: What else is there you'd like to pick out as special?

It has a balance control. We yielded
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 but, 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-sloping 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. L.l and so on for left and right; bass and treble have 'L' for level, then +, -.

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 78s, mono LP and stereo LP. Mono LP is distinguished from Stereo by 'LP1' ('Old') and 'LP2' ('New'), putting the numerous people who were then filling letters pages insisting mono sounded better firmly in their antediluvian place.

Like the 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 earnings at the time - we'd be in the £1,000-sf bracket now, I suppose, but it's an artificial companion. 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 of 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 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, turning 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 not be ashamed in the company of its more respected brethren.

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

### MEASURED PERFORMANCE

The Pye Mozart was a trifle novel in its own way. It was a single ended design using one EL34. The secondary feedback 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 10 watts, according to limits used. At the time, record players gave around 3Watts or so output, so whilst the Mozart looks feely 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 5kHz-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 Wolsley 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
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 SL 110A 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 (Unisons amplifier, ProAc Response 15) 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 15, they exhibit a rising treble characteristic and an obvious peak at 150 Hz. Measurements do not always tell the whole story, but in the case of 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. Besides 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-
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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 octal 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, we've been more interested in what's underneath 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 won't 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 Ill 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. Underneath, all the original components were in place, with no sign of malingerings spiders or past pyrotechnics. This unit, which delivers 100watts, looked about a year old, when in fact it was sold in the early Fifties.
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 contributions 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 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. I purchased a Deltec Bigger Bit convertor to couple with my SME 103/4 in this respect. They put me in touch with Terry O'Sullivan of Lorcraft Audio, 4 Big Lane, Goose Green, Lambourm, Bucks. RG16 7XQ (Tel: 0488 72267). I purchased a Deltec Bigger Bit convertor.

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 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 LP/12, 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
dedicated and purposeful. There were preamplifier, together with its accompany-
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spotted the name Partridge on the output
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sae; here was another, looking smart,
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 BCS24118A, 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 20 watt 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 respect-
able 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
which, being based on the Williamson
circuit, would produce around 12 watts
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, comprehen-
sively equipped, possessed of a great
degreedie 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
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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SEXTET!

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 Sextets.

Could you inform me more about the Glastonbury tweeter and publish a review of these speakers, for I really liked the treble of the Pioneer; 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 use them with an appropriate amplifier, typically 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 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

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Think 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 ES1 is might suit, but watch out for tubby bass, since both items have a tendency toward this.

Put the ES1s 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.

Tempted by a Tonigen tweeter as used in Heybrook’s Sextet!

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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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, Albary AP3 passive preamp, Albary 1025 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 cables. 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 cables? 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 midrange, though this impression commonly dies away after longer exposure, giving way to positive enthusiasm. However, perhaps not in your 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 tinsely 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.

**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.

**Continued on page 60...**
Kenwood's £199 KX-5050 cassette deck is in the new 'recession' style, with soft curves and radius-edged 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 whirs outwards; touch any control key and it whirs 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, 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 performance is more than adequate without being spectacular, but that said, its sound quality hasn't been swamped by money spent on gizmos instead of the electronics. Playing prerecorded 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 viola 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 0UV (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 +4dB, 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 0UV with metal tape.

Without Dolby working, hiss measured a low -58dB (IEC A 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.

A Bias Towards Cassette?

Kenwood's new KX-5050 two head cassette deck offers automatic tape biasing. Eric Braithwaite has it taped.
on recording. A slightly loose, unfocussed 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 kazooos 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 (315Hz) 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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World Radio History
TUNING IN

I possess the following: Arcam Alpha CD player, Audiolab 8000A integrated amplifier, Denon DRM-710 cassette deck and KEF Q60 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 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 using to hearing live music and would welcome realistic sound quality. I would be grateful if you could suggest purchasing one would be your best move. Looking at the measurements and condition. Try for a demo

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, 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 is interference, try Uniradio 70, because it is better screened than the cheaper coaxial types 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 depends 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.

There are two bits of advice I would like concerning the system:
1) The Rogers loudspeakers are great for long, unfatiguing 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, you can 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 manufactures 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 preamp 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 505 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 PMA-450 (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 addition of 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 IIIX900 (£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 Golden 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 £200. 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 PDM! Series 3. I would also like to biamp the Tannys with a second 8000P.

