

Hi-Fi WORLD

JUNE 1992 £2.00

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FIRST REVIEW
TEAC X-1
Compact Disc player



COMPETITION



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*"I recorded copies of the session onto DAT, some **Francinstien** enhanced and others not....Both the artist and the record company independently chose the **Francinstien** enhanced versions"*

Tim Handley
Record Producer
U.K.



*"Listening at home I find **Francinstien** integrates the ambient and direct sound.....The music is more 'loose' from the loudspeakers."*

Erdo Groot
Classical Recording & Editing Baarn
The Netherlands



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From Milan to Milton Keynes digital hi-fi equipment merely reproduces a flat and lifeless stereo image.

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trade winds
trade winds

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



DATABEAT UP-BEAT CD MULTICHANGER

Databeat's first product in domestic circles is the imported NSM CD 3101 FPS CD multichange player. Priced at £2820, the CD 3101 FPS takes the convenience of the CD format and sprinkles it with a dash of computer controlled juke box.

The 3101 is a two box unit. The first is a laptop computer sized box containing 100 CDs held in two magazines. This selects the disc to be played, transferring it to the second box, which looks strikingly like a mid-price Philips CD player. The two are linked by an advanced remote control unit, allowing up to 100 pre-programmed 'concert' selections, as well as scanning and random play facilities. With 100 discs on offer and the potential for programming thousands of tracks, the scan button is not for the faint-hearted! Interested parties with a stack of CDs should contact Databeat at Sound Management Services Ltd., 2 Craven Rd., Newbury, Berks. RG14 5NE. Tel: (0635) 521353.

MORE PROAC IMPROVEMENTS

Having improved the ProAc Response One, the company has now launched an improved MiniTower. While the same drive units have been retained, they are now offset on the baffle so the speakers form mirror-image pairs. The Mk II, at £875, is claimed to have a deeper and wider soundstage.

Also introduced is the £85 Sonic Plinth, veneered to match the wood finishes of the MiniTower Mk II and SuperTower Mk II. Apart from improved aesthetics, the stands are said to ensure optimum bass and are available from accredited ProAc dealers. Contact ProAc, 130-132 Thirsk Road, Borehamwood, Herts. Tel: 081-207 1150.



FLOWERS IN THEIR HAIR . . .

. . . Sergeant Pepper and petrol at twenty-two pence a gallon. That was 1967, when Norman Mordaunt and Rodney Short put their last names together and founded the loudspeaker company. The company that might have been called Norman-Rodney had flower-power been stronger at the time is celebrating its twenty-fifth anniversary this year.



NEW NAIM POWER

Available from Naim dealers in May will be a new power amplifier, the NAP 180. In the same size case as the 250, with a non-magnetic aluminium chassis and cover, it is designed to sit neatly between the 140 and the 250, using NAP 250-type circuit boards and Naim's own NAP 001 output transistors. Separate windings on the transformer feed dedicated power supplies for left and right channels. A 24v feed for Naim pre-amplifiers is built in. The NAP 180 will cost £898.98.

Contact your Naim dealer or Naim Audio Ltd., Southampton Road, Salisbury SP1 2LN, Tel: (0722) 332266.



PORTABLE WORLD

Roberts Radio have brought out a radio-cassette recorder with a difference. Priced at £199.95, this multi-band receiver covers FM stereo, Long Wave, Medium Wave and Short Wave bands, with in-built timer. You can record those

favourite programmes from the other side of the Dateline you'd otherwise have to stay up until three to catch. The RC818 offers forty-five presets, stereo recording and stereo playback using headphones Roberts Radio Co. Ltd., 127 Molesey Ave., West Molesey, Surrey KT8 2RL. Tel: 081-979 7474.



RECORDABLE COMPACT DISC FROM MERIDIAN

Meridian's CDR (Compact Disc - Recordable) player is now available through selected Meridian dealers. Priced at £4,950 including VAT, it's hardly a cheap way of making your own recordings, but it is configured with inputs and outputs which make it suitable for domestic as well as professional use. Though professionals and studios would use it with Meridian's 607 Professional Analogue-to-Digital converter for recording, it comes with on-board processing accessed through analogue phono sockets. For playback, Meridian use Bitstream digital-to-analogue conversion. The Meridian CDR will record on 8cm or 12cm blank discs, which when the recording is finalised, can be replayed on any CD player. Whereas other manufacturers of CDR are restricting their machines purely to the professional market, it will be interesting to see if high-end users take to the format.



PEAR BRING IN SHAHINIAN PAIRS

American speaker designer Dick Shahinian's products are being brought into the U.K by John Burns' Pear Audio. The range of five speakers runs from the ARC - based on the Harman-Kardon Citation 13 which Shahinian designed in 1970 - at £1,065, to the Diapason at £6,880. Shahinian's own publicity makes fascinating, if discursive reading. Once Musical Advisor and Recording Director to a symphony orchestra, he writes as much about music and recordings as he does about his speakers!

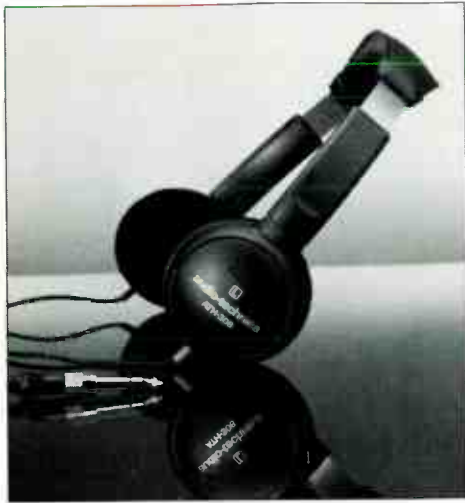
Contact John Burns, Pear Audio, 15 Shawhill Road, Shawlands, Glasgow G41 3RW Tel: 041-636 0090 for details and a dealer list.



PURPLE PATCH

Purple Pitch of Durham, a new audio accessories company, have come up with a turntable stand that doesn't look like a turntable stand. Outwardly a square box with a choice of textile coverings and

hardwood corners, The Music Box, according to the company, is constructed from a carefully chosen and configured combination of wood, plastic and mineral based materials. Purple Pitch claim excellent isolation from unwanted vibration and a stable and non-resonant platform which suits a broad range of turntables. Price is £174 and further details can be obtained from Purple Pitch, 9 Lowes Barn Bank, Durham DH1 3QJ. Tel: 091-386 2101.



AUDIO-TECHNICA BUDGET BUSTING HEADPHONES

Two mid-price open-back headphones with a high sensitivity for personal stereo use come from Audio-Technica this month. The ATH-308's, at £25.95, and the ATH-309's at £35.95 feature light-weight diaphragms, samarium cobalt

magnets and CCAW (Copper Clad Aluminium Wire) voice coils. With padded headbands, interchangeable earpads and a maximum input of 1000mW, which A-T says means they go loud, they look to be the value for money Audio Technica claim.

Audio-Technica, Technica House, Royal London Industrial Estate, Old Lane, Leeds, West Yorkshire LS11 8AG. Tel: (0532) 771441.



BLACK SATIN SHELVING

Goldring have produced two equipment racks to match its Black Satin range of loudspeaker stands. Both are provided with spiked feet and shelves which can be located at five different vertical spacings. The MBS 550 AS has five shelves and retails at £134.95; the MBS 330 AS has three and retails at £99.95. Additional shelves are £20.

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

IN BRIEF

NEW MONITOR AUDIO DISTRIBUTORS

Monitor Audio have switched distributors for their range of loudspeakers. Hayden Labs, who handle the Denon range, have taken over. Mo Iqbal, owner of Monitor Audio, says - "in genuine MoSpeak" according to the press release - "MA still lives!" Existing customer guarantees will be honoured by Monitor Audio and Hayden Labs. Contact Hayden Laboratories Ltd., Chiltern Hill, Chalfont St. Peter, Bucks. SL9 9UG. Tel: (0753) 888447.

SENNHEISER GO IT ALONE

Sennheiser will now be distributing their range of headphones and microphones themselves, including the fabulous - and very expensive - valve powered Orpheus as well as the much more affordable, popular and portable ones which are such a familiar sight. Sennheiser U.K. are at 12 Davies Way, Knaves Beach Business Centre, Loudwater, High Wycombe, Buckinghamshire, HP10 9QY. Tel: (0628) 850811.

MORDAUNT-SHORT ON THE MOVE

Only two years after the last move, Mordaunt-Short are mobile again. The success of both Mordaunt-Short and Epos loudspeaker brands means they have been looking for more space and have found it in parent group TGI's industrial development near Havant. From Monday 6th April the new address was Mordaunt-Short Ltd., 3 Ridgway, Havant, Hampshire PO9 1JS. The new telephone number to go with the new address is Havant (0705) 407722.

SHIFTING IN SCANDINAVIA . . .

For what is obviously a larger number of Swedish readers than we imagined, Erato Audio Video AB of Gothenburg took the trouble to fax us with their change of address. So, our Scandinavian fans, or our British ones crossing the North Sea, will now find them at Fredrik Barno, Otterhallegatan 1, 411 18 Gothenburg, Sweden.

AND ALSO IN WORTHING

Phase 3 HiFi have moved to larger premises in Worthing. New address is 215 Tarring Road, Worthing, West Sussex. Tel: (0903) 245577.

TRANSFIGURED VINYL CONTINUED

We hear that the price of Immutable Music Inc.'s Transfiguration cartridge (the American footballer's-helmet shaped cartridge featured in Tradewinds last month) will be £1,450 in the U.K. Not bargain basement, but not as much as we feared it might be. It is being imported by Reference Imports, Pine Ridge, Theobalds Green, Sandy Cross, Heathfield, Sussex TN21 8BS. Tel: (0435) 868004.

ALLISON DO UNDER THE TON

Allison Acoustics, having secured production in Europe for the AL range, have been able to reduce prices. First beneficiary is the AL100, down from £119.90 to £99.90 a pair.

OVERTURE TO LINN OWNERS

Overture, after the Linn shake-out, Oxfordshire's only Linn dealer, have announced they will service and maintain any Linn product supplied in the county. Contact Frank Moran or Chris Henry at Overture Ltd., 2 Church Lane, Banbury, Oxon. OX16 8LR. Tel: (0295) 272158

NUMBER CHANGE

British Telecom, in its now normal state of flux as far as hi-fi companies are concerned, has changed NAD's telephone number to 081-343 3240.

MAXIMISING THE RANGE

With the Maxim 3 already becoming a budget speaker beater, Goodmans aren't resting. We hear two larger models are in development and will be added to the range later this year.

YORKS LINX EXTINCT

Wharfedale, having recently announced it was suspending electronics production under its Leak, Cambridge and Linx brand-names, has announced that Linx is to be finally extinguished. Wharfedale say they will honour warranties and keep spares for Linx products. An announcement on the future of the Cambridge and Leak ranges is expected soon.

Contact: Wharfedale Loudspeakers Ltd., Sandeas Way, Crossgates, Leeds LS15 8AL. Tel: (0532) 601222.

★★★ LETTER OF THE MONTH

WIDE OF THE MARK?

I was interested to read Alan Sircorn's comments in the April issue about the demise of vinyl. As an LP fan who is slowly being forced to buy a CD player by the unavailability of new vinyl (and hasn't found an enjoyable one yet!), I agree with almost all of what he says. I feel that his conclusion, though, is some way wide of the mark.

He foresees a time, a few years hence, when music will be sold almost exclusively on CD and DCC, with LP and MC unavailable. This I agree with. But I feel that one can draw conclusions beyond this point.

Consider, from the point of view of the hardware manufacturers, the software manufacturers and the retailers, what has been achieved over the past decade. Sales of turntables in the high street had fallen to 'replacement' level. Sales of media were restricted to new releases, plus a steady trickle of back-catalogue. In the past ten years, at least one new CD player has been sold to almost every household in this country! And these households have proceeded to buy not only new releases on the new media, but to *replace* all their existing music collections! The manufacturers and dealers must have thought it was Christmas all year round.

With that achieved over the last decade, it doesn't take a crystal ball to see that sales of CD players will slowly fall to replacement level, as the market becomes mature. Furthermore, there is only so much T-Rex back-catalogue that you can recycle, so media sales will fall away to the position they held a decade ago.

WIN FURUKAWA FA-2010 BALANCED ANALOGUE INTERCONNECT CABLES

(1 metre pairs)

We are offering a little incentive to encourage readers to fill their fountain pens and break open a new notepad. From this month, the writer of the most interesting or funniest letter will receive a free set of Furukawa FA-2010 "balanced analogue" interconnect cables, worth £95. These are the cables we have recommended in the past.



So, if you're a manufacturer, you've done it once, why can't you do it again? Indeed, you *need* to do it again in order to keep your profits at the levels seen over the last decade, or else

your shareholders will cause big trouble! So I think that we will begin to see a backpedalling on the 'Perfect CD sound' line, to be followed in a few years by a new 'perfect' medium, with advertising once more enticing us to buy new hardware and replace our complete music collections.

Am I too cynical? In one sense I hope so, but in another I hope that this scenario does come to pass. We, the public, have been educated that bigger numbers are better, so a super-CD sampling at 24/120k-Hz (as suggested by, amongst others, Tim de Paravicini) might be perceived as being a marketing step forward. Only then will it get built!

Peter Wood, Cambridge.

Cynical? Not at all. Very realistic is more like it. As you say, broadly speaking, the need to innovate is profit driven these days, innovation for the

sake of mass (worldwide) sales now being the sole prerogative of the electrical giants.

Recently, Philips have been disarmingly frank about this. They readily explain that in their view it is necessary to launch DCC now because the prerecorded cassette has suddenly and inexplicably gone into rapid sales decline, just like LP after it hit a peak in 1978. In fact, they admit that DCC is late; it should have been launched two years ago, according to market statistics.

To any music lover, this seems both commercially cynical and detached from 'real' needs. All the same, it is the way things now are. If Philips don't address the market, others will of course, so competition is the spur.

From an understanding of this outlook, certain unusual and interesting conclusions can be drawn. If music carriers can be drawn. If music carriers follow normal product lifecycle patterns, it is best to delay the onset of market saturation for as long as possible. In the case of CD, doing this by keeping the price high maximises profits and slows rate of acceptance, lengthening product lifetime. So you could say that the British ruse of keeping CD prices as high as possible is nothing other than good business sense. The market is being manipulated to maximise yield in other words. Is it any wonder we have such a powerful music business in the UK?

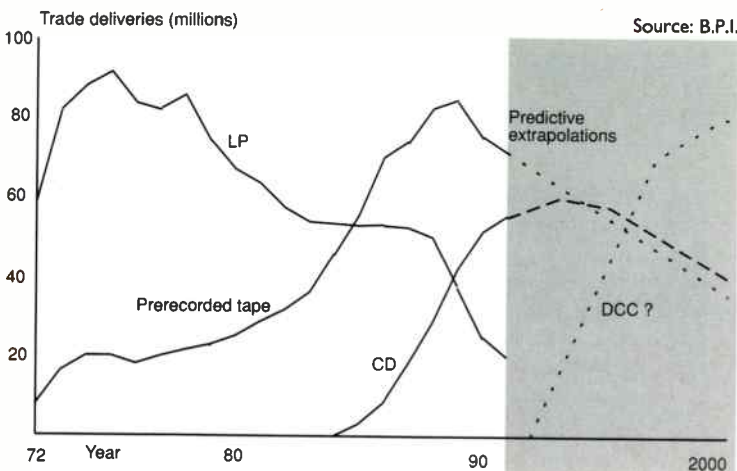
What the consumer electronics and music industry fear is the destruction of a 'good earner' through unbridled competition. DAT threatened to harm or destroy CD; the industry closed ranks against it. Now we have DCC and Minidisc coming up. I believe that DCC could threaten CD in the same way that I predicted DAT would harm CD. Philips think not. Others suspect that Sony's Minidisc could destabilise CD, sending sales into decline.

The future looks very uncertain. Ultimately, as CD sales start to plateau out, due to market saturation, the industry would replace it, as you say. That hasn't happened in Britain yet, but in other markets, like the USA, Germany and Japan, it may be getting close.

Funny you should mention higher sampling rates. Even before DCC has been launched Marantz say their first product will not be sixteen-bit, but eighteen-bit. And apparently DCC is open ended and can be continually developed, so a

The LP has been in decline since 1975. Prerecorded tapes were taking over before CD was launched. Philips say DCC should have been launched around 1990 as the prerecorded cassette went into decline.

The predictions from 1992 to 2000 are based on the 'bell curve' of a product's life cycle.



higher sampling rate may come about. I strongly suspect that in the long run DCC may be upgraded to something much greater than its launch specification.

Ultimately though, a solid state storage medium must come about, digital data compression systems like PASC (used in DCC) bringing the date forward by about ten years. Only then can I see a possible end to this continual product replacement strategy that many feel is unacceptably manipulative. Alternatively, people might just refuse to buy either DCC or Minidisc, as they did Laservision, DAT, Elcassette, V2000, etc. etc. **NK**



FREDDY AHMET

readers' reply

GREENER AND GREENER

Before the greening debate gets too out of control I thought I would pass on to you three improvements I've discovered using this breakthrough technology of the nineties:

Whenever I play Kate Bush my dog howls and runs out of the room. Since feeding him on dogfood from a tin with a green label he not only stays to listen but sings along.

My 1920's wind up 78 gramophone has always been rather LowFi. Since keeping the needles in the cardboard inner from a green toilet roll not only have the crackles vanished, but I'm sure I can detect the makings of a stereo image.

After my neighbour painted his house green my radio signal level doubled, except for Radio One, which has disappeared totally. This must be the best tweak yet!

**I E Gerrard,
Solihull, West Midlands**

For this relief, much thanks. I was afraid the whole green correspondence (see page 46) might get too fantastical and facetious. Expect a letter from Esther, I believe there's been a bit of a shortage of singing dogs of late. Since I never could sing along with Kate Bush, I'll try the dogfood myself. Have you tried a cardboard pyramid for your needles, though? They were said to keep razor blades sharp, but since I wear a beard I never put it to the test. I put up a green-painted cabinet in my neighbour's bathroom a few months ago, but I still receive Radio One at the same strength. Wrong shade? Or not enough green area? **EB.**

COMPACT ARGUMENT

I have just read Gary Hastie's letter (April Issue) and sympathise with him and other enthusiastic vinyl listeners on the sad, seemingly inevitable demise of the medium.

But I am equally saddened and enraged by many vinyl enthusiasts' utter dismissal of Compact Disc as a 'music' medium and Mr. Hastie's in particular, when he states that he is yet to hear any which "makes a sound vaguely resembling music."

This is vinyl hi-fi snobbery rearing its ugly head out of the sand from where it is usually buried. I don't own a turntable (surprised?). My system is CD based, but I am aware that a quality vinyl set-up can outperform Compact Disc. Yet there are players out there that offer an excellent, dynamic sound and you don't have to spend thousands. The budget/mid-price player market is strongly contended and manufacturers are continually making advances.

With this in mind I urge Mr. Hastie when he next listens to Compact Disc, to listen with an open mind and, if he can't, pretend it has a Linn or Naim label.

**S. Murphy,
Halewood, Liverpool.**

After many years of listening to the softer sound of most turntables, I admit to finding some difficulties in acclimatising myself to Compact Disc. On the other hand, I know of many audiophiles who have 'gone digital' completely without undue heartache. They still comment on how 'nice' turntables sound, but have successfully accepted the digital medium. Today, it is only when

the two formats are compared side-by-side that any shortcomings manifest themselves.

Although there is a great deal of blind prejudice in the LP/CD debate, some listeners do find the digital sound harsh, compared to analogue. Witness those who have walked away from demonstrations of 'music-lovers' CD players, such as Linn, Naim, Micromega and the Mark Levinson DAC. Some have left the room shaking their heads, suggesting that digital "is still not right" - a few of these head shakers base their stance on stubbornness alone. Others however, although they can see that the player is doing as well as possible, genuinely take little pleasure in the sound of digital.

A good analogy comes from the whisky business. In the past few years, CD was like a poor blended 'name' brand Scotch - O.K. for most people, but lacking in finesse. Today, it's like a 10 year old single malt - gaining refinement and subtlety and very acceptable for most palettes. Those who have developed a taste for 25 year old malts from Speyside distilleries, however, find a mere 10 year old malt rough and coarse by comparison. Analogue reproduction has been around for many years, so it has had far longer to age. Would anyone like a glass of cartridge? **AS**

BACK TO A VINYL FUTURE

I have been reading, with interest, the articles contained in the Kaleidoscope and Sircom's Circuits sections of your magazine. Especially those in the April edition.

There remains one aspect of

Send your letters to:

Hi-Fi World Letters

Page, 64 Castellain

Road, Maida Vale,

London W9 1EX.

the search for 'audio Nirvana' which has not, in my opinion, been addressed so far. That is whether, after further development, digitally encoded audio will be capable of portraying a musical performance even more truthfully, through a conventional stereo system, than a good contemporary vinyl based system.

When I listen to and assess a system, my personal preferences are for the following performance parameters:

- 1) Tonal veracity;
- 2) Timing;
- 3) Rhythm;
- 4) Involvement;
- 5) Recorded acoustic information.

On a good day, with a following wind, vinyl can achieve all five of these criteria. At present, good CD has achieved about 80% of these targets, but is generally lacking in involvement. If all of these problems are solved we may, in a couple of years, be back to where we were with vinyl stereo in the 1980's. Some might say the 1960's! But where do we go from here? Two speakers still have their limitations.

I think your commentators

continued on page 82...

PRIMA



**A bookshelf size, hi-fi loudspeaker suitable for Audio-Visual
or Nicam installations**

"A Heybrook family sound with drama, life and plenty of bass."

**Alan Sircom
Hi-Fi World, March 1992**

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Every visitor to SME leaves with a strong impression of the company's obsession with quality. There are innumerable examples around both the factory and the founder's home of a lifetime spent striving for perfection. But I mean that in the real sense of the term, rather than as a simple cliché. For some, or perhaps many of us, the sort of effort, not to mention the expense, that has been invested would look extreme.

Producing a pickup arm so nearly perfect in design and execution that it lies unmatched by either German or Japanese rivals must of course tell of something special, but at the end of the day, it was Alastair Robertson-Aikman's vision of a perfect hi-fi system that I found so intriguing. By far, his was one of the most impressive systems I have ever heard.

My almost instant appreciation and recognition of his aims stems from the fact that they are very similar to my own. It's just that he appears to have travelled much further down the path leading to a particular end result than I have the money, time or room for. But let me describe just what it is that ARA (as he is always known) has achieved.

Small Theatre

Imagine walking into a small theatre; this is ARA's listening room. At least, it is in terms of pure size, if not in furnishing. The room is 36ft long by about 25ft wide, with French windows along one end. They give it plenty of light and a fine view over a long garden and green Sussex fields. At this end also there is a long settee, and an SME Model 30 turntable with SME V arm and Clearaudio Insider cartridge that together feed a Malcolm Hawksford-

designed, battery-powered LFD Audio phono-stage into an Audio Research SP11 MkII preamp. What's at the other end? A curtain that stretches the full length and height of the room, behind which the speakers hide. No furniture sits in between.

The setting is opulent, with woven silk Chinese carpets, chandeliers and lifesize figures of turbaned boys holding flickering torches at either end of the stage. All this is a bit more grand than the usual corporate listening room, but it didn't sway my opinion of the end result. Nothing could, because it was too distinctive - and also well known to me for

reasons I will shortly explain.

Playing The Pirates of Penzance we were confronted by a complete, life size performance on a stage roughly 20ft wide. The performers sounded real, so good were the individual images. There was no trace of 'hi-fi' either: no overstrong and ringing treble, no fruity or thunderous bass, no colouration - in fact little that could give the game away. If real people had been drafted in, perhaps the images might have become even harder and firmer, but they were every bit strong enough to be convincing.

ARA's heavily modified Quad Electrostatics in place in his listening room. ▼



Reflections from Noel Keywood kaleidoscope

Alan and I smiled. As the acoustically transparent curtains drew back with an almost majestic slowness, both of us knew that this wasn't 'hi-fi' in the debased sense of the word, with everything over-proportioned to sound larger than life. This was a serious attempt at obtaining an illusion of reality - and by a long chalk we knew it was one of the best we had ever heard - or may ever hear.

Legend

This performance has made the speakers ARA uses something of a legend in the hi-fi industry; they are mechanically modified Quad ESL-63 electrostatics, two a side, each pair driven by a massive Krell Reference monoblock. Which is why I recognised and appreciated what ARA is striving for. I've been struggling with the same speakers for years, seeing the same great strengths, but also suffering the same weaknesses.

Quads throw a wonderful image of course; this has always been the case. Sitting so far away from them made the image appear sharp and real over a range of listening positions in ARA's set up. Two per side provide more volume, but they cannot be stacked like the old, original electrostatics. Instead they are placed in an L pattern, in plan view. One

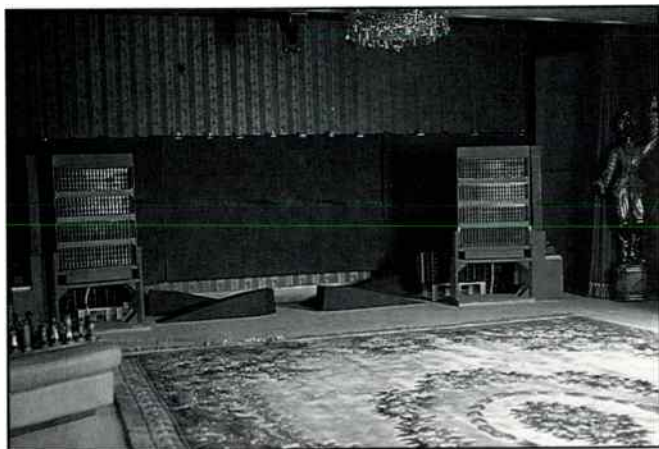
speaker fires forward towards listeners, the other outward. In Quad's own words, an ESL-63 "produces a sound pressure pattern which is an exact replica of that from an ideal source placed some 30cms behind the plane of the diaphragm." As long as the source centres coincide and the speakers are in phase, as many 63s as possible can be arranged in a circle, much like Stonehenge. At £2072 per pair, most people go no further than using two pairs, no matter how well off they are!

Much to Quad's chagrin and disapproval, we were told, the 63s were stripped down to their basics and rebuilt. In

particular, ARA insisted that firmly clamping the electrode structure and placing the frames in rigid wooden stands, up off the floor, significantly improved power handling.

Few people realise that as standard, the electrode structure of the 63 is attached to the none-too-rigid frame by foam damping pads. Quad tell me that this is to damp a fundamental panel resonance at 90Hz, but ARA insists that this is not a problem. Like my own Quads, ARA's are stripped down, but where I dare not remove the dust protection covers in dirty old Central London, he does.

It's a peculiar fact that the sound most manufacturers get in their listening rooms is embarrassing. Purpose-built rooms generally sound unnatural to the ear and get rejected for their peculiarity. Not so SME's. I had heard many a tale, told in awe, about ARA's system; none understated the case. The efforts of other manufacturers pale against his; some are even laughable in comparison. It's just a great shame that his achievement isn't more widely recognised and appreciated. This, I would like to tell many manufacturers whose inflated disco systems make me squirm, is hi-fi! ●



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After-market, bolt-on goodies have never been well received in the hi-fi industry. People are allowed to mess around with cables, stands, cones and all Mana of tables, but when it comes to fiddling about with things mechanical, manufacturers are apt to get highly upset.

It is hardly surprising; common business sense dictates that products are best left unsullied. Allowing 'bastardisation' by all and sundry is a sure way to dilute a manufacturer's credibility.

As, by and large, hi-fi equipment now consists of a collection of electronic devices, the range of 'hands-dirty' tweaks is shrinking. We now have a variety of squidgy feet, equipment clamps and green pens and rings, but there are few who customise the components themselves. We have Avondale Audio, who breathe life into anything that uses a power supply and there is also T&R Industries in this country and Mark McCormack's Mod Squad in the USA who convert existing CD players, by adding extra mass, different circuit boards and even fancy exoskeletons. Deltec's new Deltran conversion, tested in this issue, must also rank among these hi-fi hot-rodgers.

Time was, back in the turntable days, anything could be tweaked. Given a Garrard 301 motor unit, the arm, cartridge, even the plinth, were all game for tweaking sport. Today, however, such things are rare. Last year's battle over Pink Triangle's power supply for the Linn Sondek proved just how sensitive manufacturers are toward their products. People are justifiably apprehensive about modifying electronics and the promise of invalidated guarantees scares all but the hardiest of tweekers.

Healthy Tweaks

This is a shame, as there are a number of healthy tweaks that can be performed. A few months ago, a press release from Max Townshend, of Rock Reference fame, pointed to a handy little tweak for owners of non-suspended turntables such as the Rega Planar 3. For about £90, owners of such turntables can add a damping trough and paddle, thus allowing damping at the headshell end of the tone arm. This trough has only been seen previously on Max's turntables, such as the Rock, Rock Reference and the small Avalon.

From a fundamental viewpoint, damping a tonearm at the headshell is considered a Good Idea. It allows a mechanical grounding close to the cartridge. In addition, such damping can

help to overcome certain armtube resonances. Max Townshend suggests that such damping effectively reduces such resonances dramatically.

A few arms, including my own SME Series V, allow damping, but it is invariably at the arm base. While such damping can help matters, when we are dealing with the near-microscopic distances involved with cartridges, damping at the arm base may as well be four miles away. In addition, arm base damping does little for the problem of armtube resonance.

Unfortunately, most reviewers possess turntables with a suspension system, such as Linns, Michells and Pinks, making a damping trough difficult to fit with



Feedback from Alan Sircom

sircom's circuits

ease. Those reviewers that use unsuspended turntables are apt to use Townshend's Rock or Rock Reference anyway. This means that a review of a 'troughed' turntable would be difficult to perform.

To redress this, Max has created a variant of his original damping trough, designed for suspended turntables. This is done by putting the trough on an outrigger which sits between the base of the arm and the turntable's arm board. This is not as elegant a solution as the trough designed for the fixed turntables, but it does allow owners of decks with suspension to try the Rock remedy.

I received one of these outrigger troughs, together with one destined to sit on a friend's highly-modified Rega Planar 3. This turntable, which sits upon a Mana shelf, has a separate power supply and an acrylic platter. It does, however provide an occasional test-bed for such devices.

There is a world of difference between the two troughs when it comes to installation. On the Rega, installation takes about fifteen minutes; the Pink takes a fair while longer. First, there are the bolts between the arm and armplate. The standard bolts are too short when the outrigger bracket is placed underneath the base plate of the SME V that is the normal partner to my own Pink Triangle Anniversary.

Unfortunately, the long bolts that SME supply are too long, so some minor surgery was needed before the bracket was fitted.

Once the outrigger was in place, it fouled the glass top plate of the Anniversary, even with the suspension at its maximum. So the glass top plate needed to be removed. Finally, to get the be-troughed arm to play a complete side of music, the trough needed to be anchored, thus effectively disabling the suspension system, at least partially. On a turntable with a less floppy suspension, such difficulties will be easier to overcome.

Inoperative

Even with one third of the Pink's suspension rendered inoperative, the difference the trough made was clear. At this point, I spoke with the owner of the modified Rega; he and I had both found broadly similar changes.

We both discovered, independently, that the trough improved the bass by eliminating the overhang. At first, it seems as if the trough robs the turntable of bass, but in fact the opposite is true; deep bass notes are tighter, drier and easier to define, seeming to have a less artificial quality about them.

I have yet to check this with my Rega reviewer, but Max also suggests that the trough encourages the power amplifier to run cooler. Bass notes are usually the most demanding for an amplifier

and the better the control over the bass, the cooler the amplifier. I ran the Lectum and the John Shearne solid state power amplifiers with and without the damping trough and the amplifier does run at a lower temperature.

I was impressed that the trough did not add a grumbling bass, but only added depth when it was needed. It also affected its speed, maintaining the transparency of the Pink into the lower registers.

It definitely adds that Rock-like solidity throughout the frequency range. This is only noticeable on removing it, when the pitch of instruments becomes watery and vague by comparison to the Compact Disc-like solidity of the be-troughed turntable. Such

solidity helps to make sense of even the most complex of rhythms.

I believe that the effects on a Rega are greater than on the Pink. It changes the bass in what most people would consider a positive manner on both turntables, but I feel that there is less to improve in the basic sound quality of the Pink.

There are few negative aspects to the trough, aside from the installation problems and the slight inconvenience encountered by swinging the fluid-filled trough into place. I have also spoken to another trough owner; this time one who added it to a Pink Triangle PT TOO. He encountered fewer installation problems than I, probably due to the stiffer suspension. He suggested that there may be a slight thickening, even coloration, in the upper registers. Such coloration, however, is so minor that it is vastly outweighed by the improvements manifested in the bass.

In high-end, suspended turntables the improvements the Townshend Trough makes are well worth the labour, hardship and manoeuvring to install. But for those with a Rega Planar 3, who want to upgrade, but don't feel justified in spending new turntable money, I think that such a trough is almost mandatory. I dare say that Roy Gandy of Rega will have something to say about this ●

Cyclops: The Compact Disc player. At least that's what TEAC might have called their new top-of-the-range monster had the title X-1 not already been adopted. And this really is a monster, a 40lb tour-de-force of engineering capped-off with a high density fascia crafted from ceramic and stainless steel. The price? If you need to know then you can't afford it, and at £2300 that means most of us.

Those of you who are familiar with TEAC's classy CD transports will

recognise the narrow fluorescent display though the contoured fascia is modelled on their existing integrated players. Hit the Eject button and a Nextel-covered tray slides into view while, round the back, you've a choice of unbalanced (phono) or balanced XLR outputs to complement the optical and coaxial digital facility.

Once the CD is loaded it's immediately seized by TEAC's VRDS mechanism, similar to the die-cast structure that is featured in both the P-10 and P-2 CD transports. Nevertheless the X-1's power supply and

digital support circuitry are basic compared to the sophistication of the P-2. Still, credit where it's due, this is the first integrated player to feature such an advanced transport system.

VRDS, or Vibration-free Rigid Disc-clamping System, is a highly ingenious answer to the eccentricities, mild warps and vibrations suffered by all CDs in any conventional mechanism. Irregularities, I might add, that can easily disturb the RF eye-pattern recovered by the laser, causing an increase in digital jitter and distortion further down the chain.



It works by forcing the CD up against an inverted turntable which is supported by a yoke and driven from above by a powerful, brushless motor. The turntable is cast from a zinc alloy and machined to leave a slightly concave underside which irons-out the surface of the disc. Meanwhile, the guts of the TEAC X-1 are partially illuminated by a small lamp, so you can view the topside of the VRDS mechanism in action.

Hmmm. While the mechanism itself is of genuine benefit this porthole is a gimmick, pure and simple. All remaining features, save track skip, play and pause, are relocated onto a large remote handset which offers direct track access, index skip, repeat and program play options. But why, oh why, is there no stop button on the player itself?

Gimmicks and gadgetry are all part and parcel of the high-end these days, especially when expensive CD players are routinely knocked for six by budget wonders costing £300 or so. Fortunately the X-1 has more to recommend it than a bizarre transport mechanism and Brobdingnagian standards of construction.

Pungent Flavour

This is no technical wonder hamstrung by an over-polite sound. Instead TEAC have engineered a degree of character into this player, a potent, beefy confidence that permeates every sort of music. A pungent flavour that will either capture your imagination or shock your sensibilities.

But let's get something perfectly clear from the outset. The X-1 is no advance on the very best CD player or transport/DAC combination. It is, however, a very deliberate step sideways, something a little different, a player with flair, with identity and, above all, courage.

So at a time when many beautifully-crafted high-end players are opting for a thoroughly genial yet faceless sound it's a real delight to discover a player that retains the spark of individuality. This, then, is the crux of the X-1, a player that holds your interest by its sheer unpredictability, introducing subtle twists and turns that throw new light on old and cherished recordings.

In all likelihood its bass will strike you first, great meaty slabs which have the unnerving habit of rippling from even modestly-proportioned speakers. Its bass lacks the tactility, the extreme focus or cutting-edge of the Deftec PDM2, for example. Yet it captures the ponderous weight and momentum of grand classical works with a rare gung-ho confidence, setting itself apart from other integrated players - high-end or otherwise.

Take the Eurodisc recording of Brahms' Fourth Symphony and Tragic Overture in D (by the Dresden Staatskapelle) as an awesome example.

The recording itself captures the grumbling tenor of strings, low brass and timpani to marvellous effect but so few players seem able to capitalise on this potential.

TEAC's X-1 is one of the handful that grasp this earthy and tremulous quality, this resonant presence that heightens the tension and thrill of the orchestra. You are launched headlong into the depths of the music whose striding changes in scale are handled with almost brutal ease.

The concept of kid gloves is clearly an alien one. It jumps in feet first, bold as brass, eager and enthusiastic. Fortunately it's a strategy that pays-off, for the TEAC X-1 rarely trips up. Even with as intense an Overture as this, the X-1 marches through, losing none of the scale or drama of the piece. It does, however, ride roughshod over subtle if incidental inflections such as the glimmer of percussion or faint protest of strings.

The X-1 is not a crude or crass-sounding player. Nevertheless, I was taken more by the immediacy, the impact and sheer hugeness of this orchestra than individual elements within the performance. This is not an analytical player, not a player that unwinds each convoluted strand from another. Boldness, power and authority take precedence and so its music tends to be as compelling as it is unstoppable.

This same self-assurance comes to dominate the simplest CDs. Wet Wet

Wet's Put the Light On is certainly less demanding than Brahms' Symphonies, yet the X-1 still manages to convey a great sense of atmosphere, the bodhran and low whistle adding a distinctly Irish lilt to the rich timbre of acoustic guitar. The voices appear fresh, full of life and vigour, while the music as a whole sounds typically bold and forthright, without a hint of sibilance or aggression. Once again the inbred character of the X-1 is difficult to miss.

Hallmark

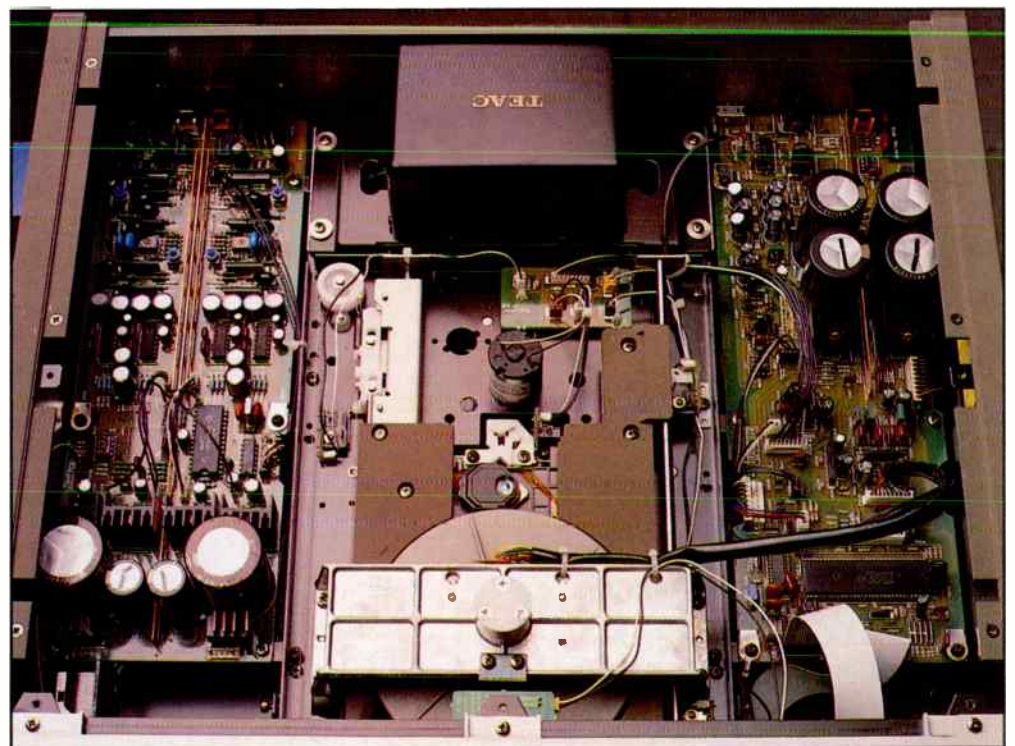
Julia Fordham's Swept is a squeaky-clean recording, yet the power and emotion behind her voice is often lost as the image stretches awkwardly between the speakers. Not this time. On this occasion the X-1 held her voice in check, poised convincingly between the speakers and quite divorced from the added reverb which pulsed gently into the depths of the soundstage. Once again, the marvellous sense of space, the effortless sweep of sound and taut imaging were, by now, familiar hallmarks of the X-1.

Below: Internally, the neatly built X-1 shows its unique VRDS rigid disc clamping system.

Paul Miller examines Teac's new top-of-the-range

Compact Disc player, the X-1.

TOP TEAC



Now that we have seen a few reviews of the Audio Note loudspeakers, all of which have been very complimentary, I would like to explain some of the parameters which we believe to govern loudspeaker design and their behaviour in the average living environment.

Having made a long and careful study, which is still going on, we have found four factors that greatly influence loudspeaker performance and behaviour.

- 1 Unit to unit consistency.
- 2 Dispersion.
- 3 Dynamic room behaviour.
- 4 Efficiency and amplifier load.

I shall deal with these in the above order.

Within a pair of speakers, it is critical that there is as little deviation in acoustic output between the two speakers as possible. If there is much difference in the acoustic output between one speaker in a pair and its partner, it is not possible for that pair of speakers to reproduce a proper stereo signal with a correct left-to-right balance, back-to-front stage or instrument timbre or position.

The detrimental effects of great differences in acoustic output between the speakers in a pair on the performance of a stereo system should not be underestimated, as it is a major contributory factor to the confusing array of contradictory results achieved with speaker-amplifier and speaker-cable combinations and thus really stands in the way of broader agreement on what works and what does not.

Our loudspeakers are all individually adjusted to have a unit-to-unit (within a pair) deviation of no more than ± 2 dB over the full bandwidth. This is furthermore achieved under dynamic, live, conditions in an environment which is as reverberant as a normal living room at a minimum distance of 1.75 meters.

All our tests have shown that in a loudspeaker which has a good dynamic response, especially in the bass, where the room has its lowest saturation threshold, it is very important for the speaker to have a "fast" bass response. If you take a kettle drum into a room you will find that you can play that very loud indeed, with the room reacting with resonances of its own. From this it can be concluded that it would be desirable for a speaker to have the same property.

This requires the use of the lightest possible diaphragm with the strongest possible generator (magnet), coupled to a very carefully designed cabinet that "loads" the unit very efficiently at low frequencies.

Any energy "stored" by the drive unit or cabinet will make the speaker respond slower than is desirable and contribute to "holding on" to the energy, which in turn will leave the sound there for longer than desirable. Remember that the room has an acoustic "memory" of its own (its resonance frequency) and that has a reaction time of its own. So if the speaker or instrument is quick the room will not have time to react; conversely, if the speaker is slow, the room is given more time.

A speaker's efficiency greatly aids its dynamic behaviour as it couples more effectively to the air, partly by easing the amplifier's dynamic transfer capability. It should be understood that amplifier power in itself does guarantee dynamics, dynamic transfer is a different property altogether and should not be confused with loudness.

Dispersion

Obviously, room interaction and its effect on the speakers' output will have some influence on the speakers' behaviour in the room. It is therefore of the utmost importance that the speakers' output is "seen" by the room in the same way that it would see as real instrument.

This view contradicts current thinking, but is based on the following considerations.

All rooms, like concert halls, have some character of their own, and to have as a goal that a speaker must sound the same in all rooms is absurd. What, in my opinion, counts, is that the speaker should react no

differently to any given room than an instrument would do. For instance, if you move a violinist from room to room, the sound of his violin will change slightly, but most importantly you will, in each different room, be able to hear that it is the same violin being played by the same musician. A pair of loudspeakers should be expected to do better than that.

We have therefore contrived to ensure that the speakers' acoustic output as closely as possible resembles that of an inverse microphone, i.e. each speaker should act as a hemispherical pressure generator over its full bandwidth. Instruments are omnidirectional pressure generators as a general rule, and since the microphone can only pick up the frontal part of this in real time and the remainder is a time-delayed reflection, it seems to me to make sense to design the speaker to be able to reproduce just that.

All Audio Note loudspeakers are therefore designed for the widest possible dispersion and evenness of off-axis response over the full bandwidth.

It must be understood that although we have come a long way towards this goal (the AN-Es response at 90 degrees off-axis is some 6dB down at 15kHz) we are some way from perfection in this

respect, especially when price is made a consideration.

Dynamic Room Behaviour

All rooms, regardless of size, have an acoustic saturation level, which varies with frequency; normally it is predominantly a problem at low frequencies.

This level is also dependent on loudness and duration of frequency energy.

Efficiency

I shall touch briefly on this aspect, not because it is unimportant, but space is running out!

In my opinion speaker efficiency is one of the most misunderstood and contrived subjects in Audio; since the availability of inexpensive amplifier power in the early 1960's, speaker efficiency has been regarded as almost unnecessary. This is a grossly wrong assumption!

Whilst it is true that amplifier power can achieve the necessary loudness from a less efficient speaker, to equate that to dynamic ability is to completely misconstrue the properties of these two aspects of performance. Loudness is NO compensation for dynamic range and never will be.

Speaker efficiency should be viewed as a question of maximising the amount of sound you get from the signal transferred from the amplifier. As an example, a speaker of 90dB efficiency only turns about 3% of the energy fed to it into acoustic energy, leaving 97% of the energy to be dissipated as heat.

The gains that can be achieved in fidelity, all other aspects being equal, by improving the speakers' energy conversion to say 10% are very considerable indeed. Think about the next time you read about a speaker that requires a 2-300 watt amplifier to drive it, because it is 80dB or less, or converts about 0.3% of the signal to acoustic energy.

Would you buy a car with that kind of fuel efficiency?

Think about that.

Peter Qvortrup

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THE AUDIO NOTE AN-SERIES LOUDSPEAKERS

However, I've already alluded to a lack of subtlety on the part of this player, an occasional lapse in refinement that's most obvious when listening to the most elegant acoustic recordings. Christy Moore's Reel in the Flickering Light is a perfect example and, I might add, a disc that I've used to evaluate some 70-80 players in the last year.

Grasped firmly by the X-1's VRDS mechanism, this disc liberated its superb sense of space, even if the closing sibilants of each phrase were slightly exaggerated, a mild highlight that drew my attention away from the 'fun', the storytelling atmosphere of the track as a whole. Not only will the very best players pull out the lush timbre of guitar and the husky undercurrent of his voice but they'll also convey the comical atmosphere of the track. In this respect I have to say the X-1 was somewhat less than convincing - engaging, yes, but divorced from the sensation of 'being there'.

So, all things considered, the X-1 is an idiosyncratic but highly entertaining player, bubbling with characterful detail and possessed of as much oh-ah appeal

as you could possibly wish. At this heady price it does not redefine my expectations of CD and is hardly likely to worry the burgeoning CD separates industry. But what it does, it does with flair, confidence and more than a little style. A designer sound - with a price to match ●

The rear of the X-1 has both balanced and unbalanced outputs. To cancel unwanted 'common mode' signals, the balanced output must feed a balanced input - rare on domestic amplifiers.



Measured Performance

As if to complement the exotic VRDS mechanism, TEAC's choice of internal electronics is equally hi-tech. This is no ordinary multi-bit player, for TEAC have opted for no less than four AD182N DACs from Analogue Devices, all addressed by a superb quality NPC 8x oversampling filter and giving a worse-case stopband rejection of 92.5dB.

These are sophisticated DACs designed to compete with Burr Brown's popular 20-bit PCM-63P. Their internal architecture is rather different, however, as every sample is offset at the 4th Significant Bit to ensure that all signals below -18dB are shifted away from the nominal zero-cross point.

Consequently any non-linearity at the 'new' zero-cross point will be 8x less significant (2-to-the-power-16/2-to-the-power-13) than that at the true Most Significant Bit. A neat idea and one that's likely to promote a 'smoother' sound, even if it cannot replicate the monotonic behaviour of a true 1-bit system.

Meanwhile TEAC have separated these 20-bit mono DACs into differential pairs for both L and R channels. A further effort to reduce noise, distortion and improve linearity. Fair enough, though the 112dB S/N ratio is still some 6dB short of that achieved by Denon's DCD-2560 - the only other player to use this combination of DACs. Distortion, on the other hand, matches the Denon between 0dB and -60dB yet steadily improves at lower levels (2.7% instead of 6.5% at -80dB for example).

These levels of THD are marginally ahead of those expected from a Philips-based 16-bit player but still fall way behind a good Bitstreamer. The -30dB/1kHz plot exemplifies this, showing strong 2nd and 3rd harmonics (0.026%) that would fall below the noise with either an MN6476 (Technics), JCE4501 (JVC) or CXD-2552/2562 (Sony) bitstream DAC.

Nevertheless the resolution of this system is on a par with the very best, betraying errors of less than 0.4dB at either 1kHz or 20kHz all the way down to -100dB. Your average 1-bit player is usually some 3-5dB adrift at this point, though absolute linearity is also a function of the oversampling filter and implementation of dither.

In this instance TEAC have stuck with their proprietary ZDII dither scheme. This uses a high-level ultrasonic noise to re-randomise the fixed and predictable quantisation errors that accompany low-level digital signals. In this way fixed errors that would normally accumulate as 2nd, 3rd, 4th etc. harmonics are dispersed, contributing to a slight increase in noise instead of distortion. That's the theory anyway!

In practice, however, we find that the non-monotonic behaviour of a multi-bit DAC introduces its own 'quantisation error' that tends to bump-up low-level distortion. It's tricky to generalise but many people feel this distortion contributes to the brighter or harder sound of the generic multi-bit player.

What's just as important, however, is the reduced output of ultrasonic noise offered by players like the X-1. Because it does not rely on noise-shapers to redistribute the huge quantisation errors caused by truncation in a bitstream-style DAC, its output beyond 20kHz is remarkably low. Take a look at any player running an SAA7350 Bitstream DAC at 11.3MHz, for

example, and its ultrasonic noise up to 100kHz is likely to be 40-50dB higher than that produced by the X-1!

As a result there's very little ultrasonic rubbish available to prompt (audible) intermodulation distortion within the partnering amplifier. So its performance is likely to be very consistent from amplifier to amplifier, system to system. Whether you appreciate the X-1's performance is another matter of course! PM

Test Results

Frequency Response (-1dB) 1Hz-20.7kHz

Distortion @ 1kHz	Left	Right
0dB	0.00075%	0.00156%
-10dB	0.00151%	0.00136%
-30dB	0.016%	0.026%
-60dB	0.195%	0.194%
dithered		
-90dB	7.08%	8.55%

Distortion @ 10kHz		
0dB	0.0025%	0.0039%

Stereo Separation		
1kHz	129.9dB	127.4dB
20kHz	98.5dB	97.4dB

Noise (A-wtd) w/o emphasis	-109.8dB
w emphasis	-112.4dB

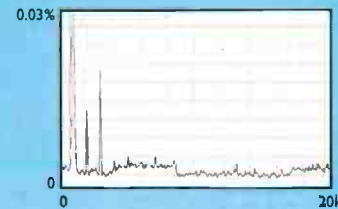
Peak Output	1.919V	1.900V
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Frequency Response



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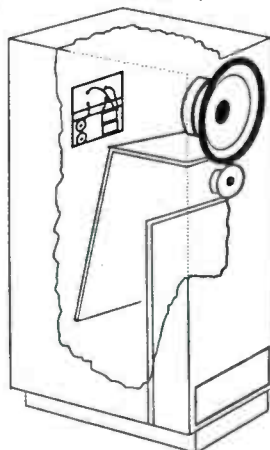
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In their pre-launch campaign to bring widespread awareness of Digital Compact Cassette to the UK audio industry, Philips have been previewing working DCC recorders. Senior Philips engineer, Gerry Wirtz, brought two top domestic recorders and a personal stereo from their headquarters in Eindhoven to London recently. They appeared in an exhibition of new products held in a marquee in Battersea Park, South London - and they appeared in our offices too!

The DCC900 recorders were fully working prototypes, complete in their electronic circuits. The surprise here is that the recorders had their analogue-to-digital (ADC) convertors on-board, meaning they were able to record as well as replay prerecorded material. Philips told us they would be using the expensive but highly regarded 'Crystal' ADC convertor, widely considered to be one of the best. Gerry Wirtz said that in carefully controlled listening tests, minor differences in sound quality between DCC and CD appeared to be linked mainly to convertor quality, rather than PASC - the new digital signal compression system upon which DCC depends. That's why they were using such good convertors, he said. The retail price of the DCC900, which will be top-of-the-range, has been set at £499.99.

Philips use Compact Disc as the sound quality standard DCC has to reach. Proving that it does so has been the main purpose of Philips'

Digital Compact Cassette arrives in England!



continual demonstrations to the Press and the industry. One of the recorders we listened to was modified so that the digital output from a CD player could be fed through the recorder's DAC, in order to eliminate sound quality differences from this source.

In a short demonstration we were shown that a DCC tape does sound very similar (it's always dangerous to say "the same as"!) to a CD. Philips told us that audible differences between the two had been traced back to differences in the software that stem from the mastering process. But bearing in mind that even cassette in the right hands can sound as good as CD when demonstrated briefly, we have to reserve final judgement. All the same, there's no doubt that DCC will offer a very high standard of sound quality, better than our initial fears would have us believe.

The technology of DCC is already changing and it seems likely to continue to do so. An interesting development is a reduction in processing within the PASC circuits. Put crudely, PASC throws out parts of the music signal we supposedly cannot hear. It is vital to DCC's use of inexpensive chrome video tape (by relying on metal tape DAT priced itself beyond the reach of consumers). However, DCC also incorporates other developments that allow music to be more efficiently coded, so more can be converted into digital data at the low rate DCC demands. This reduces the amount that PASC has to throw away, as it were, so lessening the likelihood of audibility.

inds
trade winds



Exactly how much needs to be thrown away by PASC also depends upon the amount of information in the music itself. For example, a simple flute needs fewer digital bits to describe it than a full scale orchestra, so there would be no need to throw much of the flute signal away to get it onto tape. Gerry said that PASC had been modified so that it now eliminates little of the music under most circumstances. He hoped that there would be even further improvements in this direction.

DCC might well undergo substantial development in many of its coding systems to allow sound quality to rise above that of CD. There has already been talk of eighteen-bit resolution in the recorder stages, but needless to say the topic is far too sensitive for anyone from Philips to say much of substance. The official line is that DCC can be said to equal CD - but not better it.

We didn't put the recorders through tests, nor did we explore their features. Our session with them was brief and informal, just enough to be sure that DCC does, in final prototype form, sound as close to CD as Philips have claimed. Gerry was carrying a DCC personal stereo in his briefcase that provided excellent sound quality also, although it needed a mains power supply. But the existence of a fully working personal does prove that there will not be any major problems in this direction. The complexity of a DAT transport has made miniaturisation difficult.

Since DCC transports are relatively simple, being based on normal cassette transports, battery life should not be a problem in use; it will be much like that of a conventional personal stereo. This is where rivals like DAT and Minidisc are hampered. Their complicated systems require more power, shortening the battery life of portables to the point of making them impractical. So DCC personals and portables will be much like those we use today, except that sound quality will be considerably better.

Even though we have seen and heard DCC many times before, Philips' flying visit was enough to reinforce our impression of DCC as one of the most commercially viable new mediums. Increasingly it looks set to take to the market place later this year with an ease that has eluded earlier entrants ●

VARIETY IS...

...what we found in £200
loudspeakers. Six of them
left Eric and Alan baffled
(Noel supplies the waffle).



HEYBROOK HB-1 £249.99



ROYD SAPPHIRE £198



ARCAM ALPHA £199.90

Report by Eric Braithwaite and Alan Sircom.
Measurement by Noel Keywood.

Bigger bucks, bigger boxes, bigger sounds. If you want the three together, but you are still short of space, the answer is to buy a pair of speakers that can be put close to a back wall. We thought, in these days of more expensive mortgages, that we would try out a selection around-the-two-hundred-pound mark models which might offer more sound and still leave an extra square yard or two of floor-space to swing the cat in. Or, before the RSPCA calls, for the children to play in.

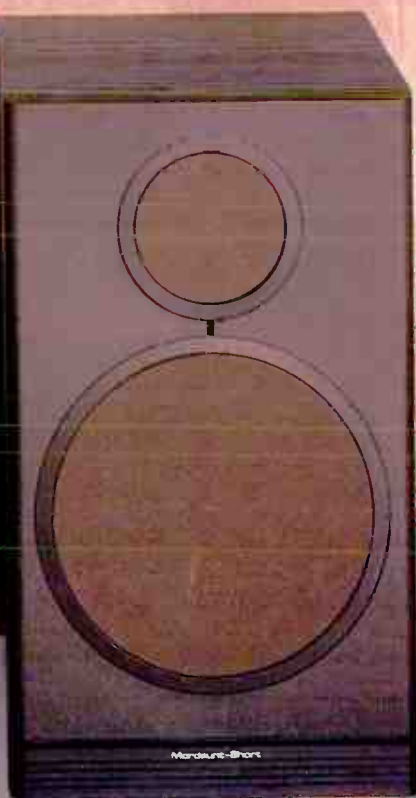
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ARCAM ALPHA £199.90

Another sizeable black box, Arcam's Alpha is also a two-way unit, but a sealed box design. The reflex port, often used to enhance bass but also subject to puffing noises, is avoided in this loudspeaker. The Alphas were the largest, in fact, somewhat bigger in all dimensions than the Heybrooks. The cabinet is constructed from 15mm board with a Medite baffle 3mm thicker; there is internal bracing. Drive units are a 200mm polypropylene bass/mid driver and a 25mm soft-domed tweeter. The black

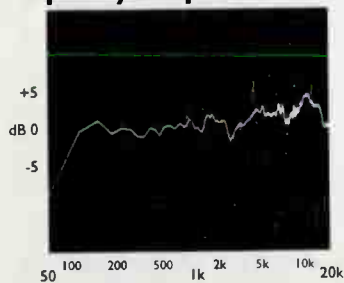
MEASURED PERFORMANCE

The frequency response of this speaker has some ups and downs in it, due to drive unit behaviour and imperfect matching at the crossover point, set at around 3kHz. This sort of response produces a sound less smooth than that of a particularly flat loudspeaker, like the Mission or Heybrook, but it is likely to impart some character that may for some - or many - sound attractive.

My greatest reservation with the Alpha though is the steady rise upward toward high frequencies, terminated by a treble peak at 12kHz. Those with sensitive hearing are likely to notice some sharpness or occasional incision in the sound, plus a bright overall tonal balance. Placement close to a wall (10cms or so) as recommended will bring bass up in use though.

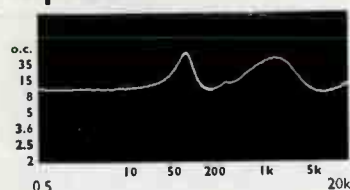
At 86dB sound pressure level (SPL) for one nominal watt input (i.e. 2.8V) the Alpha speaker is pretty sensitive. It goes loud with little power input. Having a high overall impedance of 11 ohms, this speaker also draws little current from an amplifier, making it a light load. The impedance trace shows that 8 ohms is a minimum value, even though Arcam state the figure as 6.5 ohms. These properties in unison make the Alpha a good choice for budget amplifiers lacking high current power supplies. **NK**

Frequency Response

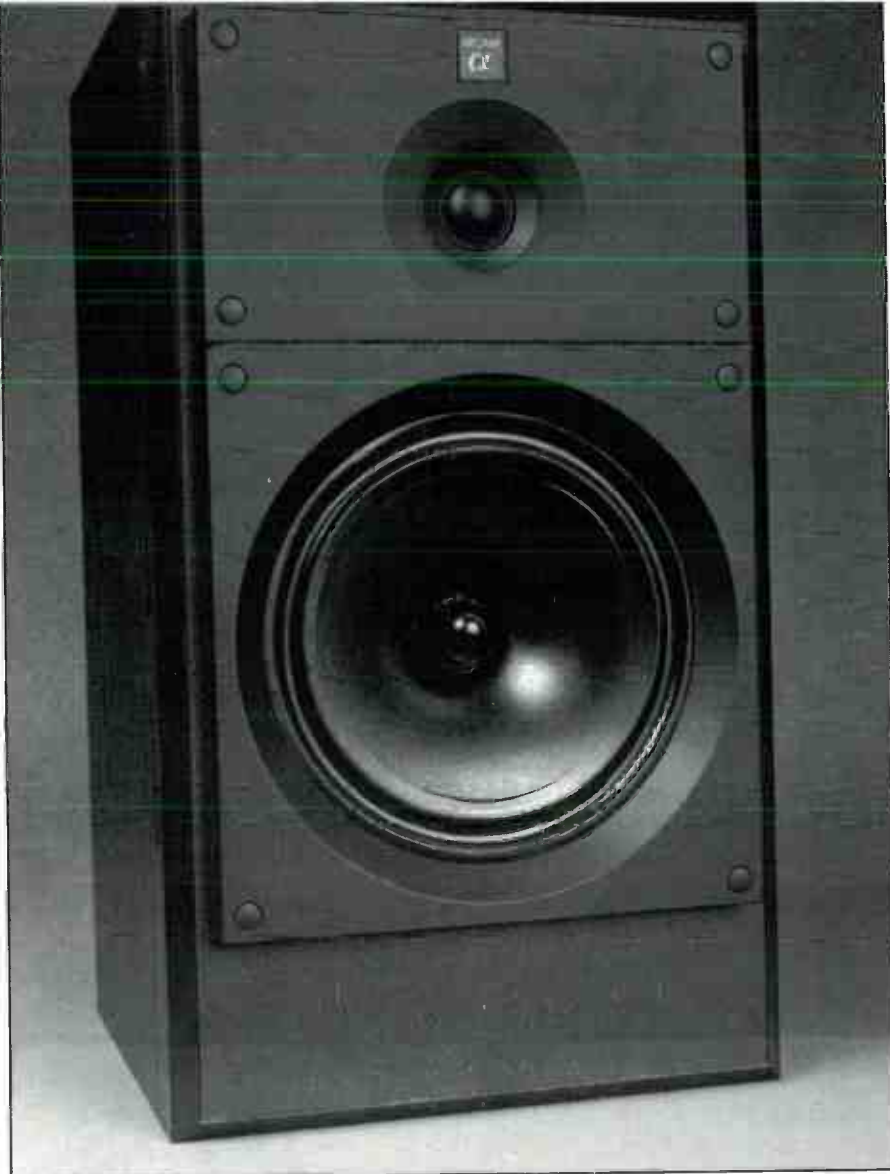


Rising treble adds brightness

Impedance



High overall impedance



cloth-covered grille looks slightly unusual, standing proud of the baffle. Like the Royd Sapphires, there is a single pair of reasonably-sized terminals at the rear, so these, too, do not accept bi-wiring.

SOUND QUALITY

Arcam's Alpha speakers had a noticeable 'plastic cone' effect, in some ways not unlike the Tannoys in this test. At its best, this creates a very fast, detailed and clear sound with good imagery. It's disadvantage is that it can be very 'hi-fi', sacrificing neutrality in the process.

Typical in this respect, the Alphas are highly detailed, at times with a fruity bloom. The detail can be more incisive than analytical; the Alphas have a touch of the 'brights' about them. This was most evident on solo piano, where the tone was radically different to that produced by the other loudspeakers in this group. Arcam's had a few 'zingy' notes in its keyboard.

Listening to orchestral music we observed a near-unique effect which we couldn't help but call 'one-note' violins. Subtle tonal colour was absent, turning both first and second violin sections into a single, wiry instrument.

The whole, however, is once again better than the sum of the parts. Like many of the other speakers in this group, the Alphas were very easy to listen to. In some respects, too easy, as they could sound over-restrained at times despite the peaky treble. To get a restrained, bright, speaker is no mean feat!

Even so, the Alpha's idiosyncrasies, tie together well. Though too restrained to inspire, tonally uneven in the treble region, the loudspeaker avoids vulgarity.

Placed close to a wall, with a slight toe-in, is how the Alphas perform best at normal listening levels. Away from the wall and at higher levels the sound rapidly collapses. As the sound pressure level or complexity of music programme increases, so the sound quality takes a tumble. Trumpets and saxophones blended into one another on 'Mingus, Mingus, Mingus', a CD-remaster of a well-known 1960's jazz recording. This is also a progressive disease; the louder or more complex the music is, the worse the confusion.

Nonetheless, although the end result could tend towards blandness and perhaps too much of an 'easy listening' sound, the end impression was of a more equal musical balance than might have been expected.

CONCLUSION

One of the better models in the group, but by default, as it turned out. The Alphas' balancing act allowed them to be enjoyed despite their anomalies. They would partner the budget end of the amplifier market successfully, where their overall tonal quality would gain credibility and they would be less susceptible to overload. They are the antithesis of the over-excitement of the Royds, but at the expense of some of the life in the music.

HEYBROOK
HB-1 £249.99

Heybrook's HB1s have some thing of an old-fashioned air which probably merely has to do with them being wider than they are deep. The original design is ten years old now, but they have sold consistently well. A two-way sealed-box loud-speaker, it utilises two VIFA drivers, a cloth dome tweeter and a paper-coned bass/mid-range unit, both slightly modified over the years. The cabinet is internally braced and constructed of high density particle board. Internal damping is long-haired wool, apparently carefully teased out by hand and weighed out to exactly 2 1/2 ounces. Ours were in black, but a walnut finish is also available.

SOUND QUALITY

One of the larger boxes among this group, the Heybrook HB1's impressed with a big sound offering up plenty of musical enjoyment. They are, despite one or two little problems, pre-eminently listenable.

During the course of the listening session, while we discussed their performance, we switched over to a Radio 3 organ broadcast. For a few minutes we stopped in our tracks, startled by a very real impression of the forceful dynamics and bass of the instrument.

While the sound wasn't equally accurate over the full range of pipes, at least there was a strong feeling of weight and power to the lower notes. We were impressed then, and remained so, with the Heybrooks' forcefulness. This dynamic strength was not far removed from the push of the Royds, without their sometimes overpowering relentlessness.

This, however, was a far cry from our first impression, when the HB1's had sounded, to put a brave front on it, dynamically flat, boomy, bland and loose almost everywhere across the frequencies. What happened?

What happened was that we discovered that when Heybrook suggest open-frame stands and solid-core ribbon speaker cable both are pretty well mandatory. Bi-wiring with the Heywire they were thoughtful enough to supply tightened and cleared up the speakers' performance markedly.

Particularly reduced were the HB1's otherwise over-evident colourations. Treble can be ragged and the box itself can be quite boomy. These obtrusive aspects of the performance evened out. They didn't disappear, but ceased to detract from an overall impression of musical honesty.

In some ways, this honest portrayal of sounds, however much the result of a series of compromises, made these speakers among the most enjoyable over a wide spectrum of music. There was enough beefiness to rock recordings and enough tonal shading to classical to make them among the most pleasurable of the group.