With the Tannys 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! Series 3, which I 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 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 convor can do. Then the Meridian will sync lock to the PDM! Series 3. Even without being locked, I believe you'll still appreciate the qualities of this DAC, which consists 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! 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! easier on the senses, for example, although since a Deltec convor sounds like a Meridian done properly, you may well take to it all.

Audiolab amps, sounding smooth, are a good front end if you're going for the somewhat forward treble of the DC2000s. Try to make certain, if possible, that the PDM! Series 3 doesn't make the sound of the entire system just a bit too technicolour. 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 lengths 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.

Continued on page 63...
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GETTING THERE
By train:
Temple Meads Station is a short distance from the Marriott and is accessible by bus, foot or taxi.

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From M4 (Wales to London) take Junc 19 marked M32 Bristol. The M32 ends at Junc 3 and becomes a conventional dual carriage-way. Follow signs for City Centre. After first set of lights parking in the Parkway (Wellington Road) NCP car park will be found to the left.
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, Akto and K9 on a Mana reference table, Linn Intek and Monitor Audio 9 loudspeakers connected with Linn K20 cable.

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.

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 - win the pools - the Lyra Clavis and Transfiguration cartridges also suit well. EB

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, 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.

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 BCI's 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 Spendor BCI's 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. They must be kept well away from a rear wall (3ft) and preferably fire downwards towards the floor. 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. Alternately, 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
This 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.
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-fi is a sure path to infidelity. Many tried flattery - offering to expend their savings 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.

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.

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.

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.

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.

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-63s 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 Keltek speakers.

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.

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.

MARANTZ
Marantz followed through the British theme with their best-selling PM405E amplifier and CDS2 Midi 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 Acoustrimass system with the bass issuing from a subwoofer subtly hidden at the back of the room.
Reflections from Noel Keywood

Kaleidoscope

understood commercial imperatives. When I visited Mission's new factory, for example, nothing could seem more modem 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?"

TDP: "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 en-sconced 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.
Today brethren, dark clouds are a'loomin' on the horizon. For I am aware that I have already failed in my attempts to dissuade some of you from endeavouring to construct your own valve power amplifiers (see this column September '92). Now I hear that there are amongst you good, hum-fearing people, some who have strayed so far into the swamp of confusion and idolatry that you are considering constructing your own pre-amplifiers.

Once again, I say to you brothers and sisters: don't do it. Valves are the serpents of hi-fi—luring us innocent hi-fi victims with their warm, cherry-red charms only to dash us to pieces with their lethal venom. Steel yourself against this temptation. Join AA (Analogues Anonymous). Sign the tube pledge. Once you let this awful vacuum into your life, you will be changed. Look at brother Noel and brother Alan.

**On The Bottle**

I have to tell you, I myself fell. And only near-bankruptcy raised me up. I have known earthly rapture. I have heard the music of men and believed it was the music of angels. I was ensnared. I thought I had glimpsed heaven but the heaven I had glimpsed was the heaven of a bottle—a line of bottles glowing red with a sheen of blue. And those bottles carried me away from the world I had known to a realm of appalling dissipation. In the blindness of my idolatry, I danced fearful pagan rites with Nijinsky, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken, I took the A-Train, I heard Salieri's pulse quicken.

The usual choice for a high-gain valve stage is a pentode, but these valves generate more shot noise than triodes because of the action of the cathode current as it splits between the anode and screen. Instead I used a cascode circuit. Like so many other valve circuits this has its origins in radio. Its characteristics are such that the total stage noise is substantially that of triode V1a. But the gain is roughly the product of the anode load of V1b and the working mutual conductance of V1a. In other words it works like a pentode but with lower noise!

The RIAA equalisation is shown in a dotted box. This is to dissociate myself from this section of the circuit. If you have your own ideas about RIAA etc. then you can substitute your own solution for mine!

On a general note, I disagree with those who say there is no place for valves in low level circuitry. Well-designed valve circuitry can give superlative results. Hum negative feedback, passive RIAA equalisation and it employs a cascode input stage. In transistor equipment, the problem with passive equalisation is the risk of overloading the first (necessarily high-gain) stage due to high level treble signals. With valves this does not present a problem because of the enormous headroom when using a power-supply of several hundred volts.

The first lesson.