Addicts of tonal neutrality and accuracy, however, must look elsewhere, as would lovers of stereo imagery. A broad right-to-left spread was apparent, but there was less depth. Placement of individual images within the soundstage was also rather vague.

CONCLUSION

Pleasurable, highly listenable, but fussy, has to be the final verdict. Ignoring Heybrook's own advice as to cabling and stands is more likely to lead to disappointment than with many others. There are also more neutral, less compromised sound balances at this price level.

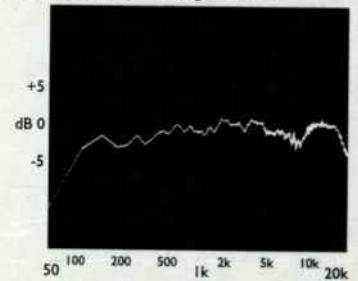
MEASURED PERFORMANCE

A surprising feature of this loudspeaker is its extreme sensitivity. Even though the overall impedance is high at 9 ohms, sound output from the HB-1 measured no less than 88dB SPL from a nominal watt of input. That's 2-3dB louder than rivals at any fixed volume setting. This is a fine loudspeaker for budget amplifiers with limited output, since it will produce noticeably more volume. It is also a good choice for valve amplifiers of limited power output.

Frequency response of the HB-1 varies a bit according to listening position. It is flat on the axis of the bass/mid-range driver, but has a slight upward trend from anywhere above this axis. It's a property that will subtly enhance intelligibility in speech and vocals. A suckout can be seen at around 5kHz, due to the crossover to the tweeter. Overall treble energy has been kept down a bit, deliberately I suspect to draw attention away from some peakiness in the tweeter. This will make the treble less-than-smooth sounding. Heybrook recommend mounting against a wall, a position that reinforces bass over that shown.

Finally, I noticed the HB-1 had a hollow, boomy sound under test, due to the box resonating. This will be audible in practice too. Sometimes, box boom adds fullness and can enhance acoustically dry sounding programme; sometimes it is adds an annoyingly unnatural colouration though, especially to deep, male voices. **NK**

Frequency Response



Forward mid-range and peaky treble

Impedance



High overall impedance



MISSION
781s £249.90

Remove the somewhat flimsily-plastic-framed grilles and the 781's instantly display a Mission oddity. It appears to have been built upside-down, because the tweeter is in the middle of the baffle between the reflex port at the bottom and the main driver at the top. These two units comprise a 175mm polypropylene mid/bass unit and a



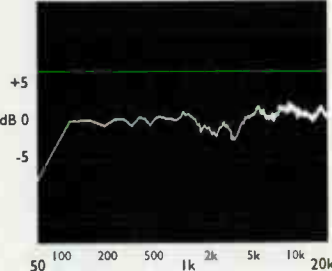
MEASURED PERFORMANCE

The 781 measures flat to 1kHz, with some slight overall upward trend toward high frequencies - just enough to make sure that, overall, the speaker will have a clear, open character, rather than a heavy, warm one. I noticed that the Mission measures more consistently over a wide range of vertical listening positions than many speakers; it gives the same sound from above as it does from a listening position directly in front. Mission recommend wall placement ("12in or less") which will bring up bass more than that shown. They also say the speaker need not be toed in.

Output starts to roll down above 1kHz until the tweeter takes over at 3kHz, there being a small but broad dip in output as a result. This may remove some sense of detail and introduce a slight smoothing of the sound. The tweeter is good one, lacking peaks in its response. However, Mission let it play a full role, giving the 781 very positive treble delivery. This is not a dull sounding loudspeaker, but neither will it spit.

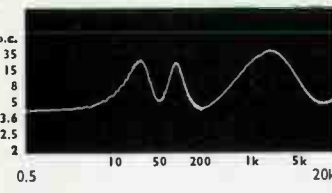
The 781 has a true nominal impedance of 8 ohms. This means that it rises both above and below this value, as the impedance trace shows, dipping down to 4 ohms in places. With a lower impedance than usual, the 781 draws more power and goes louder than many rivals in consequence. It offers 87dB sound pressure level for one nominal watt of input (2.8V). Budget amps may fare less well with it than other speakers of higher impedance though. **NK**

Frequency Response



Some treble emphasis

Impedance



Impedance lower than many speakers

19mm fabric dome ferrofluid-cooled tweeter. The front baffle avoids the black blandness of the others of this group, coloured grey with designer stripes at one side. The cabinet is substantially built, using 25mm MDF for the baffle and 19mm for the carcass. This design is also suitable for bi-wiring, which Mission say is a must. Rigid, top-spiked stands are also recommended.

SOUND QUALITY

The Missions were lively and even-natured, the mid-range extremely coherent giving the impression of being well-integrated despite compromises at frequency extremes. We noticed an effect from the port, an observable resonance which caused a slight hiccup in the 781's otherwise tight rhythm. While not affecting the generous sound quality all the time, it could give male vocals a congested sound and soften and slow bass transients.

What the Missions do not like is being single wired or placed really close up against a rear wall, or non-rigid stands. Make any of these mistakes and the sound is thick and leaden, like stuffing them with old socks. Bi-wiring them and giving them a foot of space behind puts the old socks back in the linen basket where they belong and opens up the dynamic range noticeably.

Operating properly, Mission's 781's sound strong and alive with a pleasant sound quality. Treble is clean, clear and fast, though in truth high treble lacks power in comparison to the dominant mid-range. Even though there is a large reflex port on the front of the baffle

deep bass also takes five, also proving somewhat subdued.

Dynamically, the Mission 781's were, even placed according to the instructions, on the slight side. Classical or Romantic music with a wide range of tonal colours and a big dynamic range was lacking in a sense of scale. A small change in placement for the worse turns their dynamic range almost compressed and flat. The clearness, conciseness and speed of the mid-range overshadowed the weaker bass and upper treble. Percussive sounds fell victim to this leanness at the extremes, where the limitations of bass strength became evident.

On the positive side, the overall balance is extremely smooth. Whereas other speakers in this test had noticeable emphases which could be irritating, or demonstrated a fondness for pushing out some parts of a rock mix at the expense of others the 781's remained even-handed with a well-founded sense of rhythm and timing, if on the lighter side. They image well, albeit a little two-dimensional at times. Their great strength is that they avoid vulgarity and brashness.

CONCLUSION

Although they had great potential, more of which might be persuaded out of them by experimentation with cabling, positioning and stands, the 781's lack of frequency extension and dynamic range was disappointing. Despite that, their integration across the broad mid-band was impressive, as was their ability to portray detail within recordings.

MORDAUNT SHORT 5.30 £199.95

As always, Mordaunt-Short include an attractive, easy to read and well-organised manual for their buyers. The 5.30 is the largest of the '5' Series which can be stand-mounted; the top two in this range of (guess how many? - five) speakers are floor-standing. A distinctive mark is the matt grille, which has two cloth covered apertures of different sizes over the tweeter and the main driver. It is not removable. The two drivers are a 200mm polypropylene mid/bass unit and a 25mm ferrofluid-cooled alloy dome tweeter. Mordaunt-Short have opted for a reflex design, like others in this group, with the port at the rear. Also following what is not so much a fashion now as a sales-pitch necessity, there is provision for bi-wiring.

SOUND QUALITY

Tailoring is fine, as long as it's Savile Row, we thought, on hearing the Mordaunt Short 5.30's. For this group we began to believe loudspeaker designers had been frightened by excessive treble energy at an early age.

Most evident of all was the subdued treble response of the 5.30, markedly distinctive - if anything so indistinct can really be described like that - even among this group of speakers. While the others were generally gentle with

the upper frequencies, these Mordaunt-Shorts would need a real ear-piercing amplifier to sound bright, let alone sharp.

Response in the upper treble is so tailored that it seems to have been

designed with sharp grainy and brittle Compact Disc players almost exclusively in mind. It takes the sting out of the upper frequencies, rendering them ultra-smooth sounding. There are no nasty peaks or peculiarities in instruments in that range - but alas, that is exactly what commonly gives extra life-enhancing pizzazz to recordings.

Their mid-range was characterised by a lack of character that was both welcome but worrying. Good qualities were those of tonal smoothness and a good sense of dynamics, but the combination tended to give an overall impression of being lacklustre all the same.

Brass and woodwind, for example, sounded appropriately throaty and convincing, but lacked something in presence and bite. An alto sax simply sounded too smooth and laid back.

Dynamically, the mid-range combined the virtues of being smooth and strong. This had a beneficial effect on most tonal colour and developed some sense of liveliness, rhythm and timing. Overall, however, the final result was music which was restrained and unassuming.

We were very much reminded of the 'house sound' of Mordaunt-Short speakers of earlier eras. Distinctively polite, vices and gremlins were well ironed out. It was evident

these speakers were not going to relinquish their well-behaved 'niceness' without a very sharp kick from the amplifier.

Applying another couple of turns on the volume control sharpened and brightened the overall picture by a small degree, but it also turned the rather slow and dull bass 'thuddy', instead of enlivening it.

CONCLUSION

Very much in the tradition of British restraint of the kind that was favoured some years ago, it was difficult to find the 5.30's impressive, except in their excessive politeness. Very laid-back throughout, there is more life in more music than the Mordaunt-Shorts seemed able to grasp.

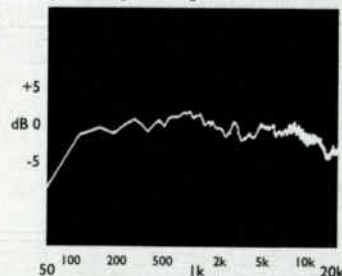
MEASURED PERFORMANCE

The 5.30 is meant to be used close to a rear wall; Mordaunt Short say between 10cms and 50 cms away. This will reinforce bass output, altering the measured response shown here by bringing up its overall level.

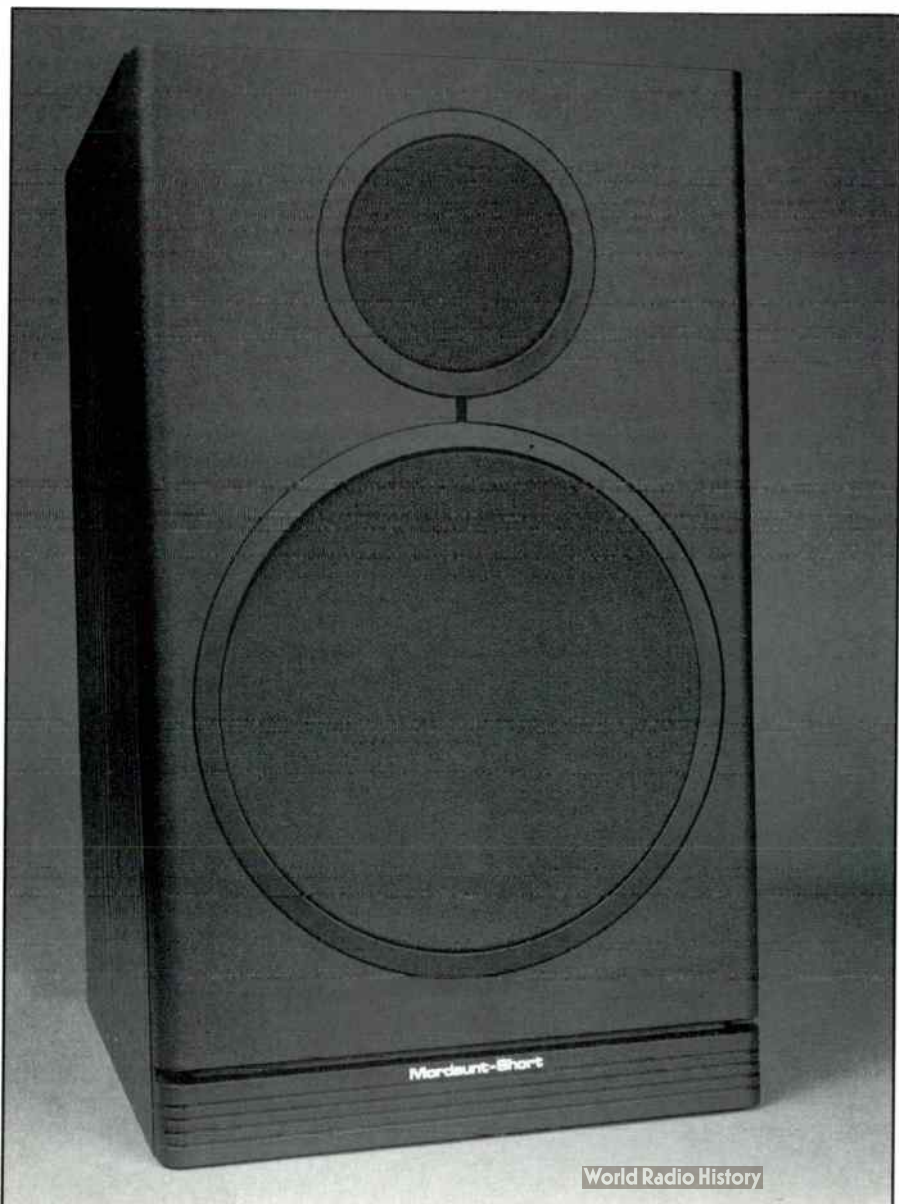
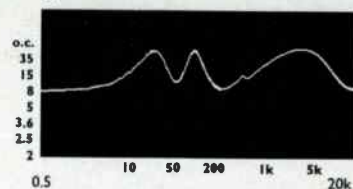
Whilst this balances out the downward trend in the curve seen to the left of the centre line (1kHz), it won't affect the similar trend to the right. Mordaunt Short have developed something of a reputation for smooth sounding loudspeakers that are easy on the ear. It is partly attained by response tailoring in the manner seen here. There is a steady roll off in high frequency output from 1kHz up to 20kHz of something like 8dB. The characteristic was even more marked when I measured these speakers using pink noise. This softens out the sound, making it easy and polite. There'll be no fierce treble from the 5.30, that's for sure. The danger is always that such tinkering can be taken too far of course, resulting in a loudspeaker quite obviously dull-sounding and inaccurate.

The 5.30 has a high overall impedance of 13 ohms. The impedance curve stays well above 8 ohms over most of the audio band. As a result, the 5.30 will load an amplifier lightly, drawing little current and power. This reduces sensitivity, but efficiency was good enough to ensure 85.5dB sound pressure level from one nominal watt (2.8V) of input. It's a respectable figure (83dB or thereabouts is low), although the worst in this group. **NK**

Frequency Response



Impedance



ROYD SAPPHIRE £198

Royd's Sapphires were the smallest speakers of the group, looking quite tiny for the price. All the same, their poundage was not so different to their larger rivals. This is a two-way reflex design, using a small five-inch main driver specifically designed, Royd say, for the cabinet. Tweeter is a 19mm dome bought-in from VIFA and modified. Royd claim

MEASURED PERFORMANCE

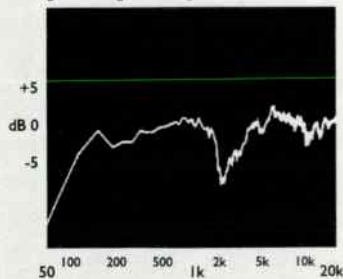
The Sapphire was a bit of a moving target when it came to measurement. Frequency response varied substantially over a range of vertical positions, being flattest on the bass/mid-range axis and above the tweeter axis. Like all the response plots, the one shown of the Royd is position averaged over a sensible vertical range, to take into account various listening 'heights', with some emphasis on the axes at which the unit performed best. At the usual measuring position, mid-way between tweeter and bass/mid-range unit, treble was -5dB lower than mid-range. However, most people listen at a distance where the drive units will integrate better, under which circumstance the Sapphire will give results approximately as shown. Since it is meant to be wall mounted though, bass will be brought up.

Broadly speaking, the Sapphire is a bit mid-range forward, but the suckout at 2kHz will soften and smooth the sound a little. I've heard this effect before from a Royd; often it is surprisingly benign but sometimes - especially with violins - it really does dull and mute the sound.

Upper treble is well maintained, but it is a bit ragged.

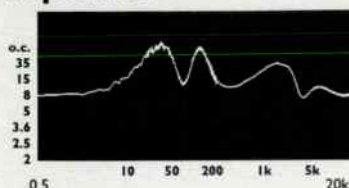
Even with a high overall impedance of 11 ohms, this speaker was sensitive, producing 86dB sound pressure level for one nominal watt (2.8V) of input. It loads amplifiers lightly and goes loud with modest input. Royd recommend amplifier power of 40 watts maximum. **NK**

Frequency Response

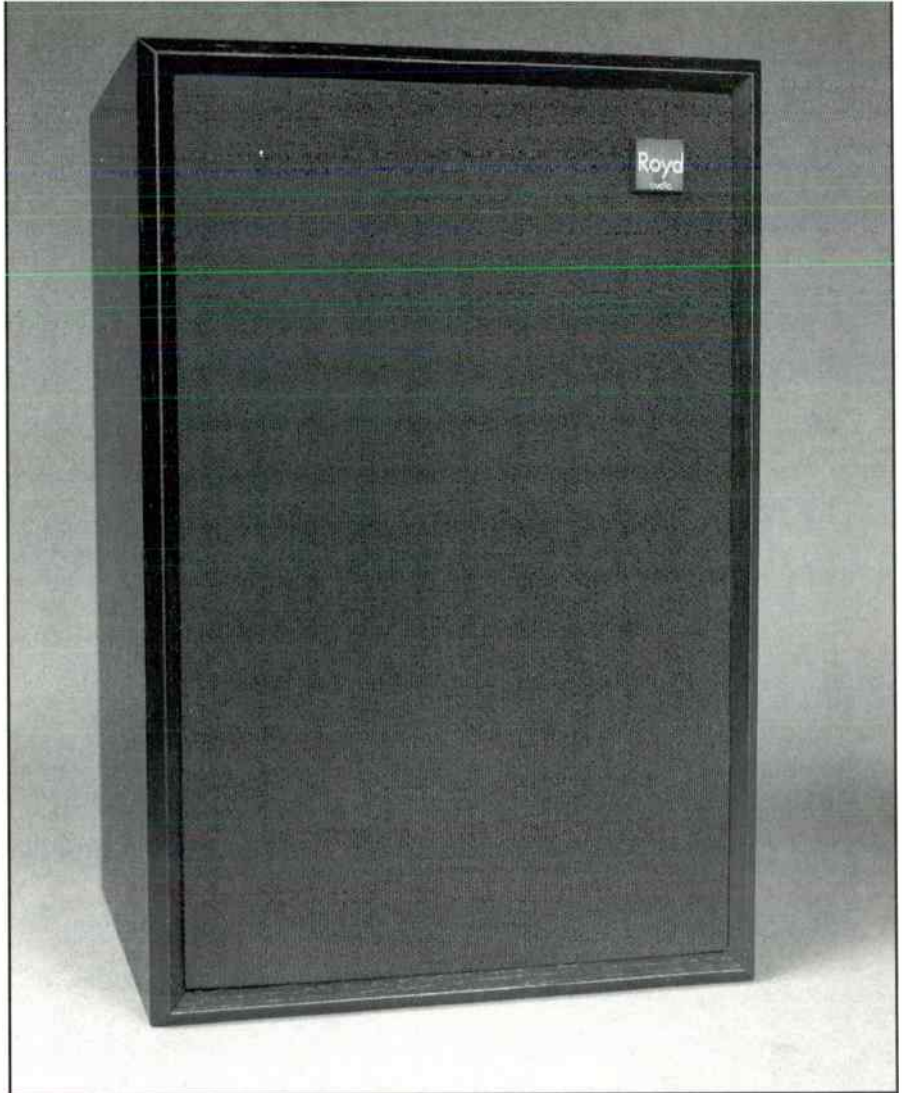


Suckout in the upper mid-range

Impedance



High overall impedance



to use a simple crossover design with high-quality components. It's very tempting normally to use a rearward-facing port tube to help lifting a speaker like this. Doing so with the Royd is a mistake. It has a layer of grease which instantly, it seems, migrates from fingers onto the cabinet. Ours were finished in Black Ash wood veneer; Walnut and Rosewood finishes are also available. Speaker terminals are no better than average quality and the Sapphires cannot be bi-wired. Royd recommend not removing the grilles.

SOUND QUALITY

In a demonstration room the Royd Sapphires would easily be the most impressive of the six pairs of loudspeakers we tested. Not in size - they were the smallest - but in their forceful dynamics and immediate impact.

If this sounds familiar, it is very much in the Linn Kan mould, but scaled down. Admirers of the Kan sound, lacking the cash for them, would surely say "I'll 'ave 'em" within minutes.

Timing was where the Sapphires were strongest. Pace and rhythm were spot-on, diverse changes in musical programmes dealt with easily and with precision. These Royds played music with more presence than any other speakers in this group could muster: bass and percussion were more positive, the treble more dynamic, everything well up-front.

In fact this sheer dynamism and verve could turn into one of the Sapphires' biggest problems. Add a bright, sharp amplifier, and it could fast become tiring. The initial impressiveness wears away as their tonal qualities become more evident. The treble performance is ragged and uneven, the voice of Tim

Booth of James becoming harsh, for example.

The energy and fire the Sapphires breathe into music doesn't always relate to the programme being played. On Barber's Adagio, with string sections playing in harmony, they sounded easy and relaxing. However, comparison against a reference loudspeaker with equal timing abilities, showed that the violins were not accurate in tonal quality.

Testing this aspect brought out one of Robert Von Bahr's BIS recordings, a simply-mixed, pre-eminently natural disc with an expansive acoustic are all trademarks of this label. Here, the four saxes of Francaix's Petit Quatuor pour Saxophones were quite undifferentiated tonally, or as individual instruments. Though so lively it could have been played in a disco, tonally the instruments melded into one another and gave the impression the piece was being played by a brass band.

However impressive and dynamic, there's an obvious wrongness about this. Nevertheless, rock music is projected well forward with such forcefulness behind it that the Sapphires will gain their devotees for this aspect of their performance alone.

CONCLUSION

A mixed bag of positives and negatives, are the Sapphires. On one side, they are impressively dynamic and musically powerful. They produce a big, fast, even deep, sound which belies their small size. While they make enjoyable music, always setting feet tapping, this is at the expense of instruments' true tonal qualities, a property that can be seriously off-putting.

TANNOY

607

£199.99

One of the larger of Tannoy's new 'Sixes' range, but still requiring stands, the 607 stands out among this group because of its unusual polygonal cabinet shape. Love it or hate it, aesthetic opinions become polarised over the inset top, having an unusual marbled effect in brown and purple.

A two way design, the tweeter on this model is a 25mm aluminium dome and the main drive unit an eight-inch unit with moulded unit. Tannoy offer matching stands which fit under the otherwise odd-looking moulded skirt at the bottom of the speaker. Terminals are chunky and substantial; the positive ones are an unusual lilac/purple colour. The 605's are bi-wirable.

SOUND QUALITY

At first, the listening panel exchanged disappointed glances. The polygonal box doesn't look small, but there didn't appear to be anything like enough bass and the mid-range sounded squashed and lifeless.

After leaving them to spend a night with Prince, hammering away in a corner of the room, the 607's underwent a transformation. Obviously they had needed more running-in

than the rest of the group.

This achieved, the Tannoys metamorphosed into the best of the bunch. They achieved a healthy balance of virtues, without succumbing to some of the downfalls of others. Evident from this box were the elements of excitement possessed in such abundance by the Royds, the bass of the Heybrooks and the smoothness of the Mordaunt-Shorts, with a dose of Mission dynamics thrown in. Taken apart, none of these individual strengths were improved on, but all were healthily amalgamated.

Tonally, the treble was slightly laid back. Cymbals didn't crash with all the verve that is possible, though all the percussion came through right down to the 'ting' of a triangle. Or more accurately, more of a 'ping' than a 'ting'. Though laid-back, with some of the cutting edge of piercing guitar, sax or female vocals softened, the Tannoys were not as muted dynamically as some others in this test. Upper mid-range and treble would be better described as mellow.

Added to a full, though dry bass, the Tannoy's lively mid-range produced a good sense of rhythm and beat. Combined with quite lucid imagery and pertinent detail, without it all being thrown forward into the listeners' laps, they made listening to a variety of musical choices relaxing and pleasurable.

Equally pleasurable was a strong sense of imagery and ambience. Listening to a particularly reverberant recording didn't tax their

ability to reproduce the acoustic without bungling the instrumental colours and melodic lines. That said, there wasn't the fullness and depth of tone which marks out the best loudspeakers at this price. There was, however, a more than decent depth to the orchestral layout, and realistic layout across the space between the speakers.

CONCLUSION

Easily driven, the Tannoy 607's had an amalgam of balanced virtues which added up to a well-rounded representation which couldn't be flustered. Without doubt the smoothest and most seamless of the group in tonality, regardless of a certain thinness of tone on occasion, the 607's proved to be good all-round performers.

MEASURED PERFORMANCE

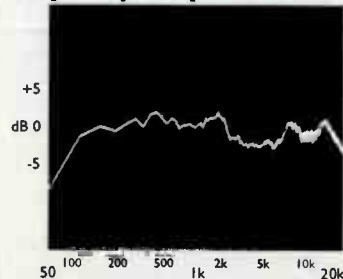
The 607 was another loudspeaker, like the Royd Sapphire, to vary its response according to vertical listening position. However, the 607 varied a lot less than the Sapphire. At a distance, and listened to on-axis, it gave its smoothest response, as shown here. Generally, treble output is slightly lower than that of the mid-range, with treble peaks at 6kHz and 12kHz helping to bring energy up a bit. The drop in output at 2kHz will soften the sound somewhat, much like the suckout of the Royd, although to a smaller degree.

From the variations in the response of the 607 I would expect a characterful sound rather than a strictly accurate one, at least in terms of basic tonal balance and perceived smoothness. Because the overall response trend is reasonably flat, the 607 should not be unduly dull or bright in nature.

Unlike the other five speakers in our group, the 607 is not meant to be used against a rear wall to reinforce bass. It should be stand mounted and kept away from walls.

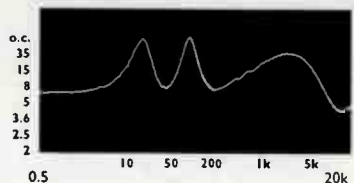
A high overall impedance of 10 ohms makes this speaker a light load for amplifiers, but Tannoy have managed to make it sensitive through high efficiency. Consequently, no less than 87dB sound pressure level is produced for one nominal watt of input (2.8V). At any given volume control position, the 607 will be louder than the other speakers in this group, except for the Heybrook HB-1. NK

Frequency Response



Flat response trend; low-ish treble

Impedance

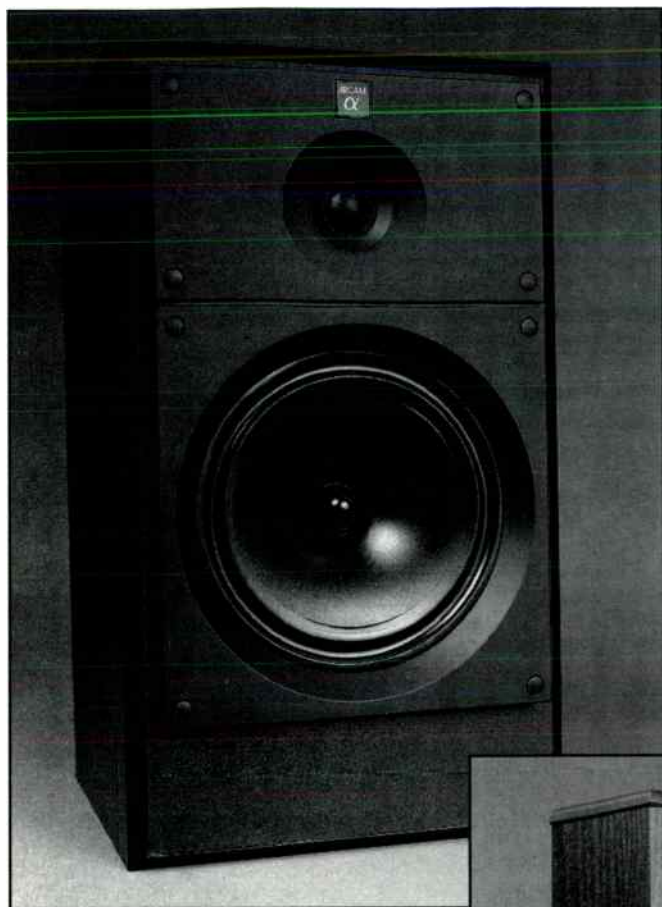


High overall impedance



World Radio History

CONCLUSION



furiously projected up-beat sound; most often more upbeat than the music. The smallest of this bunch, they drove music fast and furiously, and in time. Yet unless you are a determined fan of disco-type dominance of rhythm, they might drive you from your listening room as well. It's fine for heavy rock - and the Royd's rock with the best. But how much rock'n'roll do you want with your Nutcracker Suite?

Somewhere between the two extremes lie the Heybrook HB1s, the Mission Cyrus 781 and the Arcam

With tender loving care applied, hearts will warm to their innate, broad-based virtues.

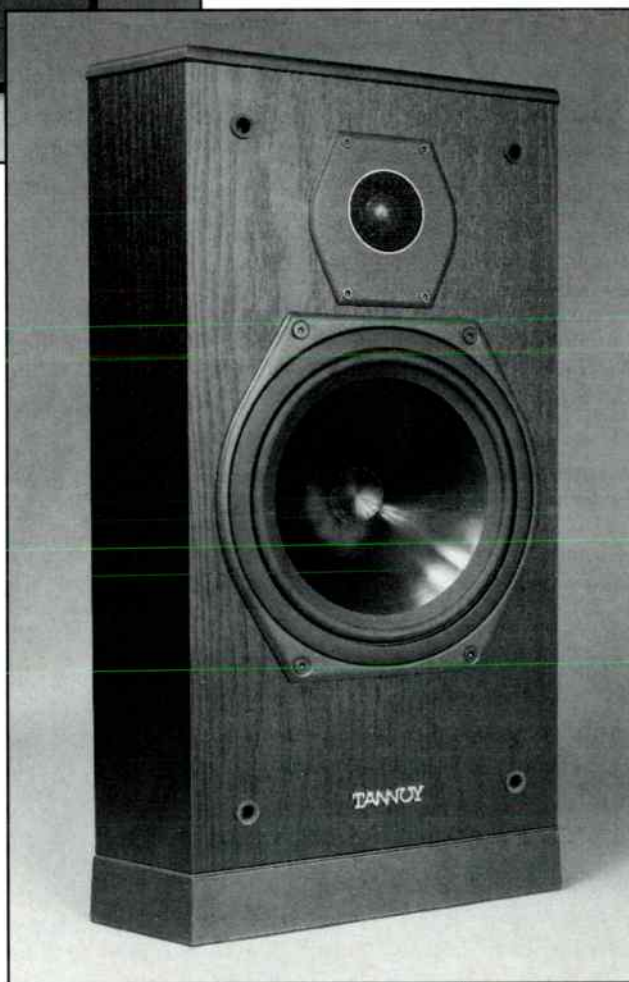
Arcam's Alphas were, despite their occasional 'ping' and 'sting' in the treble somewhat slow dynamically and in some ways diluted in terms of detail. Overall, there was a disappointingly bland aspect to their presentation. They were smooth in the mid-band, but lacked the ability to raise enthusiasm or keep a listener bopping.

In some respects, the Heybrook's produced the most enjoyable - if inaccurate - sound of the three. Despite woody colouration of some voices and instruments, as well as raggedness in the treble, the impression was of a good deal of music-making going on. As with the Missions, tender loving care has to be applied here too. Open stands and, particularly, solid-core bi-wiring using Heywire, lift the HB1's from blandness into musicality.

Leaving best until last, Tannoy's 607s were definitely the pick-of-the-bunch in performance. They had plenty of energy throughout the frequency spectrum, giving a well-balanced sound and - lo! - imagery and perspective as well. We might have wished for a more profound bass, but it was firm and rhythmical. Alone among this batch we felt the Tannoys would be most likely to appeal to a broad spectrum of musical opinion, with the proviso that those leaning to the up-front Royd presentation would find it too laid back.

Now back to the Bauhaus. At least with the Tannoy, driver design and cabinet design have held hands. The only drawback is that the shape is eccentric, and the odd marbled, brown and purple inset top might not be to everyone's taste. It reminded us of Fifties milk bars. Sound quality was definitely Nineties, however.

To finish off, we thought we would mention a model we didn't include in this batch because it was past of a system last month. The Rogers LS2a2 is in the same price bracket and we used it as a reference against which to gauge



Alphas. The 781s were - if it isn't too much of a contradiction in terms - fast and easy. They had a smooth tonal quality, by and large, with fairly strong dynamics. They positively demand bi-wiring or they take on a degree of anonymity; they need an amplifier with a dry-ish bass or that end becomes woolen, and preferably top-spiked stands.

this half dozen. In a relatively small box it comprehends all the best factors of this batch: smoothness, tonal equality, vigour along with delicacy, a solid sense of dynamics and a wide airy and deep perspective. Don't neglect it if you're in the market for this price of loudspeaker. It offers such a strong blend of abilities, we have to mention it ●

No point in being mealy-mouthed about it. With the exception of the Tannoy 607's we were decidedly put out by this group of loudspeakers. We really did begin to wonder whether there had been any advances that were other than cosmetic in the last twenty years.

Yes, we agree that the old basic black shoe-box can be boring and it's hard to turn out a loudspeaker that might raise an approving smile from Walter Gropius, but we started to feel the designers' energies had been directed into tweaking the external aesthetics rather than balancing the important bit - the drive units that produce the music.