In this design I left nothing to chance and powered the valve heaters from a dc regulated power supply (Fig. 2). The h.t. was also shunt-stabilised using cold-cathode glow-discharge tubes which look great! The power supplies were built on a separate chassis. The more common ECC83 valve would be suitable as the first stage cascade valve except that the ECC82 is more robust in construction and therefore less microphonic. I have found, recorded message

**Left by Richard Brice**

Can sometimes be a problem. In this design I left nothing to chance and powered the valve heaters from a dc regulated power supply (Fig. 2). The h.t. was also shunt-stabilised using cold-cathode glow-discharge tubes which look great! The power supplies were built on a separate chassis. The more common ECC83 valve would be suitable as the first stage cascade valve except that the ECC82 is more robust in construction and therefore less microphonic. I have found,

**Fig. 1**

**Fig. 2**

Figs 1 and 2 are reproduced by kind permission of Electronics and Wireless World.
dB on the level

Dominic Baker

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
old good 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
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
lessen this difference the
anologue 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. Perhps a little more
effort was needed with
ordinary cassette?" MD is short for Sony's
MiniDisc, which is basically a
miniature recordable CD
 housed in a plastic computer-
disc case. Thus MD has the
advantage of long life. How-
ever, 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
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 unsuit-
able, 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
counter this. 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
reformatting.

What we need is a com-
 pact, digital recording system
with the same quality as CD
and a longer lifetime than
anologue recordings. As far as I
can tell, there is only one
solution that will fulfills 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
a comparatively cheap tape,
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
(pew!), 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
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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, rumouts. 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) Bartlett's Hi-Fi  - Philips
sound good but the Marantz is
better; no reliability problems.

These results show that head
clogging was purely a
mischievous rumour.

70

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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 passages there are quiet subtleties in the background which are never lost.

What did surprise me about 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 uneconomic 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 downshift 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 EIA (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...
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 phono sockets 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 cp-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-525E 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.

TEST RESULTS

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<th>Frequency response</th>
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<tr>
<td>Distortion (%)</td>
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<tr>
<td>-6dB</td>
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<tr>
<td>-30dB</td>
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<td>with emphasis</td>
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<tr>
<td>Dynamic range</td>
<td>100dB</td>
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<tr>
<td>Output</td>
<td>2.3V</td>
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</table>

Frequency Response

Well maintained treble.

Distortion

Down-band noise.

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
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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 unrecorded 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 Jankovich'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

Epic Soundtracks

Rise Above

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- 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 onstage) 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 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!" Next. 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 smithereens. 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 sublime catchy, chart-smashingly lovely pop tunes with a clumsy joke-tite 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 dissonantically 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

Rock & Pop Reviews
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

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 Samples produce amazing rhythms and sounds any drummer would die for, using nothing 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 chansonnière-style 'Guilermo 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 - 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
tunes and phrases are taken upbeat and every now and then outrageously a tail very neatly - classic trad Folk deceptively naive lyrics. They can twist finger-in-the-nose brigade again. That could explain it. It's lively, it's Age Travellers and magic-mushroom vocalist Janet Anderton, can satirize pretentious thumb-in-the-ear and be able to cope with the more beaten up - 'The English Rover' for festival get-togethers. Come to think. Anything - even tabloid tales of New you still think Folk is Arran sweaters, crusading Christian Chief Constable - it Tansad - style. MR

PETE TOWNSHEND
Who Came First
RYKODISC RCD 10246

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.

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 Townsend/Baba Meher relationship and Townsend's own article on the mystic published in Rolling Stone in 1970. 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 DYN13

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 C.V, 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 Revolt- ing Cocks, Finitribe, 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 a商业CREASE as Connelly's vocals go into lounge as Connelly's vocals go into a 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 a commercial, though undermined by some truly hideous synthesiser sounds.

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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 Susa Muso. As ever, Jazz music's been there, seen that, done that. And on the evidence of two records here still does, and how.

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Simon Hopkins
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 jazzer 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 'Incertitude Pourpre'; spoken-word samples a 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 improvisant-rock border, and Dolden in particular turns in some cool guitar here, screeching away over massed tracks of digitally layered sound. Apocalyptic stuff.

FRED FRITH AND RENE LUSSIER
Nous Autres
VICTO VICTOCD 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 above-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 partner, 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.