Mordaunt-Short's 5.30 might be taken as a case in point. The new grille has two round cloth covered holes and a narrow dividing groove. That's one way of catching a buyer's eye with something different to the usual single expanse of black cloth. What wasn't particularly ear-catching was the laid-back, soft, subdued sound. This was reminiscent of Mordaunt-Short speakers of years back, designed to partner shrill transistor amplifiers. It struck us that this kind of response might well have been tailored for bright, shrill-sounding Compact Disc players - but they are old news. Times have moved on and the apparent diminution of dynamic forcefulness does nothing for a front end of any quality but diminish the amount of music it makes available.

Royd's Sapphires pole-vaulted to the opposite extreme. They could adopt 'If anyone Kan, Royd Kan as well' as an advertising slogan. Here the trademark was a

It's small, about the size of a box of cigars, black and digital. It's not an electronic crossover, it won't - like B&W's black boxes - alter the sound of a speaker to match a room, nor will it add bass. And it is dedicated only to Celestion's own SL600 (now obsolete) and SL600SE (£820) loudspeakers, so it isn't even universal. What is it?

In short, it's a brilliant idea for making, in my view, a very good speaker even better. At least with Compact Disc as a source. Being a digital processor, the DLP 600 - price £349 - works entirely in the digital domain. It has to fit between the

simply, if the different frequencies, travelling at different speeds towards the listener's ear, arrive at different times, there are going to be phase and amplitude anomalies which will militate against an absolutely truthful representation of the music as it was recorded.

Attempts to correct this are usually performed by fiddling with the crossover, but there's a rule of analogue design that says the more circuits and componentry you add to do one thing right, the more likely you are to find they've got together to do two other things wrong. Designing a speaker baffle so the tweeter is

do it digitally.

Broadly, the DLP 600 uses coding algorithms developed by Celestion which correct amplitude and phase according to the requirements of the 'perfect' speaker and crossover design. What should happen, if the whole processing is subtle enough, is that the all the sound should come out whole, totally uncoloured, and anomaly-free.

It helps, of course, that the 600SE speakers are well up the scale in the small monitor stakes. Somehow, they seem to have been forgotten about, perhaps because of the reputation they've gained for dreadfully low efficiency and fussiness about the rooms they're placed in. Carefully sited, they offer Windolene transparency, with an ability almost equal to the more expensive SL700's to portray the tonal qualities and interior subtleties of recorded music down to the last whisper of an artist's sigh.

Delicacy

Like the SL700's, I could sit in front of them for hours. And have. There is something of that delicacy and detail that electrostatics have in them, along with a tonal balance in the mid-range that makes every instrument a fascinating insight into the music it's playing. Where they don't make it is that the bass roll-off is very marked. They don't manage the same conmanship as the 700's which appear to go down below their limit, though the more power fed into them, the more believable it becomes. Nor are they quite as cruel or ruthless, delivering, on the whole, a warmer sound, with less acute a focus on single strands of sound, and somewhat less deep a stage. Mind you, the 700's are exceptional.

Someone who had lived with the DLP600 for a few days told me it

digits in a box

Celestion's new DLP600 processor for the 600 range

impresses Eric Braithwaite.

digital output of a CD player and the digital input of a Digital-to-Analogue converter. It can't improve what comes out of the SL600s if the source is analogue. Unless you are one of the very few who can get their hands on an Analogue-to-Digital Converter that's usually the province of the professionals.

One of the problems in designing any two-way loudspeaker is the inescapable fact that the tweeter which handles the high frequencies is physically removed from the main driver which handles the rest. Put

physically further back than the main driver never seems to have been the answer either. It's logical, but then you add all sorts of reflections due to the woodwork on top of the original cabinet colourations you're already trying to control anyway.

Celestion, having taken up Aerolam for the cabinet of their 'SL' series speakers, and produced some of the most neutral uncoloured cabinets around, decided that if they were going to correct any remaining minor anomalies that weren't responsive to analogue engineering, they'd

HOW CELESTION'S DLP600 DIGITAL SIGNAL PROCESSOR WORKS

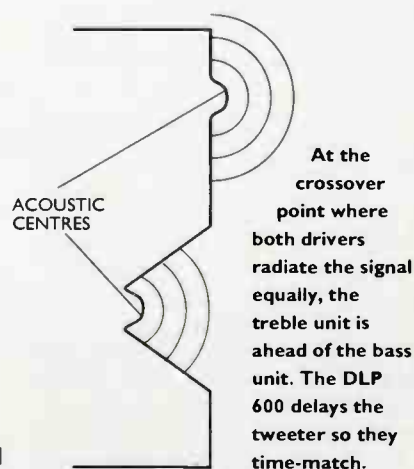
Celestion's DLP600 digital signal processor corrects both amplitude and time delay errors within their SL600/SL600Si loudspeakers. The aim is to give these loudspeakers a flatter intrinsic frequency response, without relative time delay errors. These errors are due to the acoustic centre of a deep woofer cone being physically further back in the loudspeaker than the convex tweeter dome.

There have been attempts to correct time delay errors before. These have included equalising circuits, delay lines and stepped loudspeaker baffles that place the

tweeter on the same acoustic plane as the woofer. The benefit of adaptive digital signal processing, however, is that the sort of correction complexity and accuracy available is far greater than that possible from analogue circuits.

In a nutshell, the overall behaviour of the loudspeaker in terms of amplitude and phase is measured and then an inverse of this is applied as a correction. This eliminates both response aberrations and relative time delay or phase errors.

The outcome is subtle. The problems eliminated are arguably minor in subjective impact, but important all the same. Other



features that characterise the loudspeaker, such as cabinet and cone colourations will remain unchanged, as will the loudspeaker's interaction with the room. Celestion point out that their digital signal processing does not

took him a while to make up his mind whether he really preferred the thing in circuit. I made up mine within minutes, with it feeding a Deltec PDMI Series 3 converter into a Michell Argo pre-amp and thence to T&R monoblocks from Coventry.

Broadening & Deepening

Most noticeable was a marked broadening and deepening of the sound stage with individual instruments and vocals acquiring an almost visible presence and shape and definable size. The 600's and 700's are small speakers, and I've felt in the past that I'd welcome a larger scale than the near-perfect, detailed but somewhat smaller scale of the original. The DLP provided exactly that expansion in all dimensions that I've looked for.

It also tightened up the focus. Listening to the Decca Dutoit/Montreal de Falla recording showed a much clearer image of the number of orchestral players' handclaps - and their varied sound. There was also a more definite impression of the location and spread of the instrumental sections. Brass on this recording is difficult to reproduce, some tending to disappear in the hall reverberation. With the DLP in circuit the 600's came much closer to ESL-63's in separating the two.

Celestion's DLP adds a fair amount of the 700's 'onion skin' ability to the 600's. Strands in the mix, the multi-tracking on recordings becomes just that little bit more discernible. Vocalists acquire just a bit more 'body', the listener coming to imagine a more whole holograph, as it were. A plucked bass, for example, appears to be played by someone with stronger fingers; trumpeters more clearly have fingers on the valves. In one recording, a harp and a piano



LOUDSPEAKER RESPONSE

a. 

DLP 600 RESPONSE

b. 

CORRECTED RESPONSE

c. 

Response errors in the speaker are cancelled by an inverse response characteristic in the processor, giving a flat result.

attempt to correct or cancel room behaviour, unlike some other more complex (and less practical) systems. So, the DLP600 is a sophisticated digital equaliser that eliminates some of the more easily identified problems of a loudspeaker. **NK**

needing concentration - minus DLP - to separate them clearly from the reverb that swamped them became clearly distinguishable. There's a hint of sharper attack and decay on notes.

It's quite a subtle effect, but it makes for a larger picture and one with more substance, an additional solidity and even more believability. The better the DAC and the amplifier, the more addictive this holographic aspect becomes, as does the slight but noticeably smoother and clearer overall tonal balance. That's good anyway, but the DLP brings out tiny nuances of instrumental colour and dynamics that adds a few more subtle shades of colour to the picture. I came to regret switching to analogue sources and losing that extra degree of subtlety. In fact I moaned about

that to Graham Bank, Celestion's Technical Director, wishing he'd think of producing one that included an Analogue-to-Digital converter so people with non-digital sources could have the benefit consistently. Who knows?

Celestion's DLP 600 is not a Road-to-Damascus-experience. Don't spend five minutes demming it expecting it to blow your mind instantly. It won't change your life in the first few seconds you hear it, but once lived with, the red light that indicates it's in circuit is never turned off. What it does, for people who appreciate the SL600's tonal accuracy and precision, is turn an £820 speaker into one which undoubtedly sounds like at least £400-worth more. It's worth every penny ●

SME claim to make "The best pick-up arm in the world".

Alaistair Robertson-Aikman, the founder, spoke to Noel Keywood about his past, his pick-up arms and the future.



The latest Series V arm is cast from magnesium for light weight, great strength and good damping.

ARA: SME began in 1959, although the original Scale Model Equipment Company started in 1946. We then occupied a building in Steyning that we now use as a warehouse. Before making pick-up arms, we were model engineers, making scale models for shipping and other companies. I particularly remember a model of the Suffolk Ferry that we built for the London North Eastern Railway.

One day in 1959, being less than satisfied with my pick-up arm, I decided to make my own. That was really the beginning of the SME arm; it was in the Autumn of 1959 that I decided to produce it commercially.

Our present factory was built between 1959 and 1961. The plans were laid down at the same time as the first arm was being designed. The first production arm, the Series II, was built here, starting in the Autumn of 1962. Our first two models, the 3009 and twelve inch 3012, ran through until 1972, when we changed to the Series II Improved.

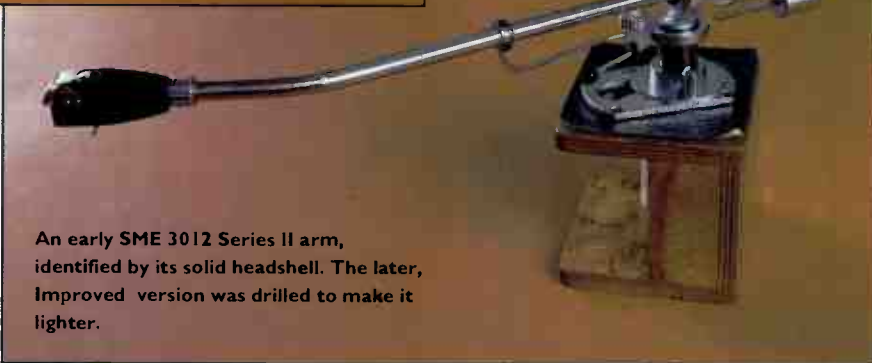
NK: What was 'improved' about the Improved version of the 1970s?

ARA: The Series II Improved, offered much the same as the earlier Series II, except that the effective mass was lower, the range of tracking force had not to be so great and it was generally tailored to the cartridges of the time.

NK: What came next?

ARA: Before the low mass/high compliance vogue petered out, we introduced the Series III in 1975; that had an effective mass of only five grammes. With a Shure V15, one of the most popular cartridges of the time, it would easily track a hat brim! If you had need for warp riding, that was the answer.

But then something else happened. Cartridge manufacturers, particularly in Japan, became less than happy with the need to pay a royalty to Shure for all the moving magnet cartridges they were producing. As the Ortofon patents on the moving coil had run out, they turned their attention to MC's. With the expertise of the Orient came new MC's which rather set the clock back on pick-up arms. These



An early SME 3012 Series II arm, identified by its solid headshell. The later, Improved version was drilled to make it lighter.

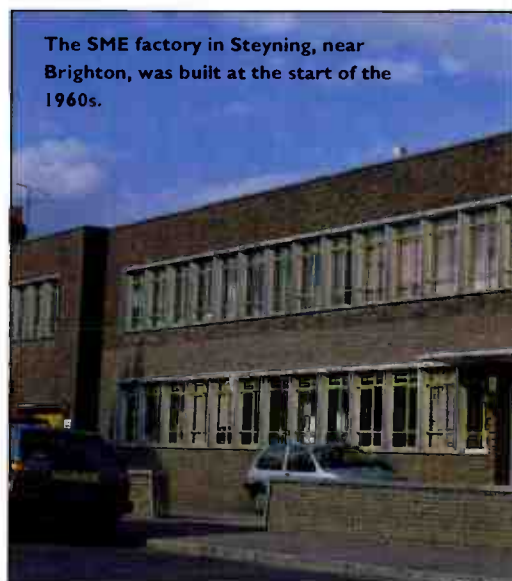
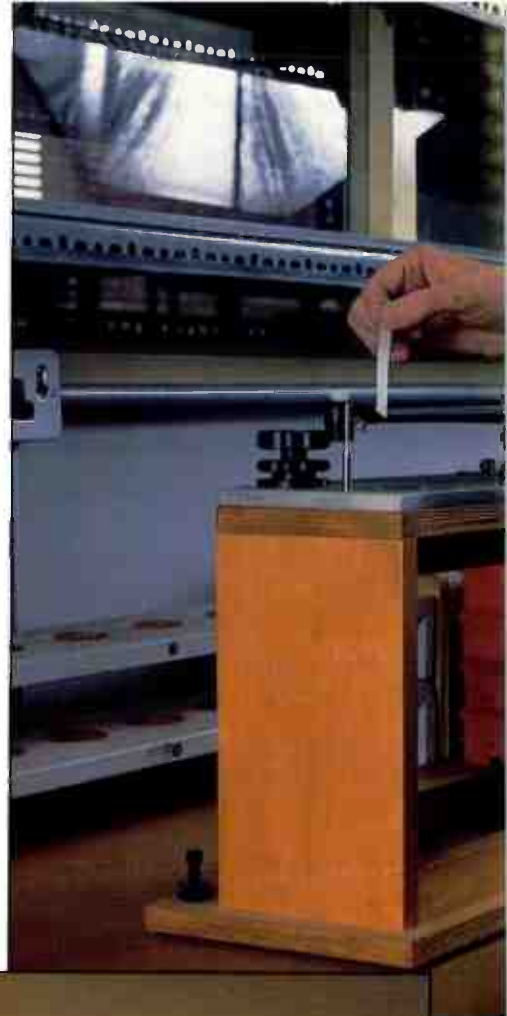
put a lot of energy into the arm. In consequence it needed to be stiffer and more massive overall.

We stood back from the situation for a bit and then in the 1980s decided that we would build a new arm dictated by what appeared to be a more settled cartridge situation. This was the Series V, launched in December 1985. It was followed by the Series IV and then the Series 300.

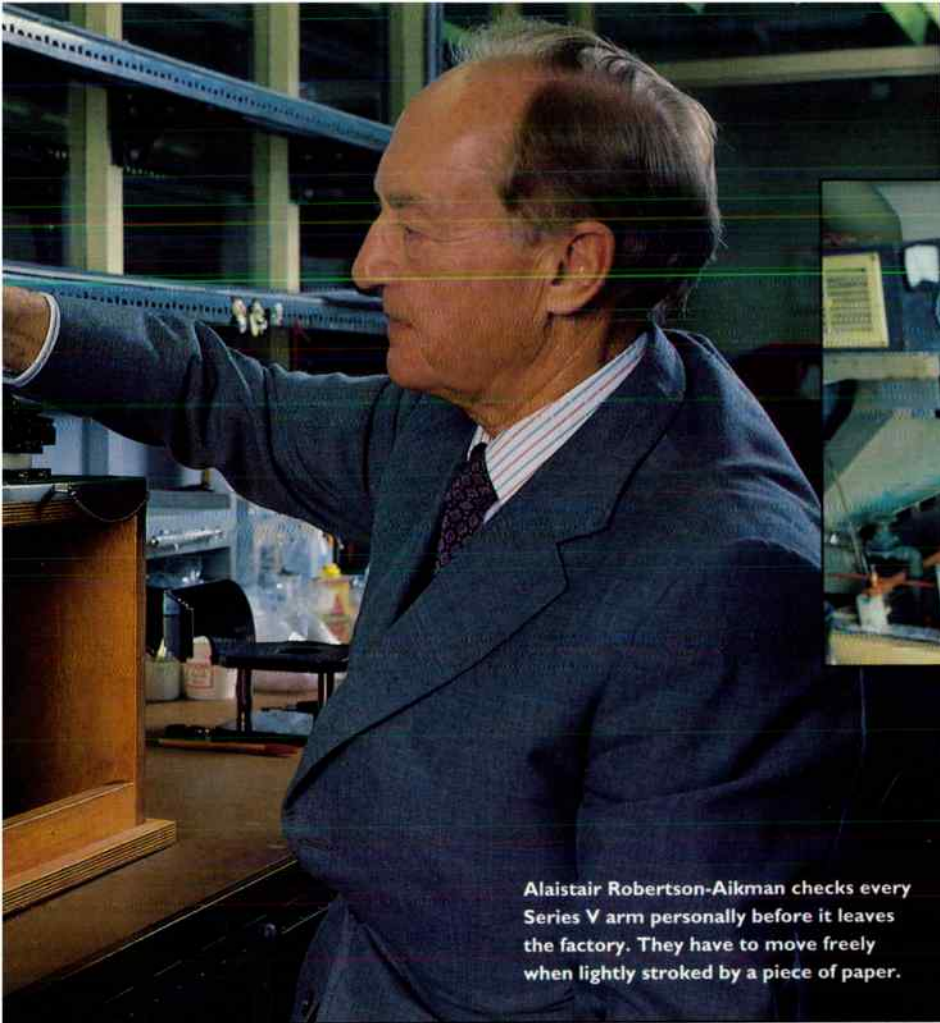
NK: The Series IV was the first reduction in cost brought to the lavish Series V presumably.

ARA: That's right. It is a simplified form, but maintaining the principal features, of which the most important is the cast magnesium armtube.

The 300 Series, which is less expensive still, is formed from an extruded tube - not cast. It has a very stiff armtube, but nothing

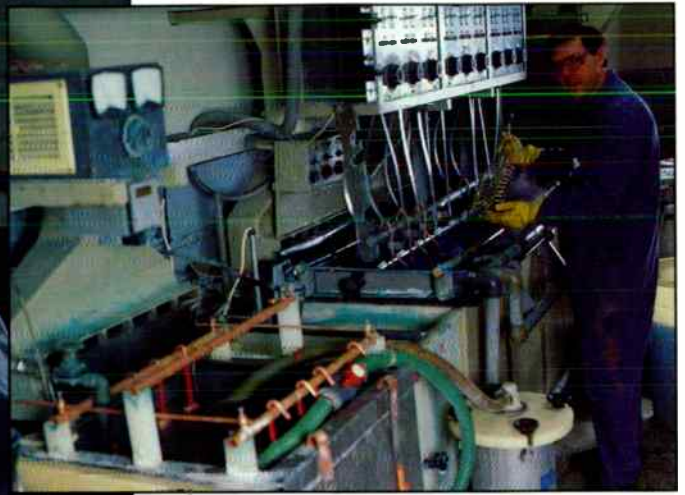


The SME factory in Steyning, near Brighton, was built at the start of the 1960s.



Alastair Robertson-Aikman checks every Series V arm personally before it leaves the factory. They have to move freely when lightly stroked by a piece of paper.

SME are proud of their in-house plating shop. It allows them to achieve an unrivalled standard of finish.



contained, preferring to perform every task in-house. What benefits do you find this provides?

ARA: In-house independence allows us to achieve our own high standards of quality that would be virtually impossible through sub-contracting. In addition, if you want to develop something, it can be produced quickly and simply.

NK: Presumably, you must be thinking of taking in more sub-contracted work in the

has the stiffness of the magnesium arm. We still offer a free Series V to anyone who can bend our magnesium arm in their hands!

NK: Have you had any special acknowledgement of your abilities?

ARA: We have nineteen top awards for our pick-up arms, from Japan, Germany and all over the world, as well as the UK.

NK: To get your finish, you subject your parts to an unusually wide range of processes, don't you?

ARA: It's a matter of quality at every stage. First of all the parts are highly finished when they leave the machine shop. They then go through various metal finishing processes so

STRENGTH & PERFECTION

that when they get to the plating shop, they have a smooth, uniform finish with all radii consistent. At that point the pieces are cleaned and, in the case of parts that have the satin chrome finish, they are blasted and go through two types of copper plating process. It is that jacket of copper, which takes more than an hour to put on, that gives the surface its mechanical strength.

After that it is inspected, re-blasted and chrome plated. We have bright chrome, black chrome and many types of plating finishes, including gold; all are performed here.

The plating shop has been there for the last twenty-eight years. It's really crucial, as it would be quite impossible to get the famous SME plated finish otherwise. It took us many, many years and a great deal of heartache to perfect the many processes. We are known among the plating suppliers as probably the best plating/die casting company in the country.

NK: You are virtually completely self-

future. Will that work be confined to audio?

ARA: We have made components for a wide range of purposes, including avionics. Occasionally names like the Tornado are dropped. Before you sub-contract for those aerospace people, you are very carefully vetted. But if you show them something like the Series V or the Model 30, you're in!

NK: Are there any plans to expand into the field of electronics in audio?

ARA: We have got a little bit of research ongoing there as well. Who knows, something may come of it. I doubt that it will be any more difficult to produce electronic items as regards their manufacture, using external sourced components like everybody else does, than taking on other people's businesses such as die-casting, injection moulding and especially electroplating, as we have already done. Our interest in producing a perfect source remains ●



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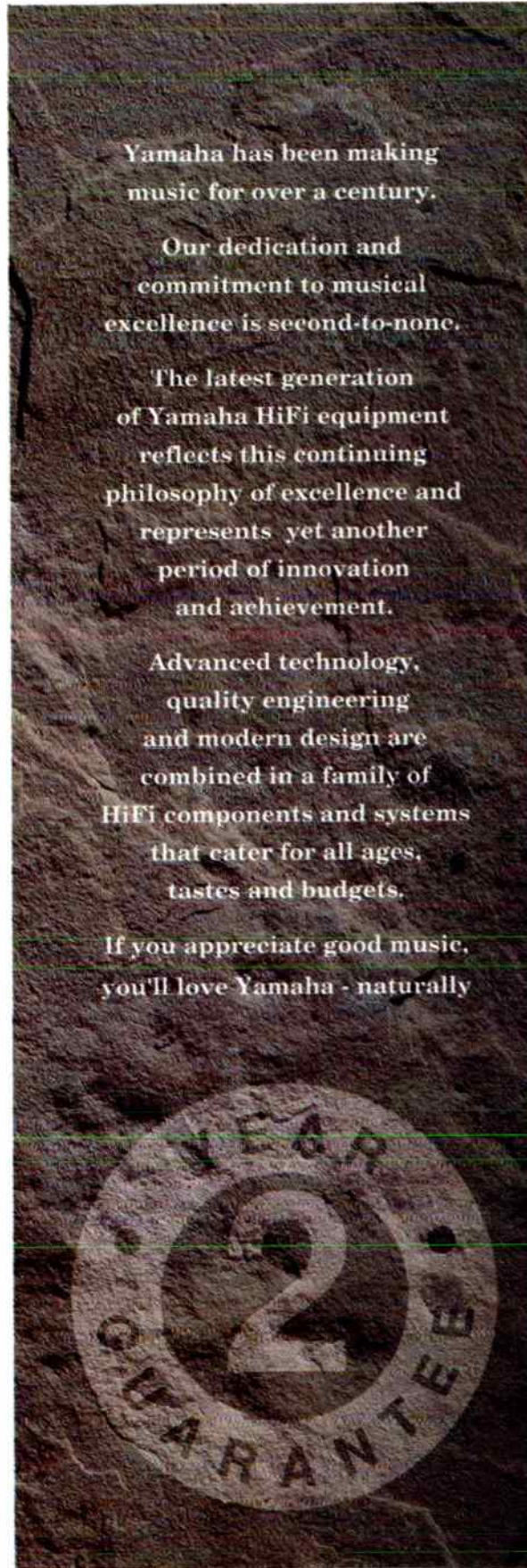
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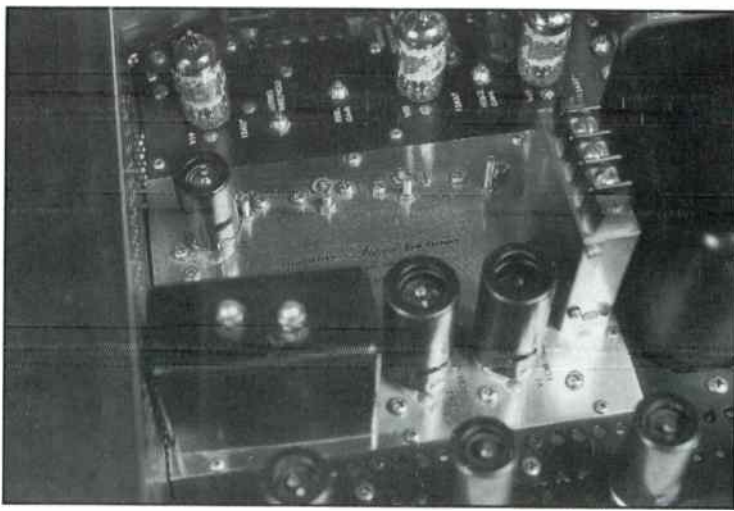
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The aerial - 300 ohm ribbon only - connects to screw terminals curiously placed in the centre of the chassis. Various pre-set adjusters, for scope, muting, etc. are accessible internally as well.

Today a Marantz 10B tuner can be bought for around £1500-£2000 in the UK, according to condition, etc.

Contact:
David Wren, **Radlett Audio**,
141 Watling Street, Radlett, Herts.
Tel: 0923-856497

Tom Fletcher, **Nottingham Analogue Studio**,
128 Cordy Lane, Underwood,
Nottingham, Notts.
Tel: 0773-762947

Our thanks to Graham Tricker for the Marantz 10B background info.

switch that offers various options of usage too.

In circuit topology, the 10B is extremely complex - much more so than the Leak Troughline. There are no fewer than two RF amplifier stages, each using grounded-grid triodes (EC88) for low noise. This results in three tuned stages. Together with local oscillator tuning, a four gang capacitor is used. From the mixer (6DZ4) the signal passes through no less than six IF stages using 6JK6 valves. From there it goes to limiter and detector stages, then on through the stereo decoder. There are twenty one tubes, a solid state rectifier and a cathode ray tube

our own, wonderful Eddystone drives of the period, but its lighting was different. The dial and scope light up bright blue, with red gradations.

The facilities of the 10B differ little from those offered today on quality tuners. There's a stereo/mono switch with a 'Hi-blend' option that reduces hiss on stereo. Inter-station noise muting can be switched off if desired. The oscilloscope display has an associated rotary

for the oscilloscope. The 10B is a tour-de-force of tuner engineering in which budget and complexity were obviously of little concern. Nothing like it was built in the UK at that time and I doubt whether a market for such products would even have existed then. In retrospect Europe appears to have been still dusting itself off after World War II in contrast to what was the norm in the States when the 10B was built.

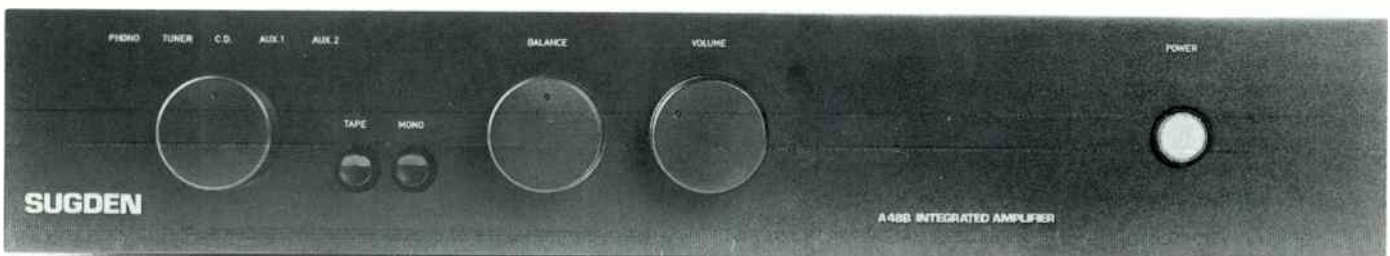
We listened to the 10B just long enough to get a reasonable overall impression. It was especially smooth and silky in its sound, quite unassuming in fact. Like all good valve tuners though, there was a fullness and an atmosphere accompanying programme material that is so often missing from solid state designs. Treble sounded both sweet and unmuddled; it was also understated in comparison to a Troughline, which offers a brighter sound. I was surprised at just how unassuming yet natural the Marantz turned out to be. It was utterly refined. I imagine that, over a long period, this tuner would provide the sort of performance that begs no questions.

The Marantz 10B never was cheap; it isn't today. But it does offer a fascinating perspective on hi-fi, one that puts technological 'advance' into a different light. Tuners might have got cheaper; they haven't got better ●

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A TECHNICAL OUTLINE OF THE MARANTZ 10B

The circuit diagram of the 10B is a spiders web of complexity, with many signs of unusual and advanced design solutions. Tim de Paravicini emphatically makes the point that the Marantz 10B, designed by Dick Sequerra, was one of the world's most complex and advanced tuners. We asked Tim to explain roughly what Dick Sequerra was aiming to achieve with this remarkable design.

Tim de Paravicini

Dick Sequerra's main requirement was low phase distortion, so as to provide the most accurate audio and stereo performance. This fact and the innate complexity make the 10B extremely difficult to align, since it is optimised for minimum group delay through the IF strip, not flat passband response shape like ordinary tuners.

LOCAL OSCILLATOR AND RING MODULATOR

The local oscillator, working at incoming $F+10.7\text{MHz}$, feeds a balun to obtain a push-pull frequency. The RF from the last coil also feeds a balun for push-pull. Two push-pull signals are required to drive the four-diode mixer (in other words 'Ring Modulator' or 'Doubly Balanced Mixer'), the only true mixer with virtually no second harmonic component. The output, via a third balun, becomes the 10.7MHz IF signal.

Only two or three other FM tuners in the world use this method, because it's expensive.

THE IF STRIP

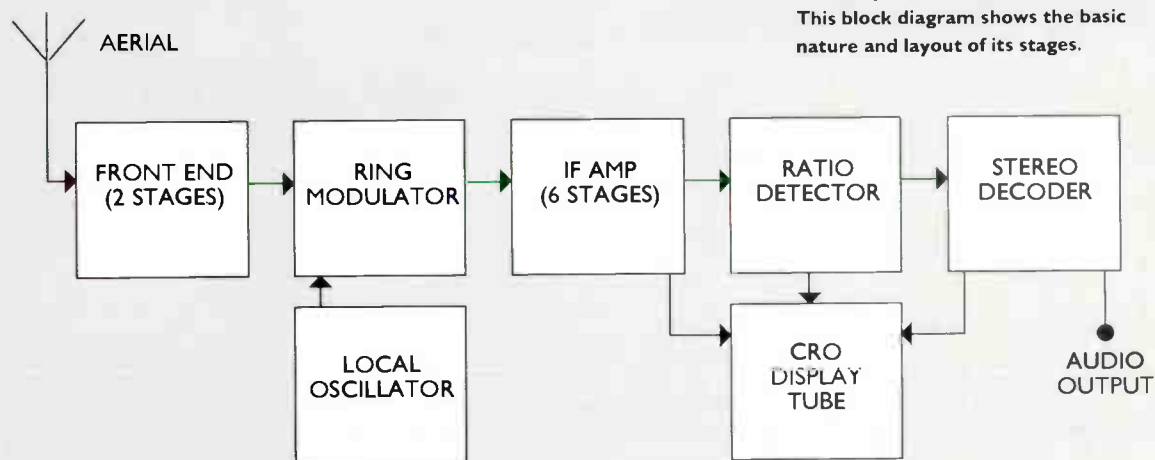
The IF consists of six stages, all identical, using pentode RF valves and 8-pole IF filter transformers with two diode slippers in each can to prevent saturation of the following stage. Total gain-per-stage

THE STEREO DECODER

The recovered audio is fed to a triode cathode-follower buffer. One output feeds the display, the other feeds a pentode buffer splitter. From the cathode through a low-pass filter is the mono component to feed the light-dependent resistor (LDR) switch.

From the anode is the $38\text{k}+19\text{k}$ pilot which feeds a frequency doubler coil to synchronise a local 38kHz oscillator (push-pull). The outputs feed a balanced product detector which, via an LDR switch feeds two halves of a double triode (one half is L-R, the other is -L+R) to be subtracted from the mono component that feeds the two output cathode-follower buffers via filters which are L and R outputs to feed the hi-fi system. The 75µsec de-emphasis takes place in these last filters.

The Marantz 10B was a complex and unusually sophisticated valve tuner. This block diagram shows the basic nature and layout of its stages.



THE FRONT END

This has two stages of grounded grid amplification using EC88 (a UHF tube); the 300 ohm-75 ohm antenna balun is connected to a double tuned RF coil to cathode; the anode output feeds another double tuned coil into the cathode of V2; its anode also has a double tuned coil (three stages in all) to provide some (10dB) RF gain, but mainly to provide good phase-linear Pass Band before conversion.

is about 24dB; hence so many stages to raise 1µv up to 10 volts. Each stage has a diode detector to feed a common line to provide a logarithmic signal strength signal for AM display and muting control. Ratio detector After the IF, three valves amplify and condition the signal for the detector (ratio discriminator type) to provide audio (composite or multiplexed stereo).

THE CRO DISPLAY TUBE

The cathode ray oscilloscope (CRO) display consists of a 3" tube to show two basic functions: one is the signal strength and audio level; the other is to display the stereo content of the audio output as an X-Y Lissajous style, a very powerful 'diagnostic tool' which has never been bettered

THE POWER SUPPLY

The PSU is a fairly usual filament AC supply plus two voltage doublers for +265v + 130v + 270v. All RF valves have their filaments well isolated by RF chokes.



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Miniaturisation always attracts people. Models of the QE2 carved out of a matchstick, the whole of King's Cross station in a matchbox, you know the sort of thing. Monitor Audio have also gone for the 'Small is Beautiful' syndrome. The £139 Monitor Audio One is tiny enough, and light enough (24cm high, 16cm deep and 15cm wide) to balance on the palm of your hand. Even someone living in a cupboard under the stairs would be able to find room for them.