ALLAN HOLDSWORTH
Wardenclyffe Tower
CREAM CR310-2

- One of the most consistently disappointing musicians on the planet. The British-bom, 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 high-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.
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Missa Et ce cerae terrae motus/
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secundi toni
The Tallis Scholars; director, Peter
Phillips
GIMELL CDGIM026 (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 in Ferrara. Brumel's most celebrated composition is the principal work recorded here, the Missa Et ce cerae 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 could 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
Toccata and fugue in D minor BWV565/Aus tiefer Not schrei ich zu dir BWV1099/Concerto in G Major BWV592/Trio Sonata Nol in E flat BWVS25/Pastorella in F Minor BWV590/Erbarm dich mein, O Herre Gott BWV721/Fantasia and Fugue in G minor BWV542
Kevin Bowyer, organ.
NIMBUS NIS280 (DDD/67.11)

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 Toccata 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 virtuoso 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.

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 Lindseys 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 cozy career: playing the classics before audiences of chamber music devotees.

For the Lindseys, 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 Lindseys playing four-part fantasias by the Seventeenth century composer, Henry Purcell I, 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'.

The Third Quartet of the Swedish composer Dag Wiren was also new to me and emerges as a work of delicious, captivating anger. Like the Lindsays, Wiren, 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. They may continue to do so through many more anniversaries.

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 taking 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.

**RECORD OF THE MONTH**

**DAG WIRED**

String Quartet No 3 in D minor Op18

**ANDRE TCHAIKOVSKY**

String Quartet No 2 in C Major Op5

**HUGH WOOD**

String Quartet No3 Op20

**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 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 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.

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- 10MΩ/40pF input. Accuracy: 0.05% DC.

Weight: 1.4kgs.
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Battery powered: 6 x C cells.
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HOR: DC- 500kHz, 1mV/div.
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TV sync., variable trigger, alternate/chop/add modes.

Weight: 3.5kgs.
Size: 290W x 190H x 280D mm.
Mains only: 100-240V, 50/60Hz.
Price: £182 (inclusive of VAT).

LEADER LMV-181A AC millivoltmeter

- 100µV - 300V in 12 ranges,
- 80dBV - +50dBV (0dB = 1V).
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- AC out: 1V at full scale.
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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.

Standard size: 43cm x 35cm (W x D), takes up to 7Kg
Heavy duty version (£189) takes up to 20Kg
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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.

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.

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.

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 phono connectors. 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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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.

Monster’s Original cable comes attractively packaged in a clear sleeving. Retail price is £3.50/m.

Rotel Supra has been around for a long time now but is still going strong. Supra 4mm retails for £2.50/m.

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.

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.

Tandy’s Ferrite 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.

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 Audiokits, RATA, etc. at around £4/m.

The DU4S retails for £25 and the DU6S for £35.

The DU4S and DU6S are both suppressed, which comprehensively protects against both symmetrical and asymmetrical mains-borne interference. Thus, a balance between performance and convenience is met.
AVI CD PLAYER

There can be little doubt that our best selling product line is the beautiful pre/power units manufactured by AVI in Stroud. These mid-size units not only look elegant, they sound superb, and breathe new life into many a speaker which otherwise look ready for an upgrade.

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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You need a strong stable platform if your speakers are to sound their best. Our extensive range includes Partington, Target and Apollo.

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We sell a huge number of essential and useful accessories - tape, switching boxes for sources and CDs, record, tape, CD and stylus cleaners of many kinds - all too numerous to mention. If you have a particular requirement, ask us, we probably have the solution.

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COMPACT DISC PLAYER

SONY CDX-G77  £1160
DENON DCD 890  £269.99
MISSION DADS  £300
ROTEC RD-686X  £420
ARCAM ALPHA+  £420
CREER CD60  £16-bit player.
CARY CAD-855  £900
MICROMEGA SOLO  £1350
NAIKI  £1950
TEAC X-1  £2300
NAIKI CDS  £2937

Superb starter CD. Packed with facilities.
Exciting and forceful sounding, but slightly characterful sound.
Vinyl-based player. Very even handed, with solid bass. Some lack of spaciousness.
Vinyl-based player. Calm, open and sophisticated performer.
Offers a warm, full-bodied sound with a big, rich bass.
16-bit player. Excellent rhythmic properties and a superb bass performance.
Cary designed- valve output stage. Packed with ambience and musicality.
Distinctive transport; very light and musical, but with a deep, well controlled bass.
Single box, 16-bit player. Close to the two box CDS, very disc dependent, has vital single fader.

Compact disc transports

ARCADA DELTA 170.3  £650
TEAC CDR-102  £1759
DPA DIGITAL T1  £1795
MICROMEGA DUO  £1745

Smooth. Draws the listener into the performance. Improves on all the strengths of the 170.
Can be too restrained for some tastes, but subtle and highly detailed.

Digital to analogue converters

QIK-HIGH  £125
MICROMEGA MICROCSDAC  £129
MISSION DAC 5  £360
ARCH BLACK BOX 3  £376
ALP AUDIO CYM D.D.E.  £376
DPA LITTLE BIT  £395
DPA BIG BITTER  £395
MICROMEGA DAC  £395
DPA POND-ONE  £395
PRINK TURNTABLE DA CAPO  £550

Based on Philips Bistream. Excellent value, with no rough edges. Co-axial input for CD only.
Creak build, but tunable with much to offer. Very coherent.
Built to last. Transparent and lucid, although can sound bass light. Sets the standard to beat.
Fixed with Rega RB 250 arm. Good basic deck, with tweakability.
(With RB200 arm, £539) Falling between the Synico and the Gyrodec, the Mycro has superb mid-body clarity and poise.

Turntables

SYSTEM DAVE RX-900  £190
PROJECT 2  £250
REGA PLANAR 3  £270
THORENS TD166/WK  £270
MICHELL YCRO  £397
PIRIN Prongs L.P.T.  £397
ROKAS RACUS  £397
THORENS TD-300/1BC  £397
PINCH GEAR DIRECT EXPORT  £397
VOIIO VALID  £397
ROKAS XEREX  £397
PATRICK P-5000  £397
SME MODEL 20  £397

Surprisingly natural sound, if not as detailed as some. Suits Rega, Moth and Helius arms. £
Creak build, but tunable with much to offer. Very coherent.

Cartridges

GOLDRING 4012  £45
GOLDRING 1042  £89.95
SUPOKO BLUE POINT  £100
ORTOVON D100  £120
ROKAS CORUS BLACK  £120
SHIVAM V:  £140
DENON DL-304  £140
GOLDRING ELITE  £150
LYRA SUPERCEL  £150
LYRA LYDIA  £150
MORCH DP-1000  £150
AUDIONOTO 10  £150

Excellent value. Well balanced performer, rich and full without warmth. Very spacious and clear.
A wealth of treble detail and a fine sense of analysis proffered by the Goldring secures its place in this section.

Cassette Recorders

TECHNICS RS-850X  £130
TECHNICS RS-BX606  £140
SONY TC-540  £170
JVC TD-V541  £280
DENON DR-810  £280
CASSETTE DECK 2  £350
CASSETTE DECK 1.5  £350
CASSETTE DECK 1  £350
PIONEER D-505  £350
TEAC VBX-1000  £420
ARCHAM DELTA 100  £420
NAIKAKM OR CAPO  £420

Superb versatile cassette deck. Just like CD. Sweet sounding, but a bit expensive.

Tuners

DENON TU-260L  £110
ARCHAM ALPHA 3  £195.99
ARPA TURBO  £230
YAMAHA TX-950  £230
KENWOOD KT-7020  £230
NAIKI NTS-800  £280
QUAD 66M  £490
NAIKI NTS-1  £490
NAIKI NTS-1  £490

Excellent budget AM/FM tuner. Easy to operate, good all-rounder with a fine sound. £
Good all-rounder, but detailed budgets AM/FM tuner poorly, looks dated.
Excellent vocal clarity and decent sharpness; good for Rock.

Amplifiers

HARMA-N KARDON HK-6150  £159

Good sounding starter amplifier. Great dynamic range. Excellent bass.
Lots of insight and detail but could sound a little wrong in the wrong system.
**PREAMPLIFIERS**

**NAD 1000**
- £180
- Wonderfully relaxed. Located and easy on the ear. Best with 2100 power amps.

**QUAD 34**
- £490
- Modern and way. Not especially transparent, but relaxing and built to last. Clever tone controls.

**CONCORDANT EXCELSIOR**
- £900
- Very hi-fi sounding, but can sound good with high-end equipment.

**JOHN SHEARNE PHASE ONE**
- £1125
- Smooth and unobtrusive. Not especially transparent, but relaxing and built to last. Clever tone controls.