What hasn't been shrunk in this diminutive box, with its fibre-pulp coned main driver and distinctive gold dome tweeter, is the amount of sound that comes out. They didn't need triple-figure wattage to fill our medium-size listening room. Just because they're tiny doesn't mean they would only be at home in the spare bedroom.

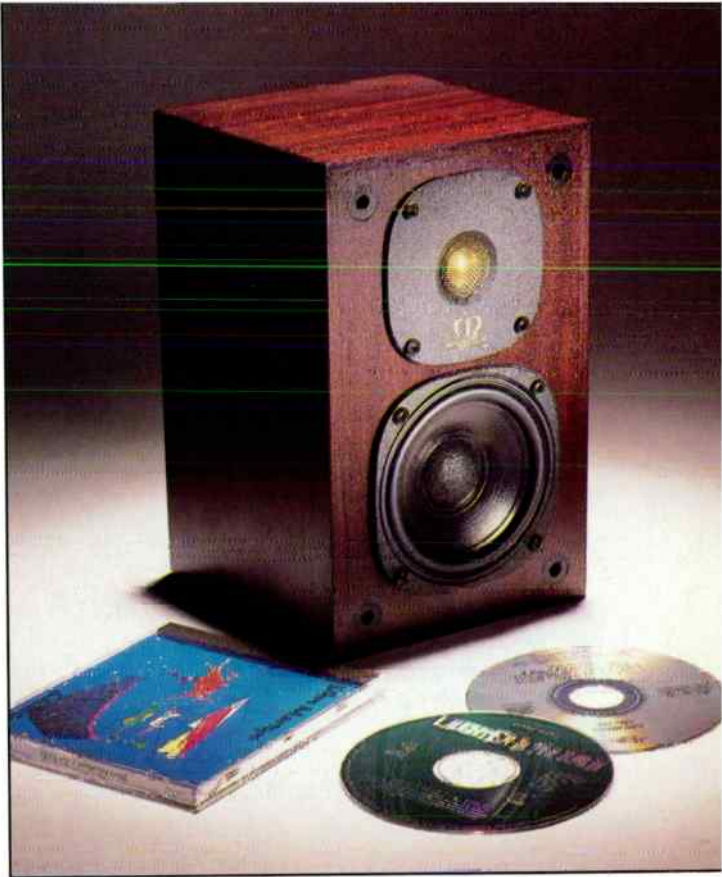
Most striking was that the Ones had both presence, style and serious pretensions to offering a well-developed sonic stage. Listening to Peter Hurford's organ would convince no-one they were sitting in Liverpool Cathedral, but missing lower octaves apart, it didn't sound as though he was playing a Hammond or a harmonium either.

Credibility is the name of the game here. These speakers give a neat, clean, and tidy

representation with a wide spread between the speakers. Monitor's little babies could offer up a broad swathe of orchestral sound too, laid-back enough to give the band an illusion of depth, and the sensation of there really being a hundred players a dozen rows away.

There are some compromises in tonal quality. Rachmaninov's Piano Concertos had a good sweep of balanced sound but with some anomalies. The inevitable one is in the bass, despite the reflex port's valiant and strenuous air shifting. Bases mumbled away rather than being present in force. All the same, there's a tightness and control in that long-throw driver that keeps melodic lines moving even in these parts of the score. In the upper reaches, however, trumpets, on the ball in their entry, lacked body.

Here I dissent from the



one from the heart

Eric Braithwaite falls for the new baby Monitor Audio Ones.

Measured Performance

The frequency response trace of the MA-1 shows a steady rise in output up to 1kHz. However, a baby speaker like this is meant to be used close to a wall, a position that reinforces bass. Taking this factor into account, the MA-One's response then becomes flatter across the bass and mid-ranges than it appears in the analysis here. The speaker wasn't measured against a wall (speakers never are) because peaks and suckouts from phase addition and cancellation would cloud the picture.

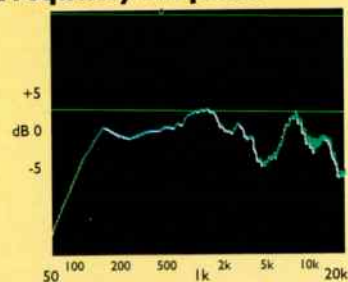
There's a fairly substantial drop in output of 8dB or so from 1kHz up to 4kHz, before the tweeter comes in above 5kHz. The resultant suckout will add a smoothing effect and lessen detail, but as I mention with the Royd Sapphire in our group test this month, such an effect only becomes obvious with musical instruments strong in upper harmonics. Closely recorded violins are an example and it is here that the MA-One will reveal its limitations.

The tweeter peaks at 7kHz, output falling away at higher and lower frequencies. It will have its own strong character as a result. I would have hoped for a smoother response from a modern design.

Overall impedance was high at 11 ohms, making the MA-One a light load upon amplifiers. Unfortunately, high impedance has also made the speaker insensitive; it produces just 83dB sound pressure level for one nominal watt (2.8V) of input. For any given volume control position there will unfortunately be less output from this speaker than most, so it doesn't complement budget amplifiers of low output especially well, unless moderate volumes only are wanted.

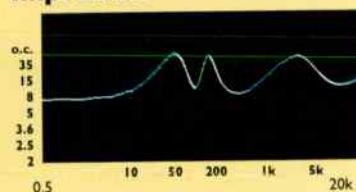
The MA-One offers its own characterful sound; I couldn't call it a mini-monitor like the Goodmans Maxim 3 for example. However, the smoothness of a flat-response loudspeaker isn't always liked, especially with Rock music. An enhanced sound was for years offered by the Linn Kan - one that was loved by devoted followers. **NK**

Frequency Response



Bass/mid-range output falls before treble from the tweeter takes over, producing a dip.

Impedance



High overall impedance of 11 ohms.

Ones' view of what cymbals should sound like on a Cult recording. Like classical trumpets, they don't contain that much tin. I sniff metal dome or crossover playing up in this area. Rory Block's vocals had more of a bite and less obvious key-changes than I've heard elsewhere; both mandolin and drums were over-metallic.

Turning to more Rock music showed the little Monitor Audios to be a dab hand at tunes and melodic lines, but not muscular enough for heavy bass and drumming to keep up with larger models in the timing department. If they were a bit short in pile-driving, giving the impression of a limited dynamic range, it was easy to close the eyelids and enjoy the performance.

And so I did. Putting these tiny Ones up against a Goliath or two later - at least in terms of box size - proved they were no slouches in terms of overall quality of sound. Orchestras and rock bands both had serious volume and a more than a credible feeling of dynamics, entirely belying the small size. They sounded bigger, livelier and more tuneful than many larger rivals.

Whatever the few mistakes the Monitor's make, these don't detract from their high enjoyability factor. They'll take a fair amount of power without showing any signs of cracking up or losing their grip, and they're an ideal partner for the best of budget sources and amplifiers when space is in short supply. Don't skimp on the quality, either - they're good enough to show where you spared the pennies ●

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TECHNOLOGY MOVES ON... ...KJ HAVEN'T STOOD STILL EITHER!

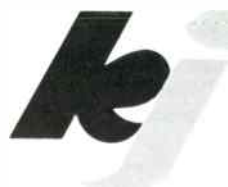
Technology moves on and this beautifully crafted horn gramophone has long since become a museum piece. At KJ we have to keep pace with technology and are well established as London's leading audio consultants with over 25 years experience.

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With barely a whisper - let alone a public charter - Tannoy unveiled their new Prestige range of loudspeakers at Runnymede. King John may well have approved, since some possess considerable power. His barons wouldn't have let him near them. They forced him to sign the Magna Carta at Runnymede to curtail his excesses.

Things have changed a bit since then. The M25 thunders across the low lying fields of the Thames flood plain on a viaduct, which tends to spoil the scenery a bit. There's a convenient exit at Junction 13 though, barely half a mile away from the Runnymede Hotel. This was the venue at which Tannoy were showing their Prestige loudspeakers, in conjunction with Quad who brought along most of their current products.

As George Hooley of Quad reminded the audience before the demonstration began, these two companies are amongst the oldest in the audio business; Tannoy started in 1924 and Quad in 1934 - and both are still going strong. Hi-fi, he reminded us, was still very much alive in the hands of Britain's specialist manufacturers. The Japanese might occupy the High Street with their cheap rack systems, but they would be hard pressed to match Tannoy's mighty horn loudspeakers or Quad's famous point-source electrostatic. There was no shortage of visitors ready and eager to hear his message, even though it was delivered on a blustery and wet Sunday in March. People were streaming into the spacious but elegant surroundings of the Runnymede Hotel all the same. Real hi fi still exerts a pull.



hi-fi shows

hi-fi shows

hi-fi shows

shows

Priced at just £3,500, it is (hah, hah) more affordable.

Arranged below the GRF is the Edinburgh, which uses a more modest 12in dual-concentric TW driver and the Stirling, with its 10in dual-concentric TW driver. Prices are £2,750 and £1,750 respectively. The Edinburgh is a floor stander with a large bass reflex cabinet,

Tannoy/Quad Show

The Runnymede Hotel, March 1992

TANNOY

Regular readers will know that we reserve a special place for the massive Tannoy Westminster Royals. They're one of the few large horn loudspeakers left in the world - and they pack a mighty punch. Most go to Japan, believe or not, where they are not only appreciated but their massive cost - £13,500 - is paid by enthusiasts.

The new Prestige loudspeakers aim to combine many of the properties of the Royals with more acceptable dimensions and price. Sharing its massive 15in dual-concentric, Alcomax-magnet drive unit is the £7,000 Canterbury 15. This speaker is built to order. The cabinet is traditionally styled and finished in rich veneers. Owners get a certificate of ownership and a brass plate with their name engraved on it. Both the Canterbury 15 and the smaller 12 (£5,500, 12in bass driver) have compact, distributed port reflex cabinets. The ports have a sliding grill which can be used to adjust mouth area and tune bass. These speakers combine the Westminster Royal driver with large, but domestically acceptable cabinets.

Below these three loudspeakers lies a sub-range which, perhaps confusingly, use a less expensive dual-concentric driver having a ceramic magnet, together with a more advanced treble unit possessing a new 'tulip waveguide' (TW). I have heard it and can confirm that the new synthetic waveguide, which directs treble from the rear-mounted tweeter through the centre of the large cone, does give smoother treble.

So now for the TW range. It starts with another Westminster - a sort of beginner's version. This one, the Westminster TW, costs just £6,000. Whilst the Royal cabinet is made from Finnish birch plywood, the WTW is made from less expensive particle board. It is simpler internally and (I think) it's a bit smaller too. However, it is not small in the normally understood sense of the word, as its weight of 132kgs suggests.

Below the WTW is a new Guy R. Fountain Memory. This model, always near the top of the range, is a tribute to Tannoy's founder. It uses a 15in dual concentric TW driver also, but the cabinet uses ducted ports to load and tune the bass. Although it is not small (no sizes are quoted since after inspecting the Westminster and Westminster Royal dimensions to see if we could possibly get them through our doorways for review, Tannoy and I suspected the new product catalogue had got them wrong), the GRF can be lifted by two men and it will go through most doorways.

whilst the Stirling has a variable port bass tuning system and benefits from stand mounting. Even these loudspeakers have the same traditional veneered finish and brass adjuster plates of the bigger models.

The impecunious who dream of following in King John's footsteps may like to start with a pair of Stirling stands. They are the base upon which power rests - and cost just £250. Humble serfs can get a jar of Tannoy wood renovator for £11, to which the cabinet can be added later - Barons permitting.

QUAD

Quad were slightly rueful about the continuing absence of the new FM66 tuner from sale, due to production problems, I was told. However, they joined Tannoy in bringing along a wide range of products, including the always-fascinating cutaway version of the ESL-63. Quad amplifiers and preamplifiers provided all the muscle for the Tannoys too.

The '63 and the Westminster might seem worlds apart in conception, but they were demo'd side-by-side, believe it or not. A somewhat timid selection of music, played at restrained volume (we were told there were "no pops, because pop music is all electronic and therefore cannot be used for quality judgement" (groan!) served to suppress differences. I rather yearned for the audience to be told and demonstrated the differences between an electrostatic and a horn, but it would have been a bit too much to expect in the overly-genteel atmosphere that prevailed. There was one moment when "a good pop record" was played and the ESL-63s came alive though, showing just how sweet, smooth and clear they can be.

The conservatism of the demo muted the message; some members of the audience will have left wondering why they should pay so much for such exotic equipment, when it seemed so unspectacular. Since the subtleties of hi-fi - especially those of a fine electrostatic - are largely lost in any audience demo, proceedings needed livening up with some fireworks.

This minor disappointment apart, the 'show' was an interesting one, offering an excellent opportunity to see and hear some of the rarer and more exotic loudspeakers of the hi-fi world - speakers loved by Hi-Fi World! **NK**



Turning the Tables for Britain

Malcolm Steward spins the Thorens TD166/VI/UK turntable, fitted with Rega arm for British ears.

The Thorens brand-name has become synonymous with high quality, suspended sub-chassis turntables; current decks using a three point sprung suspension system all owe a debt to the Thorens TD150 that popularised the principle.

Prior to the introduction of the TD150 in 1964, Thorens decks like the TD124 were driven by idler wheel systems where a rubber wheel drove the platter directly and, in so doing, squirted healthy doses of mechanical noise into the play-back system.

The revolutionary change that came with the TD150 was the replacement of the idler gear with a belt-drive system. The motor was bolted to the unit's top plate and drove the platter via a compliant rubber belt. The platter and tone-arm were floated on a sub-chassis, decoupled from motor and environmental noise by three conical springs, and, of course, the drive belt. The idea has since been refined and tweaked but not superseded; it remains the most effective way of configuring a high performance turntable.

The TD150 eventually made way for the TD160, a turntable that still remains available today, although it is now in its fifth incarnation. The deck

under consideration here, the TD166, is a less expensive variant of that classic design. To be precise, the deck featured in this review is a special version of the standard European TD166, customised solely for the British market.

What makes a TD166/VI into a TD166/VI/UK is the replacement of the rubber platter mat fitted to European models with a felt one, and the addition of a Thorens-badged Rega RB250 tone-arm. So equipped, the deck retails for £269.90. Kitted out with a budget moving magnet cartridge you can put together a very respectable turntable for under £300.

The TD166/VI/UK is fully manual, unlike other inexpensive Thorens designs where some degree of automation is included. The Rega arm mounts onto a removable base-plate attached to the deck's galvanised steel sub-chassis, so there's room for manoeuvre if a tweeky enthusiast wants to fit an RB300, or any other arm, later.

Setting up the deck is



child's play. Most users will simply fit the cartridge of their choice, plug in the deck's power lead (with captive transformer), place the deck on its stand or table, fit the belt, outer platter, and lid, and that will be it: the only time they will need to touch the deck again will be when they're using it. It doesn't require cossetting; the Thorens suspension is robust and generally free from the drifting and settling that can plague other turntables.

However, the suspension of the first sample of the TD166 I tried six months ago did require adjustment before the deck would perform properly. The arm cable was providing a mechanical short circuit to the suspension by touching the deck's baseboard. Thorens is addressing the problem and current samples should be okay. The Rega cable exits the arm perpendicularly and will foul the deck's base if it is not folded back and secured to the arm pillar before it is routed to the P-clip on the plinth. A plastic cable tie will solve the problem for owners of early examples.

No Fuss

Once set-up the deck proved to be very easy to use, its convenience enhanced by the provision of top-plate speed switching. This is a manual arrangement, the switch operating a mechanical linkage that moves a fork to nudge the drive belt onto the appropriate crown of the synchronous motor's drive pulley. There's no fussing with taking off the outer platter and shifting the belt manually, which, despite being a cost effective way of performing the task, is not a Good Idea: greasy fingers are best kept away from the drive belt and the surfaces it touches.

I tested the TD166 in a system that used a Cyrus Two/PSX amplifier and Cyrus 780 speakers, bi-wired with Sonic Link Blue/Yellow (4-wire) cable. The turntable was sited on a Target TT2 stand; I thought that my usual, £400, three-tier, Mana Reference stand was perhaps not representative of the kind of platform that most users would employ with this deck! I fitted an Audio



Left: The outer platter lifts off the inner hub. Drive is transmitted from motor to hub by a rubber belt; speed is changed by a metal arm that nudges the belt on to one or other of two pulley diameters.

Technica AT-OC5 moving coil cartridge into the Rega arm: I wouldn't recommend that users fit anything more sophisticated than this but experience with the TD166 has shown that it doesn't really come to life with mundane cartridges. Roksan's Corus Black has also proved to be a suitable partner, and so has the cheaper Goldring 1012, but any cartridge that errs on the dull or laid-back side of neutral should be avoided if my experience is typical.

So equipped, the TD166 acquitted itself well and gave an animated and well organised account of a wide variety of recordings. It fared best with straightforward, openly recorded material like Lou Reed's 'New York' LP. Its sound was crisp and clean, giving a clear view of vocal, drum and guitar contributions. Only bass and bass guitar attracted criticism. While the TD166 articulated and resolved both instruments well, clearly differentiating between Rob Wasserman's Clevinger upright and Fred Maher's Fender, neither had outstanding punch or weight.

Like most sub-esoteric turntables, the TD166's soft spots exist at the frequency extremes. Unlike some mid-price decks, however, the Thorens' top end seemed well-measured, being detailed but not intrusive. It had, for example, the subtlety to do justice to a lightly brushed cymbal and the attack to catch the impact of one that was more enthusiastically struck.

With tracks from Mary Black's LP 'No Frontiers', the TD166 sounded impressively secure. Where lesser decks tend to get stretched at the seams by her powerful singing, the Thorens retained its composure, making for anxiety-free listening.

The Athena recording of Rachmaninov's Symphonic Dances demonstrated that the Thorens, while having a sound that was dynamic and vital, didn't compete with premier

As Williams worked his way round the kit, gradually piling on more and more pressure, the Thorens reflected the increase in attack vividly

out the music's cross-rhythms and the interplay between the performers well. However, if you really want to get inside the musical fabric and have a poke around, you need to think about a more expensive deck. While the TD166 is an informative and coherent performer, it isn't an information retriever or organiser that will rival decks of the Pink Triangle 'Little Pink Thing' calibre.

The TD166 is aimed at taking market share from turntables like the Linn Basik, Rega Planar 3 and Systemdek IIX/900. It stands a fair chance of succeeding. Although the Rega and Systemdek offer it stiff sonic competition, neither has its visual elegance. Put alongside most of its rivals in a dealer's showroom, I'd say that there was little argument which would attract the most admiring glances.

The Thorens also has tweak-appeal. Tuning the deck was outside the scope of this review but there are several areas where the enthusiast could attempt to wrest even better performance from it: you could try replacing its rubber feet with those from a Linn, taking the foam out of its suspension springs, indulge in some hard-wiring . . . the possibilities are many and varied.

In its ex-factory state the TD166 is a safe and dependable-sounding turntable that easily justifies its price tag. If you want to use it as it stands, that's fine. If you want to try to take it a little further, the opportunity is there ●

Far left: The arm of the '166 is a rebadged Rega RB250: the Thorens name can be seen on the support pillar.



FIXES OR FIDDLES?

Congratulations to all at Hi-Fi World for March's Letters debate. May I take issue with Messrs Braithwaite and Hughes for their responses to my own contribution?

Firstly, though, my apologies to EB for doubting his integrity. I wanted to provoke a response to product plugging - and I really got one!

EB's details of Dr Smith's findings were very welcome, but they in no way challenge the significance of Fred Davies' results. If we accept that coloured ink absorbs reflected light, it doesn't prove that it has any effect on the sound. Mr Davies tested the claim that scattered light reduces sound quality, not the absorption theory, and he found it seriously wanting.

I can only wonder at J.H.'s experience with inks, especially on vinyl. Can he consistently pick out a tweaked item in blind tests? He made no mention of being able to.

Any tweak either works or it doesn't. If, as E.B. wrote, someone chooses to remove their glasses at a concert and enjoys it more, that's fine by me. Someone else may prefer to leave theirs on, for the same reason. But let's suppose that somebody then started selling 'Incredible Acoustic-Enhancing Glasses' for the 'Amazingly Low Price of £19.99!!!'

Wouldn't just a smidgin of reliable evidence help its credibility? Both E.B. and J.H. seem to think that a tweak is worth paying for if it is merely perceived to work. But I emphasise again that in dubious cases those same perceptions are often faulty. We need protecting from our psychological foibles; we don't need them to be ignored by the naive or exploited by the unscrupulous. After all, few people can afford to squander their money.

Both reviewers also made appeals to the history and philosophy of science (heavy stuff!). If Green Pens really do what is claimed for them, science will, of course, provide an explanation. But do we have to wait as long as we have been waiting for Nessie to appear? I'm not holding my breath . . .

J.H. referred to those who favour Green Pens as "open-minded". Does this mean the rest of us are closed-minded?

There's a little known danger in being too open-minded: your brain might fall out. . . True open-mindedness must involve healthy scepticism, not just a predisposition to indulge in one's own subjective impressions or to be credulous. As Bertrand Russell wrote: "For my part, I should wish to preach the will to doubt . . . What is wanted is not the will to believe, but the wish to find out, which is the exact opposite."

Lest I be labelled an inveterate sceptic, I do believe CD ring stabilisers actually work, but the difference is small and hard to pick out in a blind test. I think I can live without them.

**Richard Ward,
London SE13 6DR**

When I did this, my original suspicion that there might be something there became a conviction: there was. Since then I have become an increasingly enthusiastic follower, and have completely transformed the sound of my system, which was not making horrible noises originally.

Of course Mr Walker will say that I am deluding myself, and I do not know how I could convince him about a matter on which he is impervious to contradiction; but for other people who may be deterred from making a few simple experiments I feel compelled to offer my opinion in the hope they may take advantage of the work of one who I now believe to be the discoverer of a completely new approach to

CD, then (all else being equal) this must mean that the quality of the two digital states (i.e. One and Zero) is improved in some way. This scenario very effectively demonstrates the fact that a CD player is in fact not a digital system, but analogue! How absurd.

With regard to Dr Peter R. Smith's experiment with lasers and Green Pens, I have always believed (perhaps incorrectly) that the laser is directed toward the disc at approximately 90 degrees, not 45 degrees as in Dr Smith's experiment. If I am correct, Dr Smith's experiment is fundamentally flawed with respect to a CD system and therefore is of next to no scientific value.

If I did have an axe to grind, it would be with the sale of green pens at an extortionate rate (would you pay approximately £7 for a marker pen at the local newsagents?) justified by someone's "best stab" at a scientific explanation of its worth. If Joe Bloggs wants to paint all his CDs because he thinks it improves the sound quality, fine. When I am given an explanation of the effect, I appreciate reasoning that's at least half convincing.

What's a shoe repair shop and Hi-Fi got in common . . . ? They're both full of a load of old cobblers!

**A. E. Taylor,
Leicester**



THE COLOUR OF OPINION

Mr Ross Walker tells us that some reviewers have fertile imaginations. I am not certain which is the worse: a fertile imagination or Mr Walker's dogmatic conviction of his own rightness, which is apparently unassailed by the number of experienced listeners who disagree with him.

Never having tried the Green Pen, I offer no opinion about it; though I have tried the violet pen and can answer for its effectiveness. Initially, I was as unconvinced by the assertions of P. W. Belt as Mr Walker, and made many a joke about such nonsense - not without hints that P.W.B. was on to a good thing with those he duped into following him.

I then discovered that I had made one of my experiments incorrectly, and felt that in honesty I must get it right.

the problem of audio quality. It is an approach which naturally finds no backers amongst the manufacturers and few among the professional reviewers; but if I and increasing numbers of music lovers are having the experiences which we clearly do have, P.W.B. will be acknowledged as he deserves to be.

**Peter Turner,
Stroud,
Gloucestershire**

COBBLING IN HI-FI

In continuation of my letter in November's issue and your article "The Greening of Compact Disc" in the March issue, may I offer a few points?

If some people are to be believed and a Green Pen does affect the sound quality of a



This correspondence could last longer than The Mouse-trap. (Sigh.) I've been beset by piles of funny bits and pieces to stick on my

CDs. I suppose I owe it everyone to try them, and I'll report in due course.

Anyway, apology gracefully accepted, Mr Ward. I might come back to product plugging another time, for it does occur to me there is a nice little anthill to be poked into here.

However, some research using treated CDs and CD mechanisms has been in progress and we hope to bring you the results soon. We may not have to wait for Nessie to raise her head above water.

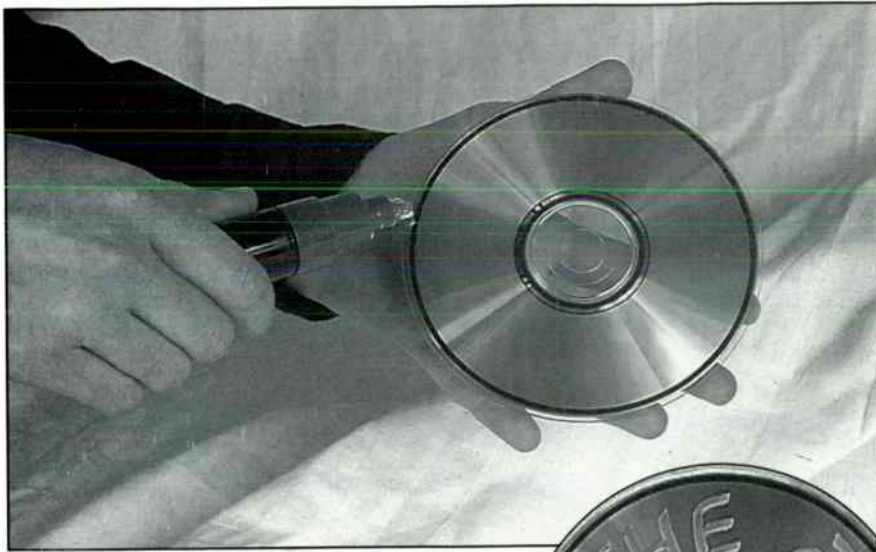
Meanwhile, I think Mr Taylor may have hold of the wrong end of the stick. If you're measuring the amount of absorption of light, as Dr

Smith was, it doesn't matter what angle the light source strikes a reflective surface, as long as it's not so shallow it's dispersed too widely to be measured. Secondly, as far as I know, proponents of the Green Pen have never suggested it would alter the two digital states, "On" or "Off". The majority of treatments are believed to improve the ability of the laser to read the ones and zeros, and reduce the amount of interpolation by the error correction system when it has difficulty reading a stream of data. If this happens, then it must be beneficial to the sound. It is the "if" that is the problem.

I think it is about time I came clean. My own personal view is that the Green Pen probably has a psychological element. There is plenty of research around on the effect of colour on perception. There are obvious reasons why hospital wards or dentist's surgeries are not painted red, for instance. Wharfedale, I recall, once did some listening tests with the same speakers painted different colours, and were amused by the apparent perceived differences in the sound. Here I differ from Mr Ward - again! - and simply urge any buyer to repeat the phrase "caveat emptor" frequently.

The "wish to find out" I fear is not very strong as far as tweaks like this go. While treating one disc with no errors and a precisely similar one with a measurable number deliberately introduced, would probably settle the business, I can't, I'm afraid, see one of the record companies which have the facilities for it putting such an experiment very high on their list of priorities.

Now to stir the pot a bit more, I've had a paper by D. Sipes and A. Martinez of Naperville Illinois, U.S.A. These two gentlemen are apparently optical engineers with a background in industrial laser applications. Mr Taylor will be shocked to



the green pages

**Could it be that only the grass
is greener on the other side?**

More thoughts on green (and violet)

**Compact Disc tweaks,
with news of a lens hood - no,
not for a camera, for a laser.**

discover that they do indeed refer to a part of the CD playing process as "analog"!

To precis the argument in as short a space as possible, Sipes and Martinez refer to digital audio reproduction as a "two-dimensional process." The signal received by the optical pick up, they say, is a pulse width modulated code where the edges of the pits pressed into the CD are the "I's" and the time intervals between transitions are the "O's". Distinguishing between time intervals ("bit error rate") is enhanceable through error correction schemes, and is digital; controlling the

arrival time of the information ("time jitter") is not, and is "analog".

Still with me? "What is really happening," they say, "is that the laser is mapping the contours of the disc and trying to decide whether what it sees is a mountain or a valley . . . at a rate approaching three million times a second." The mountain or valley is a hundred times narrower than a human hair, with a depth of less than a thousand hydrogen atoms end to end. "In order to gather as much of the light as possible, the optics are designed to accept light over a very wide

angle, much more than the fastest camera lens available. This 'optical vacuum cleaner' gathers the desired reflection as well as all the extraneous unwanted light. This has the effect . . . of blurring the exact position of the edge of the pit thus causing this unwanted jitter."

What the two have developed is a kind of shade for the laser somewhat like a miniature lens hood for a camera to eliminate some of the scattering. To go into the experiments the two have performed would be a lengthy exercise, but anyone interested can write to Laser Illusions Inc., 1220 W. Ogden Ave., Naperville, Illinois 0563 U.S.A. We hope to acquire one of these widgets.

As far as Peter Belt's treatments go, I suspect Ross Walker probably would react as Mr Turner suspects. I have some sympathy for the notion that if all hi-fi hardware and software were perfectly engineered, then no tweak would make any measurable difference. However, I feel an attack of Leibnitz coming on, and suspect that this is not "the best of all possible worlds" and in the meantime our psychological foibles are bound to be exploited. They are in any case: I must repeat that the reproduction of music in stereo no less than mono is an illusion in itself. All we expend our time and money on is reducing our own personal credibility gap between the real world and the illusion, and in these terms I can't see much difference between a piece of hardware and a tweak. Now for Plato . . . or maybe not. At this rate we might be the only Hi-Fi magazine to publish an article on the philosophy of hi-fi!

My local shoe repairers registered a protest, by the way. They say neither of them are a day over thirty. **EB**

WIN A MICHELL GYRODEC

This month, we and Michell Engineering are offering one lucky reader the chance to win a hi-fi sculpture - the Michell Gyrodec. Not only elegant in appearance, it exudes elegant engineering from the satin sheen of the cast sub-chassis and the cylindrical covers of the suspension springs right down to its three turned cone feet.

It must rate as one of the most striking and beautiful turntables ever made. Heads never fail to be turned by

its looks even when it's still. As the platter spins with its revolving gold weights beneath it, John Michell's Gyrodec exerts a pull as strong as any hypnotist. It mesmerised Kellogg's advertising agency, who used a Gyrodec as a feature in one of their campaigns.

Some of the Gyrodec's unique design came from Michell's model-making work for Stanley Kubrick's science-fiction masterpiece, '2001'. Lovers of trivia should also note that Michell's previous turntable, the Hydraulic Reference, was used in another Stanley

MICHELL GYRODEC COMPETITION ENTRY FORM

1. Apart from the Gyrodec, name two other Michell Engineering products

2. The word 'Gyro' is derived from:

- Giro - The Norse god of credit transfer.
- Gimus - Latin for recording.
- Gybe - Obsolete Low Dutch to swing.
- Guros - Greek for rotation.
- Guru - Hindu for teacher.

3. Michell Engineering is based in:

- Pinewood.
- Borehamwood.
- Hollywood.

4. Where did the inspiration for the Gyrodec's design come from?

5. In which T.V. commercial might you see a Gyrodec?

- Kellogg's Start.
- Pedigree Chum.
- Levi's 501 jeans.

6. In which Museum is one of John Michell's turntables on permanent exhibition?

- The Tate Gallery, London.
- The Museum of Modern Art, New York.
- The National Gallery, Scotland.

Tie breaker (obligatory):

Think of an innovative use for a Gyrodec that is printable, but does not involve hi-fi. No more than twenty-five words, please. Diagrams and illustrations are only acceptable as accompaniment.

Name: _____

Address: _____

Postcode: _____

Daytime Tel. No: _____

Please send your entry forms, completed in block capitals, by 26th June, to:

Michell Gyrodec Competition, Hi-Fi World Magazine,
64 Castellain Road, Maida Vale, London W9 1EX.

Kubrick film, 'A Clockwork Orange' and that this turntable design is on permanent display at the Museum of Modern Art in New York.

Fitted as standard on the Gyrodec is one of the best starter arms around, the Rega RB300. Even the arm-mounting plate is machined and matched for mass to ensure the suspension needs no tweaking. The Gyrodec must be one of the most versatile arm platforms around, with forty different mounting plates available, individually machined for practically every arm on the market.

It's not only impressive in looks and engineering but in its neutrality of sound. In build, appearance and sound quality, the Gyrodec has many of the qualities of more expensive 'high-end' turntables, but at a fraction of the price. As such it represents a substantial bargain, especially when you can win one for the cost of a stamp.

Send your completed entries, by the 26th June 1992 please, to the following address:

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We will endeavour to publish the results in our September issue. Audio Publishing Ltd reserve the right to publish such entries or parts of entries as the company sees fit. No correspondence may be entered into as regards this competition and the Editor's decision is final. Photocopied entries are not acceptable. Employees of Audio Publishing Ltd., J.A. Michell Engineering Ltd., or their dealers may not enter.