**MICHEL ALECTO**
- £572
- Matches 1000 pre. Powerful (150 watts) but relaxing sound; big bass.

**LOUDSPEAKERS**

**CELESTION 10**
- £99
- Low price, compact size, big sound. Excellent all-round performer.

**GOODMANS MAXIM 3**
- £199
- Smooth and unobtrusive. Not especially transparent, but relaxing and built to last. Clever tone controls.

**TANNOY 400**
- £1249
- The 603s are a rich blend that offer their best when bi-wired.

**MISSION CYRUS ONE**
- £349
- Thoroughly refined, tonally neutral amplifier with a realistic price tag.

**DENON PMA-350**
- £380
- Best with PSK power supply (300W). More powerful and wider balanced than almost any of its price rivals.

**MISSION 760i**
- £1199
- Solidly built Swedish amplifier. Very refined and unfatiguing sound.

**DENON PMA-350**
- £380
- Exceptionally smooth and mid-treble plus the superb dynamic range of the A400.

**MISSION 780**
- £1800
- The enormous of refinement, although not the best sounding of any around.

**MISSION 780**
- £1800
- The amplifier that shook up the UK hi-fi industry. Very hi-fi sounding, but can sound good with high-end equipment.

**PAUL WELCH**
- £203
- Surprisingly warm and well-rounded for the price. Worth seeking out.

**TANNOY 603**
- £124.99
- Gentle performer. But not especially transparent. But can sound too forward. Best suited to Linn equipment.

**MONITOR AUDIO 1200 GLD**
- £949.99
- Well suited to the ESL-63 loudspeakers. Beautifully built, smooth sound but not transparent; weak bass.

**TANNOY GRFM**
- £3500
- Giant loudspeakers. Capable of awesome sound. Need good valve amplification.

**RECOMMENDED PRODUCTS**

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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 p-n-up wire types (dipoles) only produce distortion. Simple p-n-up wire types (dipoles) only provide enough signal within a few miles of a transmitter. Otherwise, there 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 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 can benefit from the higher 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. Although whips and curved dipoles are simple, indoor dipoles (i.e. negative gain). They are suitable only for areas of high signal strength. Whips 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.

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 directivity. 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.

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.

ALL-ROUND AERIALS AND WHIPS
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.

ROTATORS
Aerial rotators 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.

AERIAL AMPLIFIERS
These roles apart, amplifiers boost noise and nosh signal 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.

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.

INDUSTRIES
The CAI has a countrywide list of aerial installers who are members that abide by the rules below.

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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 disruptive 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 MS 5.10s are quite sizable beasts 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.

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 disenchating. 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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World Radio History
MISSION 760i or Yamaha CDX660 CD player, the RX550 receiver (55W) and a 1 have just bought a Yamaha 761i, Tannoy 603 or 605, KEF it seems I have a good choice. 1 want to pay up to £180 and so latter on your good report.

IMPEDANCE WORRIES
Do you agree I should listen to do want to ensure that what 1 upon personal choice and I will so 1 do realise a lot depends different speakers of similar price would, say, the Tannoy 605 be for my 55watt Yamaha, but electrically match my equipment listen before I decide. However, I

Yamaha RX550 say for speaker because they are larger? Ditto better sound than the 603 OK?. Also, would they give speaker, A+B I 2i1 min./speaker". Classical music and would greatly appreciate your comments.

Ripon,
Mr D. Goodier,
North Yorkshire.

What Yamaha are trying to tell you is that their amplifier will not drive loads that dip below 6Ω. 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 pairs of loudspeakers and operate them both at the same time, they must be 12Ω minimum so the amplifier will still only 'see' 6Ω. 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 Tannoy 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 8Ω 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 Tannoy XI 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 Maxim 3s with good quality cables and stands such as Furukawa FS-2707 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 a 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 wanting 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 your amplifier. The only 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.

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Whatever you decide to do, audition all the options carefully, because as you rightly point out, it is a personal choice. DB

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
That leaves the Cornholme and are both behind the hook Todmorden and Walsden South TU - 260L. Both are excellent, 122 HI-F1 WORLD FEBRUARY 1993 Haslingden transmitters right hand side of Bacup. This your two closest relay stations, thus many relay transmitters. An area with lots of hills and transmitter and relay station cal map and the BBC map of Aura TU - 50 and the Denon just in case you miss the Jan '93 time you read this. However, you will have already seen my 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

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 office! 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 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 CD5211 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, converter, 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!
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