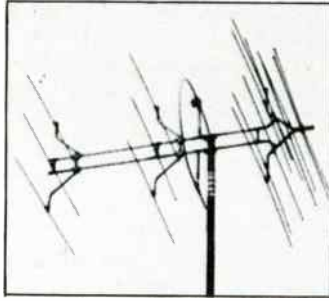


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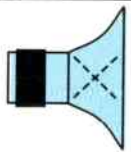
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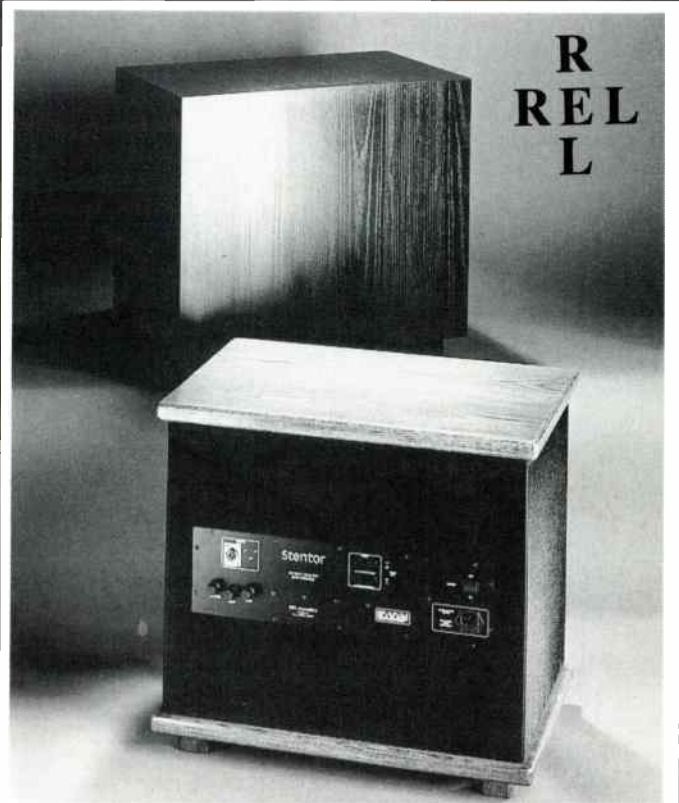
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Hi-Fi News & Record Review, November, 1991.

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Paul Messenger, Hi-Fi Choice, March, 1992.

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finding harmony

Alan Sircom sings along with a new Harman Kardon HK6150 amplifier

£159 doesn't buy you a lot in the hi-fi business these days - unless it's a Harman Kardon HK6150 integrated amplifier. Well-built and possessed of a lot of punch for its thirty watts, it falls nicely between the softness of the NAD 3020i and the sonic fireworks of a Denon PMA-350.

From a constructional viewpoint, the Harman Kardon '6150, as is common with Harman amplifiers, is solidly put together. Internally, the wiring is a bit of a bird's nest, but everything is well fitted and the maze of wiring does not appear to degrade the sound.

Although in a low price category, the '6150 does not compromise on circuit design or external build quality. The slimline front panel is sturdily made, with controls that have a very positive feel. The amplifier itself is quite weighty - always a good sign. Inside the casework, the signal path avoids integrated circuits, discrete components being used for their sonic worth.

Leaving the amplifier to run-in for

several days, the '6150 never appeared stressed. Whether running quiescent, or playing music at normal listening levels, it ran cool and unfussed.

There are inputs for a moving magnet cartridge, Compact Disc

‘Deep bass notes sank to the depths without causing panic in the rest of the frequency range

player, tuner, video and two tape recorders. All of these are connected via phono sockets that are firmly anchored, unlike many a budget amplifier. Next to these lie two sets of loudspeaker terminals; my one main criticism of the amplifier. Although these binding posts are large enough to take most budget cables, they do

not accept 4mm banana plugs axially (strangely, they do physically accept them, but no electrical connection is made), spade connectors or particularly thick loudspeaker cables. We did find that 4mm plugs can be pushed in tangentially, like a wire. In practice, I doubt if this will cause major difficulties. Finally, in the bottom right hand corner lies the captive mains lead.

The front fascia is very restrained in appearance. Only a single green LED produces any light, directly above the round on/off switch. Next to the headphone socket there are a row of controls for bass, treble and balance, a tape and source selector, the volume control and a loudness button. Audiophiles on a shoestring should not fear, as it is innocuous when out of circuit, although it does make the bass a bit lumpy when pressed.

Harman Kardon emphasise that the HK6150 is a high current design. It seems to live up to that title as the amplifier has great authority in the bass. Deep bass notes sank to the depths without causing panic in the rest of the frequency range. In

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addition, the low end was well defined, without any sense of one-note bass. It could get carried away with itself, becoming overblown with the deepest and fullest of bass notes.

Without meaning to insult or damn with faint praise, the '6150 had a very 'nice' sound. It was not over polite, but it was pleasing and seldom abrasive. It did not have the rounded sound of an NAD, yet nor did it have the impressive 'hi-fi' sound of the Denon or the Pioneer A-300. It merely sounded good.

Fewer Fireworks

I think that this could pose problems for the '6150 in demonstration, where many listeners might be initially more impressed by the fireworks of the Denon or Pioneer. The '6150, on the other hand is the sort of amplifier that one could readily spend many hours sitting in front of, simply listening to music.

The Harman amplifier produces imagery with some width, but little depth. On our April Mary Black CD, this gave the impression of all the musicians playing in each others' laps.

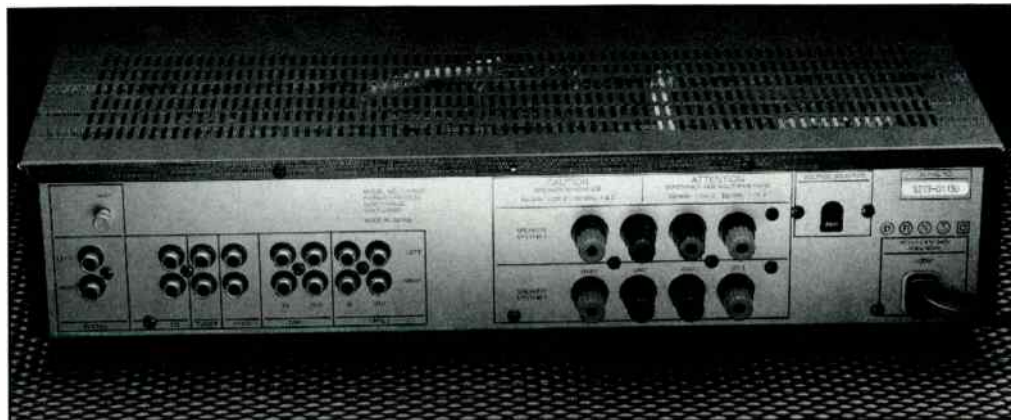
At this price point, however, few systems can produce decent image depth, and the Harman is no better or worse than its peers in this respect.

At times the Harman created a larger than life impression of the music played, especially with deep, potentially overbearing bass notes. Given that it will probably be partnered with small bookshelf designs which can tend to shrink image size, this should create a successful balance. Some care should be taken with partnering the amplifier

with loudspeakers that produce a big sound, like the budget JBL XP-1s.

Where the Harman scores over its competitors is in dynamic range. Bass drums and guitar power chords, together with dramatic orchestral passages, can blur due to a slowing of the attack and release of the note; it's like pressing the legato pedal of a piano. The '6150 plays notes with a good sense of dynamic scale.

An increasing number of budget amplifier buyers won't have a decent turntable these days. Budget disc



Measured Performance

Budget Harman amplifiers have been consistent winners. The neatly styled HK6150 looks set to continue this tradition. It produces a reasonable 45 watts per channel into a standard (8ohm) load, the figure increasing to 72 watts into a low load (4ohm). Most loudspeakers will go loud, but not very loud, in a normal sized room (around 16ftx12ft). The power increase for a halving of load is fair, bearing in mind that budget amps do not usually possess beefy power supplies.

Harman stick to their traditional 'wideband' approach to design, which they say provides best sound quality. Frequency response via CD stretched from 3Hz right up to 140kHz. Many would argue this is unwise; current theory has it that band-limited amplifiers suffer less from 'transient intermodulation distortion'. I have always felt that Harman amps effectively demonstrate that there are exceptions or the theory is based on false premises. Whatever, the HK6150 amplifies everything put into it, including deep subsonics when they exist - as they can do on CD.

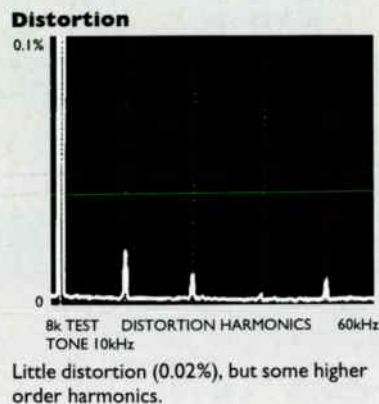
Harman have never bothered to pursue the goal of zero distortion on their cheaper amps, and this one is no exception. However, they do ensure distortion is low enough. I measured 0.02% in the mid-band and the same at 10kHz - a very good result. Together with low noise and good channel separation, the '6150 works well via its CD input. It is also sensitive enough to cope with low output cassette decks and such like.

The disc input caters only for moving magnet cartridges. It has a normal sensitivity figure of 2.4mV, enough to cope with high quality types having a low-ish output. There was 220pF of capacitance, a figure low enough not to upset cartridges that need no extra loading. Hiss was very low and hum negligible. Wide bandwidth has again been pursued, but on disc there are fur-

ther ramifications. With bass extension to 6Hz the unit will amplify warp signals strongly if they exist. Those with dodgy records, a heavy arm or compliant cartridge, and reflex loudspeakers should beware. A lot of cone flap could be the result.

This is a good little amplifier in terms of its measured performance. My only reservation concerns complete absence of a disc warp filter. A few people might get caught out by this. The advantage, in the absence of any difficulties, is stronger and more open sounding bass. **NK**

Power	45watts
CD/tuner/aux.	
Frequency response	3Hz-140kHz
Separation	70dB
Noise	-96dB
Distortion	0.02%
Sensitivity	200mV
dc offset	4mV
Disc	
Frequency response	6Hz-85kHz
Separation	78dB
Noise	-80dB
Distortion	0.03%
Sensitivity	2.4mV
Overload	95mV



stages have become progressively worse in quality as manufacturers realise this. It is all the more surprising to find the '6150 is fitted with a quiet, well-engineered phono input. Ultimately, the stage is not as tonally even as the line stages; it doesn't like the crushing guitar sound of The Jesus and Mary Chain, or Ricardo Ricci's virtuoso violin playing for example, brightening and sharpening an already intense, almost jangly sound.

But the brightness is only minor, the sort that most people equate with treble detail. Unfortunately, it precludes the use of 'starter' cartridges, like the Audio Technica AT-95E or a budget Ortofon. On the other hand, such a disc stage would suit a Rega Bias or Goldring 1012 cartridge perfectly.

Looking at the HK6150 in absolute terms, comparing it against a far more expensive reference, shows the quality of the Harman's design. There is, as expected, less low level detail and spatial information; the subtle clues that give an instrument a position in three dimensions were lacking. However, the more important tonal and timbral characteristics of a high-quality amplifier were all there, albeit in a somewhat scaled down form.

Relative to its peers, however, the Harman Kardon HK6150 successfully attempts to provide refined sound quality, together with good dynamics; it doesn't sound 'sat upon'. This places it with the very best of budget designs from the stables of NAD, Rotel and Denon. They offer tough competition, but the smooth '6150 can handle it ●

The loudspeaker posts accept 4mm plugs axially from the rear, but there is no electrical connection, which is confusing. They will plug in radially however.

personal effects

Alan Sircom and Noel

Keyword add a pair of Beyer headphones to their personals and enjoy the experience.

In professional circles, there are only two manufacturers of 'cans' that cut the mustard: Beyer Dynamic and Sennheiser. While the latter company has successfully crossed over into the domestic market, Beyer have traditionally had a lower profile. I think the £54 DT 411 Beyer phones deserve a higher profile in the headphone market.

Although comfort in headphones is relative, with different shaped heads and different shaped tastes, the '411s appear as comfortable as is possible for the price. The padding across the top of the headphone strap does get a little sweaty, but at 120g, excluding the cable, these 'phones are lightweight. My only misgivings concern the lack of adjustability. The headband is rigid, allowing only the earpieces themselves to move. This has an advantage in allowing those with one ear higher than the other to correctly adjust the headphones without difficulty, yet it does not cater well for the biggest and smallest of heads.

The dynamic open transducers use efficient 'rare earth' Neodymium magnets. These provide a nominal sound pressure level of a claimed 102dB. They also have the advantage of being a supra-aural design, as opposed to 'in-ear' designs. While in-ear types are capable of greater speed, dynamic range and bass response, they're not so pleasant to share with others. Would you like to borrow somebody else's headphones, complete with ear wax? In addition, as they are so tightly coupled to the ear drum, I can't help wondering if a bang, pop or fizz would be dangerous.

The DT 411s are designed to be an up-market accessory to a personal stereo. As such, they are fitted with a

3.5 mm mini-jack, together with an add-on standard 1/4" stereo jack plug; I used them around the office with a good quality Sony DD Quartz Walkman, much to the chagrin of the other writers (Noel used the same system earlier - see below).

By virtue of being an open design, they leak sound into the surroundings. This didn't prove as annoying as usual though, since the entire musical programme can be heard by others, instead of just the high-hat and high treble of cheap personal stereo's.

While the DT 411s lack the freedom and air of the Jecklin Floats or Stax electrostatics, they do have a lot of the monitor-like quality that made these 'phones so successful. Besides, the Beyers do not look anyway near as silly! On material with a high treble content, they can sound splashy, but without great sibilance or spittyness.

The level of detail from the DT 411s was high. This showed just how poor some Sixties rock recordings truly are; some of the pre-Sgt. Pepper Beatles recordings possess some very strange stereo effects. The entire band appears in the left hand channel, except for the vocalists that lie in wait in the right channel. When there are no vocals, there is a disconcerting total silence in one channel; it made me wonder if there was a problem with the headphones themselves. This

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shows up the sheer detail the 411s can retrieve.

Aside from the slight splashiness, the DT 411s are tonally very even. The drum beats and the bass guitar on '10.15 Saturday Night' from the Strange Fruit/John Peel session of the Cure had a great sense of weight, even though they lacked the impact given by good loudspeakers.

‘more detailed, more dynamic and simply more musical

The specification panel on the rear of the packaging suggests that the frequency response is from 15Hz-20kHz, but does not express this figure within any tolerance limits. I suspect they don't reach down to 15Hz unabated, but there is a lot of bass in there nevertheless. Because of this, everything takes on that 'in the studio' feel, a feature that is unique to listening through high quality headphones.

Some conventional loudspeaker parameters are difficult to apply to a pair of headphones because, for example, images are 'lateralised' within the listener's head. Individual images did not blur or merge together.

The DT 411s live up to the 'Dynamic' part of Beyer Dynamic's name. Recordings with rapid changes in volume, such as 'The Prince', by Madness, give a more impressive dynamic range than most of the DT 411s similarly-priced competitors. Listening to a pair of, admittedly aged, Sennheisers by comparison, the DT 411s were more detailed, more dynamic and simply more musical. Current Sennheisers close the gap considerably, although I feel that the Beyers still possibly have the edge.

Combining the DT 411s with a good personal stereo, such as the excellent Sony DD Quartz Walkman used for this test, gives superb quality that could not be achieved in conventional hi-fi without spending serious amounts of money. As opposed to many headphones destined for personal stereo use, however, the 411s are equally suitable for use in a domestic system.

Even the finest personal stereos are compromised by the giveaway headphones supplied. Upgrading to the Beyer Dynamic DT 411s will reveal the quality inherent in such machines. You get a combination that costs about the same as a budget CD player, which is a real bargain in hi-fi terms - and it's easier to listen to on the train! ●



Noel says:

There are times when I'd rather listen to music on a personal stereo than a hi-fi. It takes the tedium out of travelling, but there are times when music is more meaningful and moving on a train or in a plane. If a good Walkman is paired with good 'phones, the result is magic - but the 'phones have to be light and strong for this usage.

I took the DT 411s on a few journeys, as well as using them at home, and have grown to like them immensely. They have a generally light and open sound, one that is transparent. Their bass is even sounding, satisfactorily strong, yet quick. You get more bass out of 'phones like this than cheap personal stereo 'phones, but they are not as heavy sounding as some of the bigger domestic models that clamp your ears hard to form an airtight seal.

The Beyers are smooth and revealing across the mid-band, giving plenty of insight into a performance. Their treble is positive, but not over strong or unpleasant. I never found them offensive in this area. There was a delightful absence of colouration and vocals in particular came over with wonderful body and naturalness.

I grabbed some prerecorded tapes at Gatwick, a mixture of old and new. It was interesting to hear the mixing on Rubber Soul and Revolver from the Beatles. I have the albums in vinyl (of course!), but a good tape on a good personal stereo reveals editing and mixing techniques so much more plainly. It made me aware of the enormous contribution made by the 'fifth Beatle', producer George Martin. His Classical background and own musical ability contributes so much: the richness of the instrumentation becomes wonderfully evident through headphones like the DT 411s.

Contrasts between old and new were maintained with the latest Tina Turner album 'Simply the Best'. The DT-411s showed how Tina's voice has changed, gaining strength but losing inflexion, since River Deep Mountain High was recorded. It can be compared with her recent recordings, like Steamy Windows. The Beyers proved adept at bringing out all these facets of the music and the abilities of the artists concerned. I also found them comfortable and convenient on the move. They're great 'phones for a good personal stereo, ones that are definitely worth hearing ●

To the enthusiast, the Audionote name is closely linked with Japan. Producing a range of products that are a combination of high-tech materials research and neo-1920's valve technology, Audionote is essentially the work of Hiroyasu Kondo.

Recently however, the Audionote label has been attached to products manufactured closer to home. The first were derivatives of the American Snell Acoustics loudspeakers. Soon after came a licence to build the Audionote range of cartridges, starting with the low-output lo tested recently. There is also a range of tonearms from the Helius stable.

The new £1250 Oto Integrated valve amplifier differs in that it is the first completely UK-designed product to bear the Audionote name. This brings down the entry price of an Audionote system by about ten thousand pounds; beforehand one had to purchase the Japanese M7 Tube preamplifier and Neuro power amplifier, costing £5750 and £6950 respectively.

In Audionote terms the Oto is true bargain basement stuff. High end manufacturers who try to make lower

amplifier will be split to two boxes a la Linn Pretek/Powertek.

The preamplifier stage of the Oto is a fully shunt regulated Push-Pull (SRPP) no-feedback design like the Audio Innovations Series 1000. Shunt Regulation, a circuit design originally used in TV transmitters, effectively increases linearity of the input valve by

‘Combine the Oto with a good CD and the warmth and naturalness of the sounds produced will soothe the most savage brow

Innovations Series 200 power amplifier. The Oto is not a repackaged Audio Innovations Series 1000 and Series 200 combination however. Although there are close similarities in the fundamental designs, the Oto reflects six years of development between these products. Its styling is very conservative. Cased in a largish box, the Oto looks purposeful but slightly dated.

In fairness, I like the strong visual presence of amplifiers like this and the Copland, as it suggests a sturdy underlying build quality. This is also suggested by the thick, red, double-sided circuit boards and solid looking transformers. Because of the totally split pre amplifier/power amplifier sections, the inputs for the Oto (moving magnet turntable, CD, aux, tuner and tape) are on the left side of the amplifier, with only the loudspeaker terminals on the rear.

A twelve watt integrated, no matter how powerful it sounds, automatically limits the choice of loudspeakers. The conventional Audio Innovations fare of JPVV, Snell/Audionote and high efficiency horn loaded designs (Tannoy Westminster Royals spring to mind) are obvious choices. I used the Oto in a number of systems, but predictably it performed at its best in a predominantly Audionote system, with a Series 200 preamplifier and Audionote Neuro as reference.

The Oto needs warming up for about half an hour before its magic begins to show through. Until then it sounds incoherent, thick and stodgy, even distorting some signals in the first few seconds of warm-up. After the half-hour warming session, the Oto performed admirably.

It shares a sense of audible blackness - a deep silence - with its more expensive Audionote stablemates. It is not a 'dark' sounding amplifier that overstates the bass, nor does it have a total absence of background noise. Although it is quiet for a low feedback valve amplifier, there is still a whisper of tube noise coming through the loudspeakers.

No Artifice

Notes attack, decay, sustain and release properly, but there is more than this to such 'blackness'. It is a natural sound, without the addition of artifice from the amplifier. Its presence became more obvious to me when the amplifier departed. With another amplifier slotted into the system, out went the music, in came the hi-fi.

This is fascinating, for the Oto plays music in an honest manner rarely heard at this price level. Light, well-recorded acoustic music plays with such sweetness that most other products sound artificial by comparison.

hitting a musical note

An integrated valve amplifier from Audionote, designed in the U.K. Alan Sircom discovers the Japanese for music is Oto.

cost equipment often get things very wrong, trying to squeeze the ultimate performance for a lower cost by cutting the wrong corners. This method is as poor as the budget-amplifier-made-bigger approach of the manufacturers of low-end gear.

It may be that the company's teeth were cut on the Audio Innovations range but the Oto is a remarkably well thought-out product. It is split into two sections: preamplifier and power amplifier. The preamplifier board and power supply are totally separate from the power amplifier board with only the mains power cable that is common to the two. The forthcoming pre/power version of this

using a second valve, instead of a resistor, on the anode of the first, Audionote told me. It is technically a misnomer, as the valves do not operate in what is conventionally known as push-pull. In this circumstance, push-pull denotes that one half of the double triode provides a constant current source for the other. SRPP is said to make the circuit more efficient, with lower distortion, and has the added advantage of 'fooling' the amplifier valve into thinking that it sees a higher H.T. supply.

With only 12dB of feedback, the EL84 based power amplifier stage produces about twelve watts in Class A. It has similarities with the Audio



Where this is most noticeable is in the Oto's portrayal of dynamics. To quote those great American philosophers, Bill and Ted, the Oto's dynamic scale is "excellent, dude." The Oto is almost too dynamic at times, for it can easily overawe a recording with an overtly powerful bass line. Natural dynamics present no problem, but inflated recordings, aimed to impress the CD buyer, can sound as unacceptable as the made-for-AM radio compressed single.

Treaty

I noticed a great contrast between two dance tracks - Youthu Yindi's 'Treaty' and Primal Scream's 'Don't Fight It, Feel It.' On the first, the sheer scale of the 12" mix taxed the cones of the loudspeakers causing much panic and volume lowering. On the LP cut of the Primal Scream recording, things were much more controlled. As the 12" is designed to be played in clubs, I can imagine that it is deliberately engineered to be so awesomely dynamic.

From a company as fiercely anti-CD as Audionote, the line stages on the Oto are surprisingly good. Indeed, for those without a turntable, there is a line-only version of the Oto, for £899. Line inputs are clear and clean, suitable for anything bar the bitter sting of cheap digital. Combine the Oto with a good CD and the warmth and naturalness of the sounds produced will soothe the most savage brow. On 'Fat Valley of Pain' from our Mary Black CD, the sound was not as

The inherently musical nature of the amplifier, especially with live material, appears to tie music together smoothly

clean as that produced by, say, a Deltec preamplifier, but those who feel the Deltec is too ruthlessly analytical would find the lively, slightly warm sound of the Oto's CD stage a welcome relief.

Imagery and sound staging properties were as good as I have come to expect from Audionote products. Some of the vice-like grip over the bass driver is lacking, which gives a slight vagueness in locating some instruments, but for the most part, imagery is very three-dimensional. Like most high-quality products, a wide-screen picture is traded for better depth to the sound stage, but this is easy to live with, unless you are a fan of CinemaScope sound effects.

It goes without saying that the Oto is superbly coherent. The inherently musical nature of the amplifier, especially with live material, appears to tie music together smoothly. Even with spoken word recordings, there was little or no unevenness.

Playing 'Sound' from the new James LP, I demonstrated to some friends just how loud twelve watts can be. The power amplifier soon started to waver, thickening the sound stage and blurring instrument into instrument. At this level the amplifier simply lost it but was, with a pair of efficient loudspeakers, loud enough to cause distress among the faint-hearted.

I have heard criticism of the Audionote/Audio Innovations 'sound' as being more suited to Classical and Jazz equipment than for rock, so I played 'Whole Lotta Rosie' by AC/DC to see. The Oto kicked an accurate enough amount of bottom to be labelled as a 'Rockers' amplifier. This was followed by Duke Ellington's 'Unknown Sessions', 'White Riot' by The Clash, the introduction to The Gondoliers by Gilbert and Sullivan and a very confused call from my neighbours, asking if I was playing music at random.

The Oto has many of the higher end Audionote virtues, without the astronomic price tags. Summing up, the Audionote Oto is the antithesis of hi-fi sound, being more in tune with the music than the equipment. This ability, surely the ultimate goal of hi-fi, has been virtually unattainable at this price level. The Oto is one of the select few products that plays music instead of signals ●

Billy Vee

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balance of power

Richard Brice describes the differences between single-ended and push-pull output stages.

Here's an easily understood guide to valve jargon.

In much the same way as it is usual to find a four cylinder petrol engine under the bonnet of a car, there's a conventional wisdom that says valve amplifiers should have two output valves arranged in balanced 'push-pull' mode. However, in any healthy field of engineering, conventional precepts are always being challenged. Several modern amplifiers have been produced that reject this axiom: they use one valve in 'single ended' mode.

The designers of these amplifiers attribute audible and even engineering benefits them. Yet they are a return to the earliest and simplest form of valve power amplifier possible. Is this challenge to orthodoxy inspired or just eccentric? What is so acceptable about the two-valve output stage that has kept it a central tenet of the amplifier designer's creed for sixty years?

The simple answer is: balance. As with so many other practical engineering solutions, the lure of symmetry and balance so often triumphs in the human mind. Ask any BMW motorbike owner about flat-twin-opposed engines, or any civil engineer about suspension bridges. The so called push-pull output stage with its two valves has the aesthetic appeal of the Yin-Yang, harmony created by opposites.

I have drawn a single-ended and a push-pull output-stage for comparison as Fig. 1 and Fig. 2. We shall see that the balanced stage seems to have several important engineering advantages over the single-ended circuit.

MAGNETIZATION

All but a very few special valve amplifiers employ an output-transformer. You can think of this component as an electrical gearbox coupling the high-impedance valve outputs to the low-impedance loudspeaker. Transformers work using the principle of electromagnetism, which you may remember investigating in school physics. You may have proved it was possible to create an electromagnet by winding a wire around an iron (or steel) nail and passing a

current through the wire. Transformers work (as discovered by Michael Faraday) by converting electricity into magnetism and then back to electricity again. They are arranged so that both the input windings and the output windings are wound on a common iron core - like the nail in the school experiment. When an audio signal excites the output valve circuit, the change in the electric current in the input (primary) winding causes a change in the magnetism in the iron core which, in turn, causes a current to flow in the output (secondary) winding.

The analogy with the school electromagnet experiment is not a flippant one. If it had been possible to control the current through the wire in the school experiment and to measure the power of the electromagnet and how it related to the current (perhaps by the number of paper-clips it could pick up) we would have found a linear relationship up to a certain point: the number of paper-clips would be directly proportional to the current, up to a certain value of current. But after that value of current had been reached, the magnet would not pick up any more paper-clips no matter how much more the current was increased. It would simply serve to warm up the magnet!

This effect is due to a phenomenon known as magnetic saturation. It is due to all the magnetic domains in the nail eventually becoming used up. After that point, the iron nail simply cannot become more magnetic. In Oscar Hammerstien's words: "She's gone about as far as she could go".

Exactly the same limitation applies to an output transformer. The process of converting electrical energy into magnetism and back to electricity again is distortion free so long as the transformer core does not become saturated. When that begins to happen, the process becomes non-linear and audible distortion will start to be produced.

If you compare Fig 1 and 2 you will notice, in the case of the single ended output-stage, that a continuous current, called the standing or quiescent current (I_q), flows from the power supply through the transformer and valve and back to the power supply. Because

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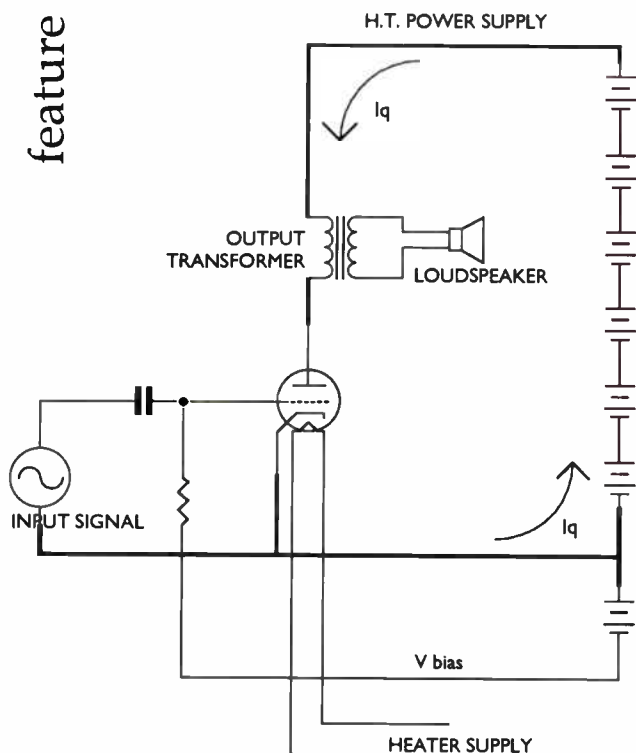


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SINGLE-ENDED POWER OUTPUT-STAGE

audio signals are always assumed, for design purposes, to be symmetrical, this standing current must equal half the maximum that the output valve is designed to carry for a given amplifier design. A typical amplifier with 10 watts output would require a standing anode current of about 70mA. This much current would produce a magnetic core flux-density of perhaps 5000 to 6000 Gauss which would take an average output transformer to 30% to 50% of its saturation limit.

Now consider Fig. 2. Here the quiescent current flows from the power supply into the centre of the output transformer. From here it splits - half in one direction into one output valve and half in the other direction into the other output valve. The current, once shared between the two valves, recombines in the common cathode circuit and flows back to the power supply.

Think back to school physics again and remember what happened when, having once made and tested an electromagnet, the battery was connected the other way around so that the current flowed in the opposite direction. You may have done some experiments to determine what direction the current needed to flow in the wire in order to produce a North pole at the pointed end of the nail. If you did, you will remember that when the wires were reversed and the current flowed in the opposite direction what

had once been a North pole became a South pole, and vice-versa.

The balanced output stage uses this principle to ingenious effect. The left hand valve in Fig. 2 is shown drawing current in one direction and the right hand valve in another. For arguments sake, let's assume the left hand valve's current is creating a North pole at the left hand side of the transformer in Fig. 2 and a South pole at its right-hand end. At the same time, the right hand valve is drawing a current which, because it is flowing in the opposite direction, will cause a North pole to be created at the right hand end of the transformer and a South pole at the left-hand end.

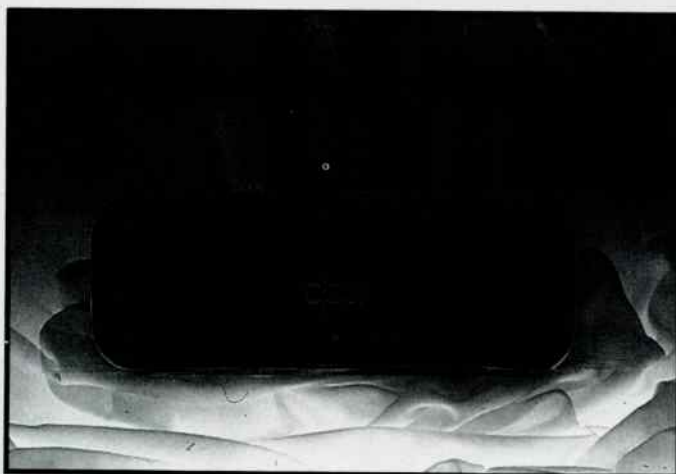
The net result is that the North and South poles at either end of the core cancel each other and no magnetism appears in the transformer's iron core. So, in the push-pull output stage, no magnetism is created within the transformer in the absence of signal. All the available flux density is available to be used for its proper purpose of transmitting audio information, rather than being used up creating a redundant electromagnet!

The problem of constant magnetization of the output transformer in the single-ended circuit can always be ameliorated by the use of a larger output transformer but the problem of saturation induced distortion remains a real one in any single-ended design.

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Listening to this unit is the hi-fi equivalent of having your ears syringed.

What Hi-Fi?
The Little Bit, Digital to Analogue processor

It offers a level of sound quality quite beyond anything I have encountered to date - and it isn't going out through my front door.

Hi-Fi Review
505 Pre-power amp

dpa

Deltec Precision Audio Limited,
Unit 7 East Moors Business Park, East Moors Road,
Cardiff, South Wales, CF1 5EE
Tel: (0222) 482818/494042

CANCELLATION OF VALVE DISTORTION PRODUCTS

You will sometimes read that a valve is an inherently more linear device than a transistor. Whilst it is true that a transistor is less linear than a valve when used as a crude voltage amplifier, a transistor is a remarkably linear amplifier if used correctly as a current amplifier. The thermionic valve, on the other hand - like the FET - can only be made linear by the use of ancillary circuit techniques such as negative feedback. In fact, the only thing one can say with any precision about the valve is that it is an inherently non-linear device!

Technically speaking, the distortion produced by a valve is due to its anode current not being a linear function of its grid-cathode voltage. Since anode current is ultimately what drives the loudspeaker cone and grid-cathode voltage is the same thing as input signal, this means that - even if everything else were perfect - the loudspeaker would not exactly reproduce the contours of the input signal. The valve itself would inevitably distort the signal.

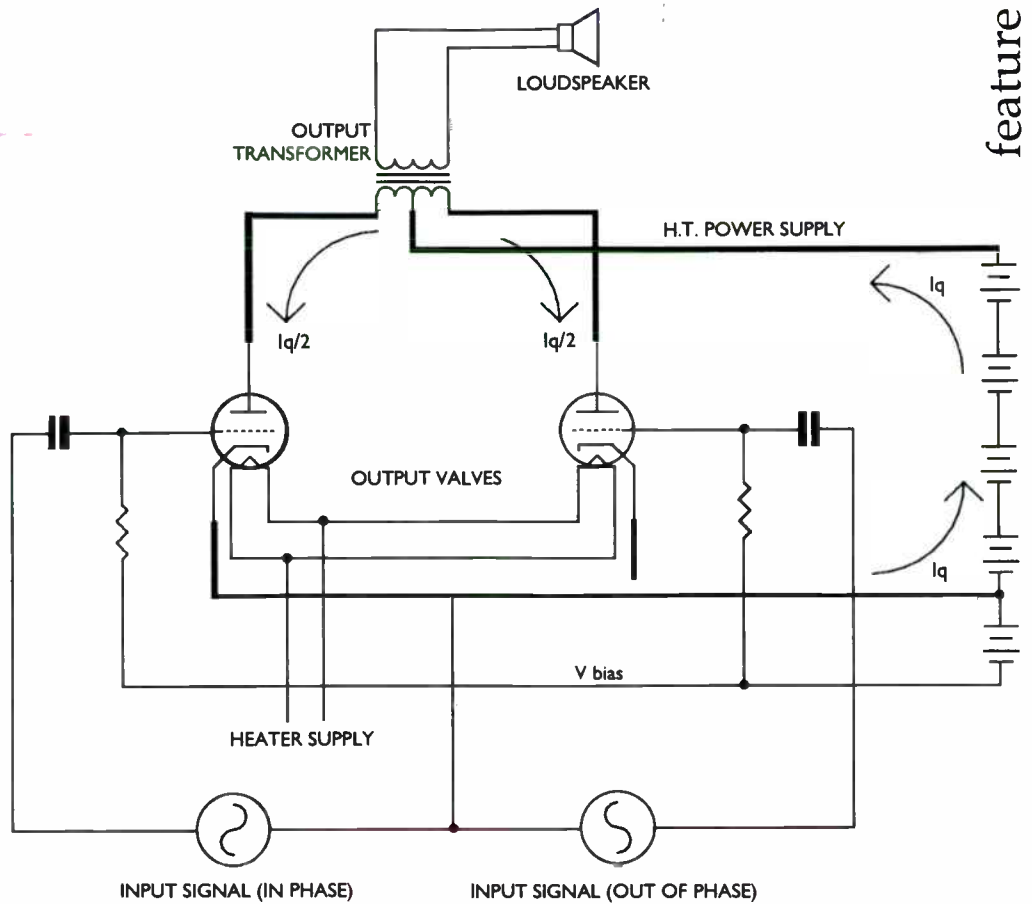
The single-ended circuit in Fig. 1 has no mechanism for reducing the valve's inherent distortion. Fig. 2 on the other hand uses the technique of balance to reduce the distortion in a very elegant way. The theoretical arguments are complex but essentially each of the two valves produces equal and opposite distortion signals and, like a magical mathematical formula, these cancel when combined in the output transformer. The empirically minded among you can refer to Table 1.

Table 1

'Single Ended' output stage (one 807 Beam Tetrode)			
Anode V (ImA)	ScreenV	Power Output	Distortion
500(50)	20	11.5 Watts	12.0%
'Push-Pull' balanced output stage (two 807 Beam Tetrodes)			
Anode V (ImA)	ScreenV	Power Output	Distortion
500(50+50)300		32.5 Watts	2.7%

Table 1 demonstrates clearly the advantages of a push-pull stage over the single ended valve circuit - over twice the power output for only a mere doubling of power-supply requirement and less than a quarter of the total distortion.

The balanced amplifier has a number of other important advantages over the single-ended stage. These include the cancelling of signal components in the power supply, which helps reduce the



BALANCED PUSH-PULL POWER OUTPUT-STAGE

risk of interaction with the previous voltage amplification stages and the attendant risk of low-frequency oscillation. The rejection of so-called 'common-mode' signals, such as power-supply noise and hum from the heater supplies is improved.

The disadvantages of the push-pull balanced output stage are few. There is a greater likelihood of high-frequency oscillation if insufficient attention is paid to this area of design, but it is rarely a problem with most practical amplifiers.

It may seem that, judged by conventional engineering standards, the choice of a single-ended circuit for a power amplifier seems to border on the eccentric. Its rival, the push-pull circuit, appears to have so many advantages and so few real disadvantages. The design principles of symmetry and balance in order to reduce distortion and secure greater immunity to, and greater independence from, the power supply are all enshrined in the best semiconductor amplifier designs.

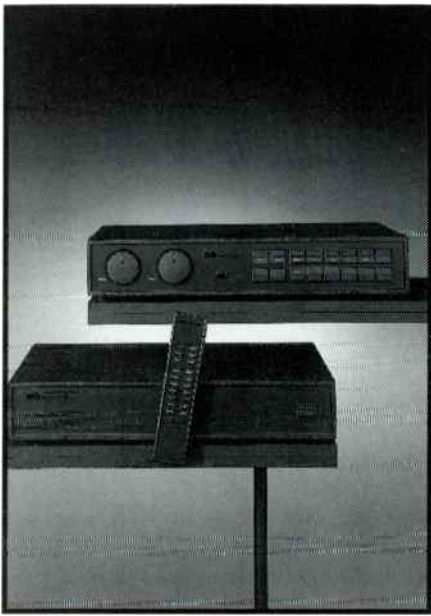
So it seems to verge on the bizarre to reject them in valve circuitry. Yet it must be remembered that all the advantages of the push-pull circuit depend on the relatively precise matching of the output valves under all the operating conditions of the amplifier. And, furthermore, this matching must be maintained throughout the amplifier's lifetime.

The push-pull output stage also requires a balanced input signal itself,

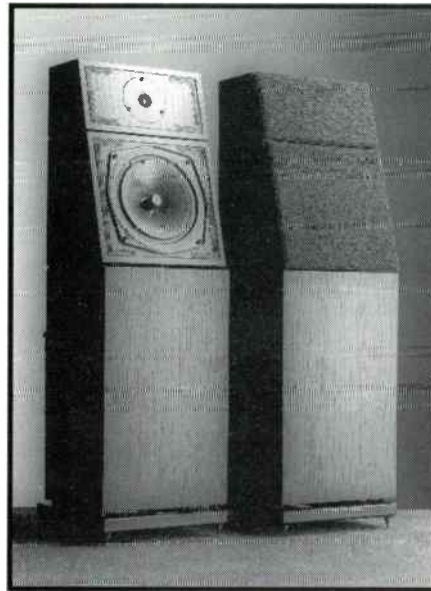
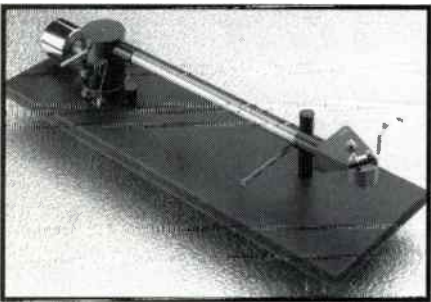
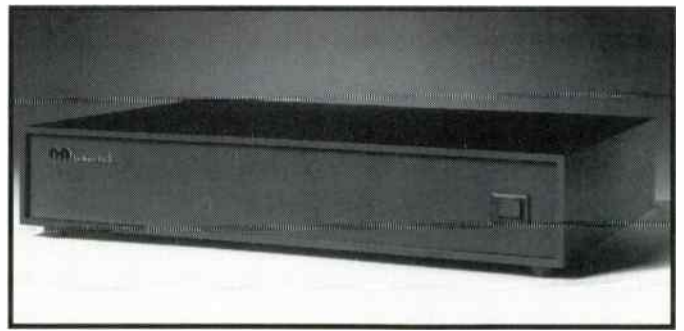
and that is usually derived from a special circuit known as a 'phase splitter'. So there remains a requirement for near perfect balance from this circuit as well. Tsai Hong Jen, the designer of the ESTI integrated valve amplifier which incorporates a single General Electric 300B triode output valve interviewed recently in this magazine (Feb. 92) maintained, "I don't think push-pull is easy to make work properly. You need perfect AC and DC balance... Good sound at a low-price comes from single-ended, not from push-pull."

Whether the "good sound" from these single-ended amplifiers is due to the distortion they create being judged subjectively pleasant, or whether there is as yet some undiscovered pernicious distortion mechanism at work in the push-pull stage remains unresolved. Tsai Hong Jen has a theory that under dynamic conditions (i.e. when the amplifier is reproducing music) the mathematical elegance of the push-pull circuit breaks down. Either the output stage itself, or the circuit feeding it - the phase splitter stops working properly and the advantages of the push-pull arrangement are lost.

One can only conclude in the manner of the law reports: The case continues ●



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Last month, talking briefly to John Michell when he delivered his Mycro turntable for review, I discovered he shared the same surprise and misgivings about some turntable owners as me. He couldn't understand why people would spend up to a thousand on a turntable and arm combination then screw a twenty pound cartridge onto the sharp end. Surely the people who do that wouldn't think of putting cheap retreads onto the four outside corners of a Ferrari?

Ortofon seem to share our concern. The Danish cartridge company have come up with a new moving-coil cartridge, the MC15, for less than a hundred pounds. Not a lot less, admittedly, just five pence on the right side of the two noughts, but it does make cartridge buying easier on the wallet.

The MC15 has a tradition to keep up, one that's been going for nearly fifty years in fact. It was 1945 when Ortofon produced its first moving coil. It was designed for cutting the grooves into the master rather than replaying them, but the company has been in the vanguard of the moving coil movement ever since.

Keep on Trackin'

I've always had a certain partiality to the Ortofon breed - through the "VMS" series moving magnets up into the realms of the MC10 - on which the '15 is based - and MC20 moving coils. The common factor has always been a substantial ability to keep trackin' - whatever the quality of the groove - and come up bright and clear.

Some of the moving magnets had a tendency to come up a bit too shiny towards the top end and I was one of the dedicated few who tacked on Ortofon's tiny capacitor to flatten the response of their moving magnets from 10kHz to 20kHz. I had some momentary feelings of nervousness that the MC15 might also have a sharpish top end, but the fears were dispelled quite rapidly.

Ortofon have engineered a remarkably tidy-sounding cartridge in the MC15. My first long spell with it, after using a pair in both a Mycro/RB300 and Gyrodec RB300 last month, was planting it in the grooves of Klemperer's 1964 recording of *The Magic Flute*. After two hours - I listened happily to the lot - I was impressed.

More correctly, I was impressed after ten minutes - and the feeling was sustained. The two sopranos, Lucia Popp and Gundula Janowitz have the pure clarity of nightingales on that recording and the MC15 treated their voices with firmness and respect, following them up through the scales without a hint of insecurity.

This cartridge is a dab hand with vocals. It detracts not one whit from the feeling that there is a real set of vocal chords and a diaphragm pumping away with serious energy. Even better, the lungs of the brass section and the woodwind were all in hearty good order too. The MC15 had a nicely-judged ability to keep orchestra, chorus and soloists in their places without mixing up the strands.

All this was with the cartridge mounted in an SME IV pick-up arm, which I thought might have been overdoing it a little. In some ways it was, for there was a touch of brittleness in the upper registers which hardened and harshened violin tone and

recordings with a sharp edge. It was not fatiguing, and installed in an RB300 had barely obtruded at all. I suspect that the MC15 might be best in a slightly less cruelly revealing arm than the SMF. Some adjustment of bias is well worth the trouble. I found that running it in the SME IV with less bias than the 2.2gm tracking weight smoothed over the sharper edges well.

Some heavy Rock on the platter demonstrated that Ortofon's affordable baby had a commendably tight grip on the rhythm and a solid foot in the bass camp.

Down in the lower reaches there is punch, drive and subtlety without it being forced on your attention. It was wholly admirable how the MC15 got stuck in without becoming unstuck. Other cartridges in this price area rarely have such overall control; there is usually some instrument or part of a drumkit over which they will momentarily stumble.

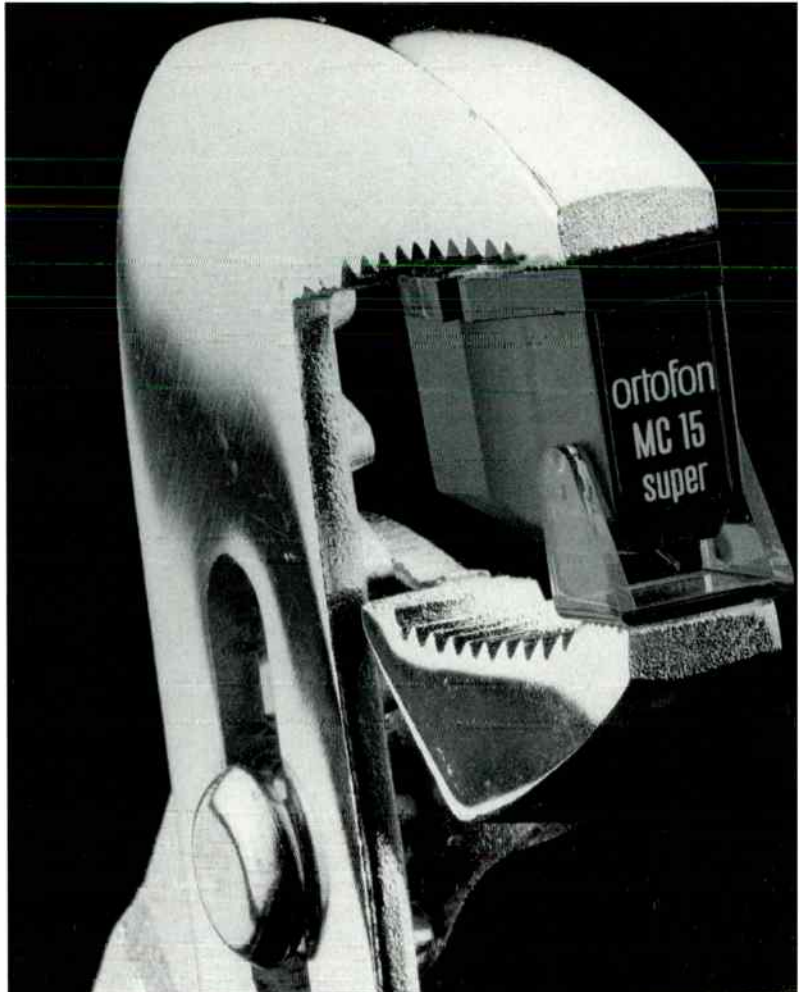
Not so the Ortofon. It handles music of any kind extraordinarily evenly, but it stars on acoustic instruments and voices particularly. In that region it has all the best facets of the more expensive MC10 or 20.

That's not to say it doesn't possess some weaknesses. It would be fairer, perhaps, to say it is less strong in some areas. Compared to my regular Morch da Capo (at five times the price, remember) some of the ultra-subtlety I love moving-coil designs for hasn't quite made it up from the Gyger stylus profile and boron cantilever into the anonymous black body.

Wholly Believable

Width-wise, the Ortofon presents a wholly believable stage, but not quite one that flows beyond the edges of the speakers. In terms of depth, too, while it is easy for the listener to be drawn into the perspective of a recording, whether live or studio, the MC15 is a little shallower than the best. The overall aspect is not a flat mural by any means, just a trifle under-developed.

Yet the music-making just pumps out from the platter, studio edits and exaggerations clearly defined without that extra analytical edge that has a listener scowling with outrage that comes from the higher end cartridges. I go for that degree of revelation, I admit, but it is an outlook that comes with the job. What the Ortofon offers is the capacity for consistent musical pleasure with nowt tekken owt that matters. Witness the fact that I wasn't tempted to switch back immediately to the Da Capo after a test run,



The Ortofon MC15 offers security and excellent tracking without breaking the bank, says Eric Braithwaite.

track record

as I have been with other cartridges.

If you have vinyl, but don't feel, in these drab days of its death-throes, you can justify treating it to a new turntable, consider the Ortofon MC15. It costs the same as seven CDs or three of those wonderful collectable Decca early pressings from the late Fifties, which it loved.

Throw your make-weight cartridge away, but ensure you have a good MC stage in your amplifier or even a Michell Iso head-amp. The MC15 is not a second-best, no more than the black disc is second to the silver one. You owe it to the memory of all the superb engineers who put such an astounding amount of information into a simple black spiral. This Ortofon won't be niggardly at digging it out ●

Why I haven't looked at Ariston's Compact Disc players before I don't know. Perhaps it was just that I couldn't shift that horrible TV jingle 'Ariston... and on... and on' out of my skull and my subconscious blanked it out altogether. Or maybe I didn't ask in case the same errant subconscious ordered a washing machine instead. You know about Freudian slips like that. Come to think of it, slips and washing machines in the same paragraph is one.

Ariston's £430 CD3 doesn't look at all like a washing machine, though Ariston must have a watery conscience: the instruction manual warns that it should

there's an audiophile extra: the display can be switched off.

Outputs are simply a pair of analogue phono sockets and a co-axial digital output, but no optical digital output. There appears to be something of a British phobia about optical Toslink connections.

Normally, I'm seldom inclined to switch my normal cables for other exotic varieties when listening to CD players, but this time I did. The first hour or so had me rather doubtful about the Ariston's speed and timing. It had a big, beefy sound, but appeared to be rather sluggish. Swapping to Kimber Kable brought a little more sparkle and

lightened its tread. It also tightened up the general focus, which helped with a degree of additional vivacity. I would suggest some experimentation here.

The overall sound is broad, powerful and expansive, and immediately attractive. Vocals and particularly recordings with acoustic backing had a full, round sound spread over a wide sound stage, with the vocalist big-bodied on the carpet in front of the speakers. I'll quibble here and say, musically engaging though this is, tonal quality in the mid-range is well on the warm side of accurate.

Vinyl Sound

There are advantages here, especially for people who are accustomed to what is often referred to as the 'vinyl sound'. A particular trademark is a smoothness on violin tone, something many listeners would welcome. No edginess on strings in the CD3; there's no danger of mistakenly assuming players have taken to fitting steel strings and wielding glass fibre bows.

Unfortunately, I sniff rolled-off treble here and a whiff of unassuming analogue filtering. On the plus side, one of the other common by-products of multi-bit, the notorious mid-band glare, is notable by its near absence. On the minus side, the sheer vivid attack and power of much orchestral playing is subdued. As I demonstrated to a colleague a few days ago, even well-recorded analogue strings can have a pretty fierce bite.

Prestwick Persuader

**The Scottish Ariston CD3 CD player has a persuasive sound,
according to Eric Braithwaite.**

not be used near a washbowl, sink or swimming pool.

David Lochran, Ariston's Technical Director, told me they'd treated the mechanical design like a turntable, going for rigidity. Its metal case is reassuringly strong and heavy. There was little difference on cost, David said, between using thin aluminium or thick steel. The advantage of the heavy gauge steel, he said, was superior shielding and strength. As a result, he suggested, the CD3 should be more or less immune to placement problems; it could be parked anywhere.

At bottom the CD3 is fairly standard electronically, using 16-bit four-times oversampling with the respected TDA-1541 S1 Philips 'Crown' chip, also used by Creek and Sugden. In looks, the Ariston is also standard - an oblong, black drawer-loader with small square microswitch control buttons on the right. The transport is a Philips mechanism with a good track record - even if the tray is plastic and flimsy.

Functions provided on the front are fairly basic. The push-buttons control Play, Stop, Drawer Open/Close, Pause and track selection. The more fanciful extras like calculating programme lengths for tape copying or memorising track sequences appearing even on Japanese budget players these days are lacking. There is no Random or Shuffle Play to surprise you by re-arranging the plot of an opera. What the remote does offer in addition is programming of up to twenty tracks, repeat of a track or programme and fast search. Like Creek's CD60

Measured Performance

The Ariston CD3 conceptually follows players from a growing number of UK manufacturers opting to tweak traditional sixteen-bit technology, rather than plunge into Bitstream. Designers insist that sound quality can be influenced greatly by circuit topology and component choice; the basic operating principle is not wholly responsible for perceived sound quality.

This is true up to a point, I believe. Sixteen-bit can sound authoritative and pacy, although I suspect not entirely for the right reasons. Whatever, each player is best judged on its individual sonic merits.

Ariston join manufacturers from Naim to Creek in their use of the Philips TDA-1541A S1 selected or Crown grade digital-to-analogue convertor chip. This gives less high order distortion than the standard form, now little used. The spectrum is dominated by second and third harmonics, which the analysis shows as twin spikes at far left. Low order distortion harmonics, especially third, can effect a slight change of sound character. This harmonic has a brightening or sharpening effect, always most cogently demonstrated by the Decca London cartridge, I felt. It is higher orders that add grittiness and nastiness; they are of a suitably low level with the Ariston, so I would not expect these blemishes to make themselves audible.

Simple correlations often don't hang together in practice because of other, sometimes contrary influences. The CD3 has, like so many other UK players ever since the Cambridge CD-1, got a steadily falling frequency response trend toward high frequencies. This is something the frequency

response analysis clearly shows. There is also a small rise at lower frequencies too. This sort of thing is invariably detectable. I would expect, from experience, a soft or even warm presentation with good bass presence. Eric detected this before it was confirmed by measurement, showing that there is good correlation in this respect. It is a contrary influence though, masking the mildly brightening effect of third harmonic distortion. The CD3 follows Arcam players and others in balancing one effect against another to get a final 'sound'.

Such tuning bears witness to a manufacturer's interest and involvement with sound quality. It is players thrown together from standard, price-engineered circuits and components that really fail hi-fi, with their stultifying mediocrity of sound.

Ariston have given the CD3 a good basic performance in all other areas. It has very wide channel separation, low noise and a respectable, if not exceptional, performance in terms of unwanted or spurious outputs above 21kHz. There seems to be little difference here between the sixteen-bit Crown players; they are all competent, which means better than poor Bitstream - but worse than good Bitstream!

A low output of 1.9V will not aid the CD3 in side-by-side comparison in a shop. Rivals with a few dB more output are likely to sound livelier, rather than obviously louder.

The CD3 is well engineered. It offers a highly competent performance from Philips' venerable and still highly regarded sixteen-bit convertor chip, tweaked to provide a certain particular sound. As a result, it will appeal, or otherwise, on the basis of this sonic character. **NK**



Playing the Collins Classics recording of Mussorgsky's Pictures at an Exhibition turned out to be very impressive in terms of weighty and solid orchestral sound. Orchestral textures were broadly differentiated, there was a good sense of tonal colour, but in the end I couldn't help feeling that the performance flopped. Though it was a colourful

impressionistic representation with an aura of hall ambience, the sections of the orchestra didn't quite match tempi, making it difficult to follow internal melodies and rhythms within the overall sweep of the performance.

Integration between the mid-range and the treble could be, I think, more precise. The mid-band can perform with plenty of energy with a full and forward projection, but its relationship with the striking and strong bass and a treble with less relative power behind it can produce the effect of taking some instruments and voices down a semitone.

Lou Reed's 'Magic and Loss', for example, with big twangy guitar sound and plenty of detailed finger-squeaking on the fretboard, along with a very persuasive amount of parchment on the drums, nonetheless had an anomaly in the vocal sound.

Comparison with a very subtle £3000 multi-bit player also using Philips 'Crown' chips clarified this particular aspect of the Ariston's tonal balance. It's necessary to point out that alone, the CD3 would not sound unbalanced. A check against my current reference Luxman, and with the Mission Bitstream DAD5, however, showed that Lou Reed's voice was throatier, with less palate and more diaphragm. Exaggerating a little, his voice took on more of the timbre of Leonard Cohen than it actually possesses.

Percussion in the upper range, while credible and splendidly free of splashiness or brittleness, as a result was also softer. What I found I couldn't cope with were recordings with a greater than usual degree of reverberation.

Nimbus recorded Martin Best and his ensemble singing the songs of Gerart Riquier in their large, echoey and very reverberant acoustic at Wyastone Leys some years ago. It's a dramatic, fast and sparkling performance with a good dose of Moorish rhythms. Best is placed well back in the hall, and there are some quite frighteningly heavy thwacks on a large skin

drum. On the CD3 these fell flat, and Best and his instrumentalists sounded decidedly phasey and unfocussed in a wash of reverberation. Here the Ariston player simply lost control; it was not cohesive across the various instruments at all.

Fulsome and Sweet

There's no doubt that the greater proportion of music of whatever genre rolls and floods out of the speakers with a splendid fulsomeness. The Orpheus Chamber Orchestra playing Rossini overtures was heavier in tone in the lower notes than it should be, cellos and basses sounding more like a larger Beethoven orchestra than this ensemble is. I was very tempted to say 'So what?' Upper strings were very sweet and not particularly digital; the CD3 produced a very convincing picture, with not as much space for delicacy as some of its rivals, but with an air of a satisfying, good old-fashioned tub-thumping energetic performance.

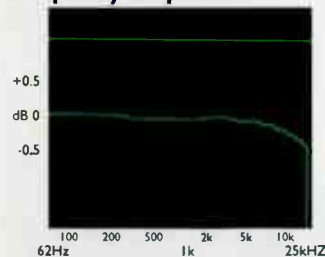
I wouldn't argue with the dealer who used the word 'musical' to describe Ariston's CD3. It's a big, strong, burly sound which entirely avoids the sharpness, edginess and occasional bitterness listeners so often complain about when the word 'digital' crops up. It reminded me of nothing so much as the vinyl sound of the late Seventies and early Eighties, fulsome and forceful. It will definitely appeal to all those people out there who keep a packet of cotton wool by their hi-fi to prevent their ears being pierced. It's also capable of expanding the music so the whole room glows with a large-scale performance.

It's a club-sandwich of a player. Plenty of meat and sufficient trimmings in terms of detail, perspective and tonal colour to make a very satisfying meal of music. It isn't the most subtle of players in its price range, nor the most accurate. But for dining well and substantially without musical indigestion it deserves audition ●

Test Results

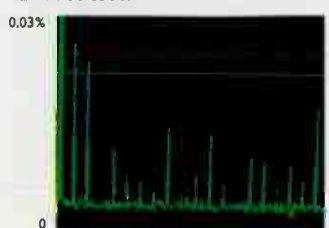
Frequency response	4Hz-20.7kHz	
Distortion (%)		
-6dB	0.005	0.005
-30dB	0.055	0.05
-60dB	0.66	0.5
-90	47	50
-90dB dithered	12	14
Separation (dB)	left	right
1kHz	108	110
10kHz	87	90
Noise	-109dB	
with emphasis	-109dB	
Dynamic range	106dB	
Output	1.9V	

Frequency Response

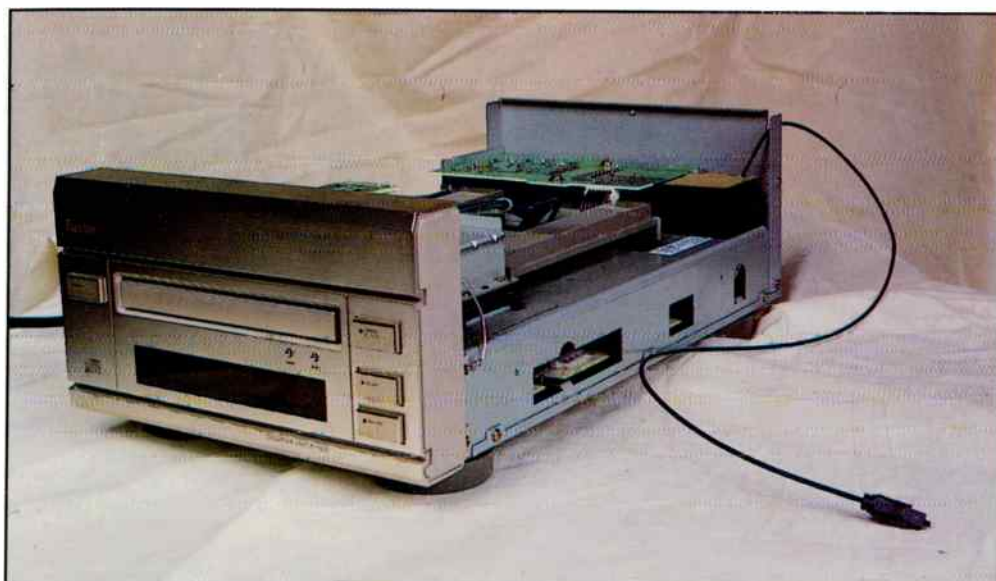


Falling treble output gives a warm sound

Distortion



Distortion harmonics up to 20kHz



The conversion comprises a small 'potted' black box, fitted internally to a transport. Deltec brought us a Teac (badged as 'Esoteric') P-500 in which the box can be seen at rear.

The new Deltran clock adaptation for Compact Disc transports from Deltec is claimed to be a great leveller, putting a converted £200 Marantz CD40 player on a subjective par with an unconverted £2000 Teac P-2 transport. As we only had one converted transport given to us for assessment, a Teac P-500, this was a difficult claim to validate, but the improvements we heard when the P-500 was connected to a Deltec Bigger Bit were enough to convince us that Deltec are probably correct.

Playing the P-500/Bigger Bit combination, without Deltran, in a somewhat thrown together system, painted a two dimensional picture of the music played, at least in retrospect. Switching in the Deltran device introduced both depth and ambience to the sound stage. It focussed images over the stage, which also widened slightly, without creating oversized images. Normally, Deltec converters have a tendency to produce

tightly focussed centre-stage images. The trade-off is some vagueness to images at extreme left and right of the sound stage. The Deltran upgrade effectively eliminates this entirely, we found.

In addition, it appears to bring out the near-analogue warmth that has been lacking in Deltec converters. Usually, warmth has been confined to woolly or

soft sounding converters; the Deltran set-up loses none of its insight into the recording, yet it reveals smoothness that the non-Deltran device lacked by comparison. This is difficult to describe accurately, as the properties of warmth and smoothness are usually linked with less forthright sounding devices, and are often used to mask the shortcomings of the convertor or CD sound in general.

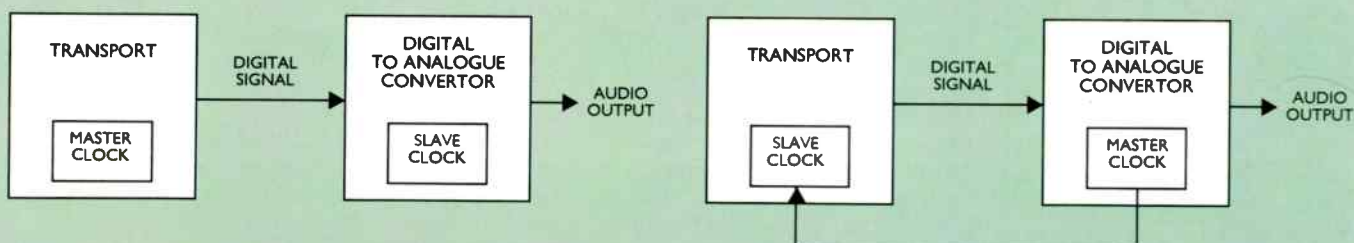
In this case, low level detail appears more obvious and the sound is easier to listen to. The improvement is immediate and very noticeable, although there are so many other improvements that it is misleading to pick on just one facet. Timing, detail, and 'listenability' are all substantially improved as well, making the Deltran combination an upgrade over the original.

Those who have a recent Deltec convertor, with the Deltran optical input

clockwise

Deltran, the Deltec clock customisation for CD transports comes under the watchful eyes of Alan Sircom and Eric Braithwaite,

HOW IT WORKS



In the normal transport/DAC arrangement, the master clock lies in the transport. The digital signal is transmitted to the DAC using the Sony/Philips Digital Interface (SPDIF) protocol. A slave clock in the DAC locks onto and attempts to accurately regenerate the timing signal. In practise the bi-phase code transitions are affected by the music, noise and RF interference, degrading performance of the slave clock, degrading sound quality as a result.

Figuratively speaking, the DAC has to interpret what the transport is doing. Imagine someone is going to throw a ball to you. With this system there's no prior warning; you have to watch the person's hands and guess the moment at which the ball is thrown. You catch it, but your stance will be affected.

In the Deltran system, the master clock resides in the DAC itself and the clock signal alone is fed back to the transport through its own line, so staying free of unwanted modulation. This system locks the transport to the DAC tightly and accurately, so the digital signal is processed without interpretive time errors when it reaches the DAC.

With this system we can say that the DAC controls the transport so it can perfectly understand and interpret the digital signal coming from it. In the ball analogy, the person catching the ball would instruct the thrower when to throw, not by speech which might be random in timing or subject to misinterpretation, but by a mild electric shock that would trigger the throw exactly on time!

I'm always sceptical about alterations and add-on circuit-boards, or for that matter mucking about with the insides of CD players. I have to admit I lost that scepticism about this conversion remarkably quickly.

I would characterise the sound of the Teac transport on its own, judged from usage with a range of refined sounding convertors (e.g. Audio Alchemy Digital Decoding Engine and Audiolab 8000DAC) as relatively mild, rather soft on focus, but otherwise competent in accuracy of tonal quality and detail.

Adding the Deltec Bigger Bit introduced a more vivacious form of liveliness in comparison to these other convertors, which I felt it needed. On the other hand, this brings in what I have always thought to be a slight disadvantage with the Bigger Bit. In the upper mid-range there is an element of glare which tends mostly to affect brass sections of the orchestra. There is, too, a tendency for the very sharp forward central focus to soften at either extreme of the sound stage.

Putting the Deltran into circuit, as Alan found, wrought a marked improvement. Playing a very fine recording of de Falla from the Decca catalogue without it produced a very fair impression of the ambience of the reverberant hall, with a good, broad spread of the orchestra. With the Deltran adaptation in circuit, the sound picture came more into focus across the whole stage width.

To illustrate what I mean, the piece

begins with some sharp work from the brass and percussion, which tends to swim out of focus on all but very highly-engineered and expensive players. Suddenly, Deltran board in circuit, the air was quite literally cleared and the focus on the spread of individual orchestral sections sharpened.

What I have thought of as typical Bigger Bit glare to all intents and purposes disappeared, and the clarity of focus was now maintained across the whole width. The soprano, some way back on the left became clearer, the echo obviously following the notes instead of being mixed up.

Increased clarity of this kind, the additional degree of insight, is something I had thought the province of very expensive players indeed. In fact, around the three-thousand pound mark, since I've been living with one in that bracket

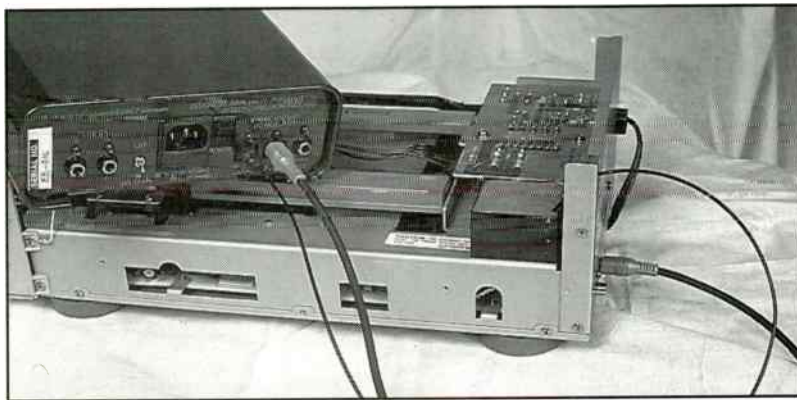
lately which achieved the highest rating for this kind of thing so far.

It extended to Rock mixes as well, offering that extra degree of separation that allows shades of tonal colour, timbre and changes in tempo to become that much more discernible and realistic.

One of the additional benefits of the Deltran adaptation is that all this improves the apparent speed and grip on the performance as well. To some extent, the Teac, edging to the slower side of quick-witted timing, was notably more upbeat.

I have to admit that if this conversion is representative, then it bears out everything Rob Watts of Deltec says about the biggest bugbear of a transport being jitter. Its disadvantage is that comparison cannot be made with anything other than a Deltec convertor: but, yes, I'm impressed **EB**

The optical clock link connects up to the DELTRAN output of Deltec's Bigger Bit convertor. The output must be switched ON also.



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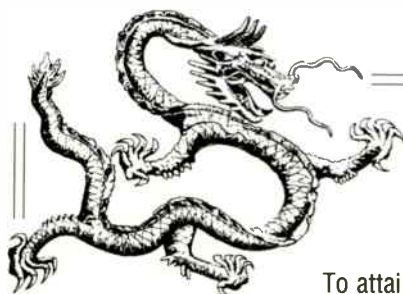
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In the February issue we offered a pair of KEF Q90 loudspeakers as a competition prize. The queue was even longer than we expected...

Once again, poetic licence abounds among our readers. There were a number of grins that appeared while we were reading through the entries, making the final choice difficult.

The correct answers to the questions were as follows:

1. KEF stands for Kent Engineering and Foundry.
2. There are three models in the 'Q' range.
3. KEF have recently celebrated their thirtieth birthday.

Finally, after eliminating the unrepeatable, the unprintable and the biologically impossible, we felt that Stephen Force of Cheltenham's entry was a clear winner:

There was a young lady from Kew,
Who discovered an experience quite new;
With a leap and a bound,
In a dealers' she found,
KEF's three winning drivers in two!

There were a number of other entries that we also felt worthy of mentioning in dispatches:

... That nice girls like Uni-Q too.
From Mr. M. Carmichael, Berkshire.

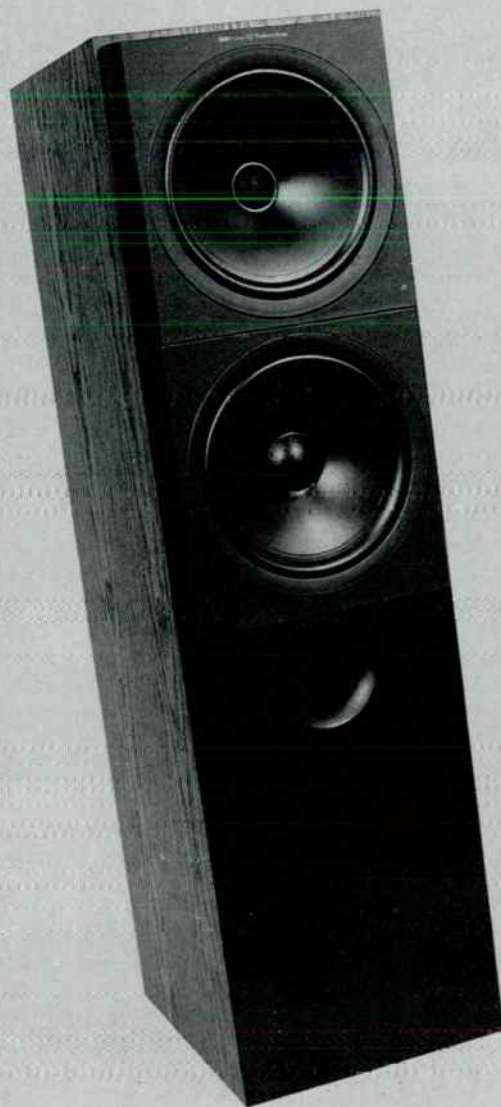
... She could bop to the KEF boogaloo.
From Mr. S. Gibson, Glasgow.

... KEF's clear and coincident too.
From R. Williams, Swanage

And finally...

... The sound of a horn loaded loo.
From Mr. T. Edwards, Dundee.

HI-FI WORLD JUNE 1992



KEF Q90 COMPETITION WINNER

and not least...

... That the earth could move for her too!
From V. Kerry, Worcestershire.

In addition, Kevin Molloy from Leeds sent us a nice picture of a KEF Q90 surrounded by a flock of sheep. Sadly the message could be considered inflammatory by a well-known hi-fi manufacturer, but we appreciate the work that went into this entry. Our commiserations to Mr. Molloy and to the other entrants who just missed the mark.

As David Inman, KEF's Marketing Director writes:

"Oh dear, I haven't had so much fun in ages. I knew we shouldn't have got into 'Young lady from...' limericks! Our congratulations to all those whose ingenuity - in so many directions - made this competition so enjoyable. Mr Force's contribution won quite simply because it was the most accurate and it scanned best!

"To all the others - well there are limits to what a respectable hi-fi magazine can print you know! Thanks anyway, and congratulations to Mr Force." ●

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World Radio History

NAD in the brochure accompanying the 4225 AM/FM tuner, take a certain degree of pride in "concentrating on component selection and sound quality instead of flashy front-panel cosmetics".

No-one could say the outward appearance of the 4225 was anything other than subdued. In typical NAD grey, with rounded edges to the central display and control panel, it is designed to match other components in the range.

For the relatively low price of £159.95, you get a digitally-synthesised tuner with fourteen memory presets divisible between both FM and Medium Wave. Long Wave listeners need not apply. A balun is supplied to fit the 75 ohm co-ax aerial socket so the 300 ohm wire T-aerial in the box can be used to begin with. Of course, you're going to have a proper roof aerial put up, aren't you? There's also a simple wire aerial to fit into spring clips at the rear for MW reception.

Tuning is by means of a 'rocker' type switch, pressed, logically, on the right hand to tune up the scale and on the left to tune down. Held down, the frequencies are scanned rapidly. A quick touch will tune by steps; pressing Search scans the bands by station.

Techno-fear doesn't enter into handling this tuner. NAD have avoided the Blackpool Illuminations effect of innumerable glowing lights and bargraph displays that festoon so many other tuners these days.

For tuning, there is a very simple

LED set-up of two orange arrows facing in opposite directions with a green LED in the middle. If you're not quite on target, then you tune up or down in the direction of the lit arrow, and when the green LED lights, then you're on station. This isn't, however, very discriminating: the green LED would light up on woefully noisy and inadequate transmissions which even pressing the 'Blend' or 'mono' switches was unable to rescue. A user really needs to know, and recognize on the red display, the strongest frequency for their locality. Tuning manually by steps also produces some loud inter-station noise; using the scanning mode is preferable, where it is muted. Favourite stations really need to be memorised on the presets for convenience.

Skip and Scan

Scanning both bands for transmissions is fairly speedy, though it will pick on weak stations on FM which simply aren't worth the trouble. On the AM band, it tends to skip a number of foreign weaker stations and restrict its stops to the stronger BBC and commercial broadcasts.

The other two lights indicate whether reception is in stereo, and a two-colour orange and green indicator shows which 'bank' of presets has been chosen. Seven small serrated push-buttons do double duty for fourteen memorised stations. It's not essential, but it's mnemonically handy to have seven 'green' for FM and seven 'orange' for AM, or, as the handbook suggests, one bank for parents and the other for the kids!

Two other square buttons on the

left handle a pair of functions, one of which is useful and one which turned out best avoided. Best forgotten about is the 'Blend' switch, which theoretically can make a weak stereo station still listenable in stereo. What does happen, inevitably, is that the sound becomes dynamically compressed, somewhat laid back and dulled. It doesn't clean up weak stations enough to make it worth it.

The mono button is a rare sight these days, but is more effective for weaker stations. It's better to listen in mono than dodgy stereo. After all, the studio engineers go to some trouble to ensure a decent mono balance leaves the studio.

NAD have engineered a fairly responsive, well-balanced FM tuner section in the 4225. Fed by a decent roof aerial, it picked up UK transmissions with ease and relatively little background hiss. Starting with Radio 3, and an orchestral concert, the tuner produced a good, well-rounded, warm tonal colour. Very advantageous to the brass section this, with splendidly fruity horns and rasping trombones. Strings had a pleasant glow suffusing them, too, with no worries about players apparently having adopted steel strings and glass bows.

In some ways this is a sound preferred by vinyl addicts, smooth, but distinctly warm. Add to this a fairly expansive width of stage, and the overall impression is very comforting and relaxing. It's not the last word in dynamics or detail, but there is sufficient to retain interest without anyone's musical concentration wandering. There was enough impression of ambience and studio



smooth customer

A return visit to the smooth and warm NAD 4225 tuner by Eric Braithwaite,



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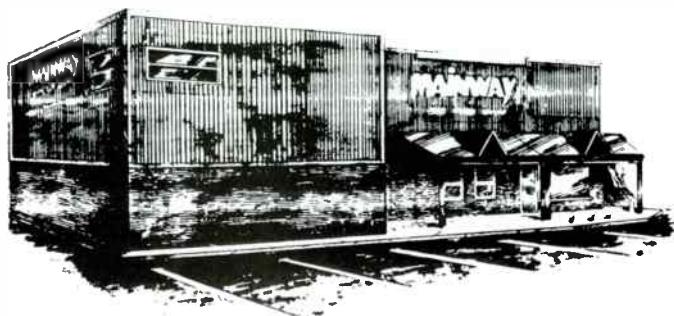
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space in one performance I listened to to give quite a realistic impression of the venue.

Moving along to other stations, and their dreaded compression, suggested that a little more tonal muscle would have come in handy. Some pacey Rock music lost its way somewhat, with too little drive and quick-wittedness to set feet tapping. Combine this touch of slackness with some of the nastier compression used on commercial stations, and some otherwise sparkling Rock could turn a little soggy.

A small problem arose here. Particularly up towards 100MHz on the FM band, the 4225 appeared to loosen its grip, the sound picture spreading, and the dynamic range mildly contracting. Admittedly it doesn't help when stations in this neck of the tuning scale are turning out some pretty inauspicious sounds anyway, but I have heard a cleaner, sharper presentation. A side-effect of that very pleasant warm tone is an increased muddle, especially on compressed signals.

Vocal Euphony

In the mid-band, NAD have built in a certain degree of vocals-enhancing euphony, I suspect. Vocalists were delightfully clear. Listening to drama on Radio 4 proved the NAD had a tidy way with the nuances and shadings of tone of actors and actresses which was pleasantly expressive. There was enough of the studio ambience around the microphones to detect that it was a studio play, but without overly detracting from the action.

Where I was less happy was in absolute tonal quality. Some of the deep-throated gruntness of Jazz FM's continuity announcer was thinned out. I was less reminded of a male Mae West on a hundred a day than usual. Catching the news from a female newsreader increased my suspicions of a catarrhal thickening of consonants, with a slight but noticeable lispiness.

None of this is less than par for the course, and the NAD has an innate attractiveness and well-founded balance to be a recommendable welcome alternative to the clean but thin and sometimes slightly glassy sound creeping into many modern FM tuners.

Now the inevitable aside. I come to dread pushing the little button, in this case next to the presets, to switch from FM to AM. Nevertheless, I usually work on the assumption that if the designers put it there, they presumably meant it to be used. Sometimes I wonder whether they ever bothered to press it themselves.

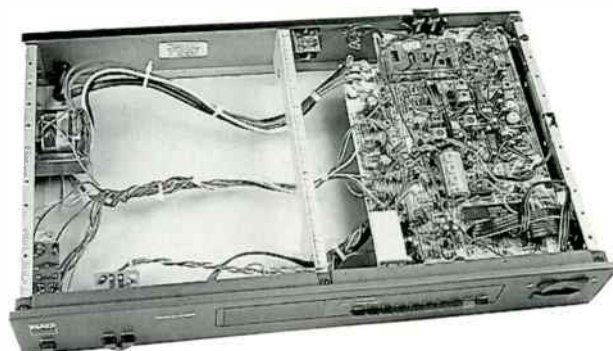
I've heard worse. I was even surprised by the length of thin wire

masquerading as an aerial. It may not look much, but it works. Well, it feeds in a signal. Unfortunately, while the AM sound quality is bearable it's also barely lo-fi. If a strong station is accessed, then some semblance of music comes out. However, it is horribly compressed and undynamic, though speech at least verges on the acceptable, even if it has a cuppy coloration and it is muddy. It really isn't sound quality worthy of a living room, and on top of that it is plagued by noticeable background hum on some stronger stations and serious breakthrough on weaker ones. Yet another case of 'stick to the tranny.'

Relaxed

AM performance apart, the NAD 4225 is well worth consideration simply on the grounds of its relaxed and tonally pleasant performance. It's at the opposite end of the sound spectrum from the developing breed

of squeaky-clean budget tuners, but not so artificially as to be sonically idiosyncratic. All that might be against it is what now looks like rather dated styling and a distinct shortage of presets compared to its lower-priced Japanese rivals. But in terms of performance it should stand amplifier upgrades a fair distance beyond its own price bracket ●



Above: The tuner head containing all the sensitive tuning circuits lies in a metal screening case, seen at the top of the picture. A maze of IF coils, discrete devices and silicon chips occupy the rest of the board.

Measured Performance

I first tested this tuner many years ago and it has remained a firm favourite in my mind ever since. This test is a reappraisal in the light of new competition. The first sample was very well engineered and this one proved likewise, but detail improvements appear to have been made.

Frequency response, seen in the analysis, is both wide and flat. It reaches right up to 16kHz, a high limit, and down to 12Hz. A response like this ensures good basic tonal balance, although I know the 4225 - like most NAD products - sounds on the warm side of neutral. That's due to influences other than frequency response.

Stereo separation was wide at 45dB in the mid-band and 36dB at high frequencies. This is plenty enough to provide a subjectively wide sound stage.

Distortion levels on both stereo and mono were lower than ever and right down to lowest level measurable with our RF signal generators. At just 0.06% under all circumstances, the 4225 matches the performance of the very best tuners available. I would not expect the small amount of third harmonic distortion it produces, visible in the analysis, to have much impact upon sound quality. It will produce a clean, smooth sound lacking coarseness or edginess.

The sudden plunge down in the frequency response trace at extreme right is caused by the pilot tone filter at 19kHz. This proved effective enough to eliminate pilot, sub-carrier (38kHz) and other unwanted signals above 20kHz that could block Dolby action when tape recording.

I expect modern tuners to produce less than -70dB of hiss, when fed a suitably strong signal by the aerial. Most budget designs manage a satisfactory -72dB or thereabouts; the 4225 hits -76dB, making it very suitable for fastidious Radio 3 listeners. Listening at high volume in surroundings where there is little ambient noise, a famous Radio 3 silence will not be sullied by tuner hiss. Since the very best tuners manage -79dB or so, the 4225 gets very close.

This new sample proved much more sensitive than the one I tested a year or two back. It needs just 630µV from the

aerial to reach minimum hiss (full quieting), just over half that demanded by other tuners. With a stereo sensitivity figure as good as the best achievable (16µV), the 4225 is fine for picking up weak stations. It has plenty of selectivity too.

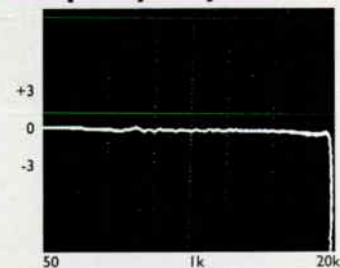
In every area the NAD 4225 provides excellent results. It offers a standard of performance not beaten by far more expensive designs, with no weaknesses or even minor blemishes to stain this picture.

NK

Test Results

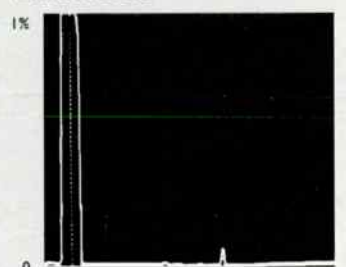
Frequency response	12Hz-16kHz
Stereo separation	45dB
Distortion (50% mod.)	0.06%
Hiss (CCIR)	-76dB
Signal for minimum hiss	0.6mV
Selectivity (at 0.4MHz)	85dB
Sensitivity	
mono	1.2µV
stereo	16µV
signal strength meter	none

Frequency Response



Flat, wide frequency response

Distortion

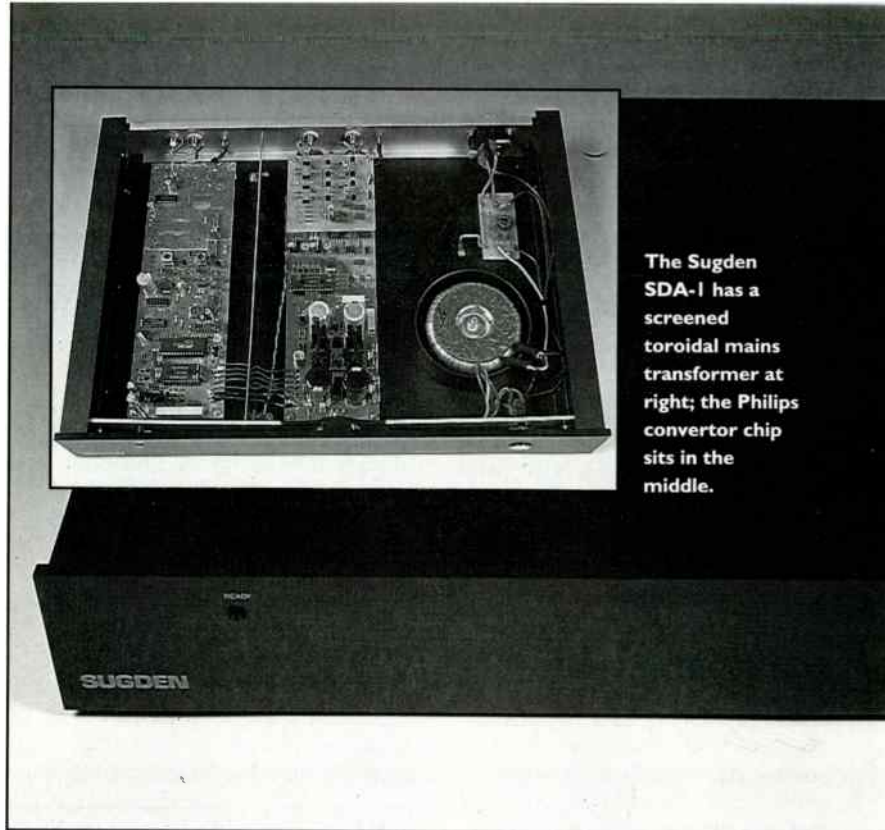


TEST TONE 1kHz
DISTORTION HARMONICS 7kHz
Very low distortion of 0.06%

We've been wading through Sugden amplifiers recently, having rediscovered a good light the Yorkshire company has been hiding under its bushel. I'll appreciate analysis and accuracy as well as the next man, but when I'm not reviewing, it's music I listen to, not electronics. That's what Tony Miller of Sugden reckons people need their electronics for as well. The word 'music' seems to enter our conversations more than any other.

Anyway, when I asked Sugden for one of their amplifiers, they told me they were planning both a range of Compact Disc transports and a range of converters. The transports haven't gone ahead yet, despite a couple of near-world tours prospecting for transport mechanisms in the interim. Sugden know what they want from a mechanism and like hard-headed Yorkshiremen won't settle for second best.

In the meantime, we have three



The Sugden SDA-1 has a screened toroidal mains transformer at right; the Philips converter chip sits in the middle.

Yorkshire all out!

Sugden of Yorkshire have produced a Digital-to Analogue convertor.

By Heck(mondwyke) it's good, says Eric Braithwaite.

DAC's from the company. The one we asked for is the £650 SDA-1, bang on the same market pitch as Deltec's Bigger Bit and the Audiolab 8000DAC.

Where it differs from these two rivals is that Sugden are sticking with multi-bit - for sound musical reasons, they say. The Philips 'Crown' selected TDA-1541 S1 convertor chip is used.

Styling is simple. The case is a neatly finished, black oblong box with a round orange-illuminated on/off switch and a small LED in a recess with a chamfered edge which shows the unit has locked onto a digital signal. It takes a few seconds to settle itself and lock, but there's nothing wrong in this unless you are particularly impatient. It will accept output from CD and DAT via either a co-axial input or a BNC socket. The analogue output is through a pair of widely spaced, gold-plated phono sockets.

The SDA-1 is intended as an add-on upgrade to existing CD players, but if the buyers' digital sources expand, so can the converter. It can be upgraded at the factory to make room for three digital inputs and a buffered digital output for recording.

A dealer raved about the sound of the Sugden with an Ariston CD3 player. So I had one sent along to try its mettle against a few others. It was an enlightening experience.

The test of a combination like the Ariston CD3 (reviewed elsewhere in this issue) and the SDA-1 is that the pair must come up to the £1000 standard, and preferably beat it. As I inserted other players and transports, it became obvious that Sugden's DAC adopts the best characteristics of a transport and translates them. I found myself spending a fascinating hour or two listening to the differences in the quality of mechanisms.

Away-day

Before I go further, Sugden's SDA-1 is too good to be relegated to being merely an upgrade accessory. It will stand comparison with the very best converters on its own. If you're in the market for a transport-plus-DAC combination, I don't care how long the journey to a Sugden dealer is, buy an Away-Day ticket and listen to it.

Somehow, the Sugden behaves like a sculptor. Given marble to work with, you walk away with a different kind of sculpture than you would if he worked with granite or steel. Insert the SDA-1 between the CD3 and the amplifier, and all the large well-projected expansiveness inherent in it becomes that much bigger, that much wider, that much more spacious.

The CD3's tonal anomalies of subdued treble and its dislike of

reverberant recordings were suddenly eliminated, recordings infused with more rhythm and timing, treble extended without the beefy bass diminishing. It became clear that where the transport itself falls short is in detailed insight and focus; in this respect still below the £1000 level - of the Marantz CD-94 for example.

But the spread of sound! It wasn't ridiculously oversize in terms of individual instruments or vocalists, just larger than life without altering the proportions. I couldn't move further back without knocking a wall down, but I wished I could. I wanted to turn up the volume, be enveloped in the sound even more, and glory in it. The only other converter that's had me eyeing the sledge hammer or the estate agents' windows for a larger flat is Deltec's PDM1 Mk.III. And that is nearly twice the price.

All the same, as I've said before, adding a £600-odd DAC to an existing player is not a foolproof recipe for increasing the sound-quality by the same number of pounds. I thought the transport of the Mission DAD5 might be even better than the Ariston. The effect was surprising. At that stage I had assumed I'd been listening to the sound of the Sugden. I was astonished to hear what I momentarily thought to be the Mission's Bitstream characteristics.



Again, there was a larger scale to the performance, though not as marked a quantitative increase. The DADS's overall smoothness and resolute and firm bass shone through.

Where the Sugden expands on its sources is its ability to present the instruments, the vocalists and the sounds with an aura of air and space that makes the whole performance three-dimensional and that much more credible. The Decca/Dutoit de Falla recording had the full sense of the size of the hall with the players' hand-claps and shouts in proportion with the

apparent size of the instruments. Listening to the same recording less DAC on the Ariston, you would be forgiven for believing that the players had hands the size of tubas. The Sugden brought all this back into scale again.

I ended up doing an A-B comparison with a £3000 or thereabouts Luxman player which also uses 16-bit 'Crown' chips and a CD-ROM transport. Highly thought of in Germany, but not yet available in the U.K., I've come to admire this machine's almost supernatural subtlety. I fed this subtle spider web of delicate textures and ultra-fine nuances into the Sugden. Switching between the one and the other proved how fine the comparison was. The Luxman has one of the best-sounding, purest, smoothest, and detailed multi-bit DAC stages I've ever heard.

Perfect Match

Sugden's SDA-1 matched it almost exactly, nuance for nuance, quaver for quaver, note by note, in tempo, speed, timing, control, every single element of the recording. It was a near perfect match, except for a broader spread on distant cymbals, which had a slightly less firm attack and decay. Acoustic guitars were also just that bit bigger, with a somewhat wider, albeit minimal, spatial separation across the stage. Tonally, I couldn't fault it, though I tried. Whatever that sharp spike is doing up at the top of the frequency range, it didn't seem to do any damage. All I could find was a trace of graininess in the top half of the frequency range, but it was so slight I had to concentrate hard.

Occasionally there were slight elements of confusion in some tonal colours, with some slight bitterness in upper string sounds. Always, however, one's attention was drawn away by the sheer amount of the music. I came to suspect very strongly that there can be very few transports around, however expensive, that would fail to give of their utmost.

Musical Transcription

This DAC behaved for me as though it was a pure transcription device, a wide open window for the transport to flow through. It responds with a real sense of musical values.

I puzzled a sharp-eared friend by swapping between the Sugden and the analogue output of the Luxman. She felt the Sugden was less acute, with a flatter perspective. Five minutes later she was demanding to know what I'd done to make the picture fuller. I'd simply switched to the same breed of cable for both outputs, removing one interconnect that tends to have exactly that effect in my system. I'd compensated for it, knowing about it. She heard it, not being able to see it. It was an object lesson in the Sugden's transparency.

I've not heard anything that receptive or strong and full-bodied since the Deltac PDM1 MkII. It doesn't have quite the same degree of central up-front punch and power, but it's close. Speaking to Tony Miller of Sugden a few months back when he first told me of their work on DAC's, he said "it's that transparent it shows up everything about a transport." It does indeed. And it needs the best ●

Measured Performance

The frequency response of this DAC has a treble peak. It needs to be considered when matching the SDA-1 into a system. I have usually become aware of the occasional sharpness that a lift in treble output brings to Compact Disc. The problem is disc specific though; the energy has to be in a recording before it can be emphasised by this sort of thing and as recordings for CD get better balanced, the problem gets more infrequent.

In practice, much depends upon partnering equipment. A bright sounding amplifier and a loudspeaker with a peaky, metal dome tweeter will spotlight the effect. Conversely, there are products that will disguise it, making intrusiveness dependent upon a range of external factors.

The Philips TDA-1541A sixteen-bit convertor chip used is the selected S1 grade that offers low-ish distortion. At around 0.05% at ordinary music levels, with an extended 'digital' harmonic structure, the SDA-1 gets a fairly standard performance from this chip. The level is higher than that from Bitstream or Burr Brown high-bit convertors, like the PCM-63 for example. This sort of distortion is not heard as obvious rough-

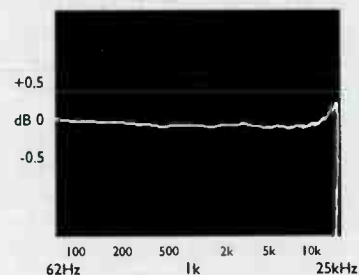
ness, but it does lightly tinge treble quality, lessening smoothness.

Sugden have in all other areas achieved a normal performance from the Philips chip. Channel separation, output, low level resolution and noise all measured well.

In measured terms, the SDA-1 offers a normal sixteen-bit performance. I have reservations about the small response peak but other factors have to be taken into account when judging sound quality.

NK

Frequency Response

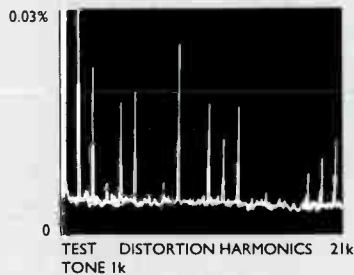


Treble peak at right

Test Results

Frequency response	4Hz-21.2kHz	
Distortion		
-6dB	0.004	0.003
-30dB	0.06	0.05
-60dB	0.47	0.5
-90	36	38
-90dB dithered	12	14
Separation	left	right
1kHz	-88	-89
10kHz	-67	-68
Noise	-112dB	
with emphasis	-110dB	
Dynamic range	107dB	
Output	2.3V	

Distortion



Some distortion (0.06%) at normal music levels



silence is golden

Eric Braithwaite listens to the silence of the Dolby S Teac V8000S.

Top: The orange fluorescent displays of the V8000S and back-lit cassette compartment make it visually attractive.

Latest in the short but nonetheless growing line of 'S' cassette decks is Teac's £699 V8000S. Bearing in mind that I've been less than kind about other cassette decks in this company's range over the last few months I'll say right now that it's a good one. What the hell - away with the caution: it's an extremely good one by any standards.

The V8000S is higher than usual, sports a hefty motorised drawer with a sizeable window, and though standard width, is deep enough to need a turntable-sized platform. To my mind our review sample, which was finished in a paler shade of champagne gold than that once used by Marantz, looked attractive enough though one or two friends thought that as a whole it was a bit garish.

Facilities demonstrate just how much cassette deck functions and controls are

beginning to take on the character of those found on CD players. The V8000S, for example, offers a tape counter which signals minutes and seconds. Why, though, it is apparently beyond the wit of man to have this tick away at the same rate as my watch and arrive at exactly thirty minutes at the end of a side of a C60 is a mystery.

Most of the essential functions - Stop, Pause, Play, Fast Forward and Rewind, Music Search, switching between Source and Monitor - can be operated from the remote control. Recording can be synchronised with a CD player, but only via a Teac machine equipped with the right link. At this price level the odd audiophile extra is to be expected; here it's the ability to switch the display off - but only from the remote.

Smooth

Functions are handled from the fascia by smooth, firm-feeling microswitches, clearly labelled and laid out. Recording level is controlled by a reasonably large knob on the right, channel balance corrected by a small one just left of it. Ergonomically, this is an easy machine to use and the logic worked well; in fact, this was a quiet, mechanically confident machine all-round.

Useful as all this is, more essential is the provision of user-adjustable bias for tape tuning provided individually on both left and right channels. An internal calibration system proved logical, simple, and foolproof. All the same, its controls could do with more precision: there's a degree of leeway clockwise and anti-clockwise before the bargraph showing levels clearly lights up one segment too many or too few. Practice and listening made perfect - or nearly so - eventually. While I tried a number of breeds of tape,

I'll refer readers to Noel's section. By and large, Maxells seemed to tune in well.

Pre-recorded tapes began the listening session and filled the room with an expansive, smooth and extremely well-balanced sound. Particularly engaging was a very clear and clean treble without a semblance of artificial sharpness and a coherence which reproduced the tonal colour of all instruments faithfully and accurately. Violins, violas, cellos, brass, all had their defined positions in the orchestra and their individual tonal colours. I was very struck by the obvious speed stability, for vocalists and instrumentalists stayed firmly glued in place and melody, beat and rhythm kept firmly to time signatures.

Not all was beyond criticism. There was just an element of blurring from one section of an orchestra to another. Against this, there was width, depth, subtlety and ambience in abundance and above all a reassuring feeling that well-recorded tapes were a viable source and enjoyable. There was one signal failing, but without real-time comparison it wouldn't show. Lower bass had a woolly colouration, sounding desirably deep and full, but over-round. Different kinds of bass-drum - real or synthesised - took on the same fruity tinge. To a certain extent, so did instruments like tubas and horns, but only to the degree of a pleasant bloom.

Turning to recording confirmed the lucidity and user-friendliness of the V8000S. Switching from Source to Tape is automatic, for example, and monitoring the quality of the tape while recording can be done from the comfort of the listening position using the remote control - an extremely useful aid. Dolby HX-Pro is always switched in on recording and is flagged on the display.

This panel also flags the three Dolby noise reduction systems, B, C and S. Tape equalisation is automatically selected too.

The orange display indicates a figure in dB above 0dB for recording level on the bargraph. It effectively extends the display up to +12, but needs to be used with caution to avoid overload. An 'Over' legend lights on the display above +12dB, but seemed too tardy to rescue a recording from distortion.

All Dolbies were well-aligned, with C very quiet and S absolutely splendid - no more than a barely discernible whisper of hiss with the amplifier whacked up to full volume. It fulfilled all its promise on this tape deck and is certainly one of the best implementations of Dolby S I've heard so far.

Using Metal tape and Dolby S produced recordings of extreme clarity and lucidity. The ambience of recordings came over with no diminution, orchestral music spread fully across as deep and wide a stage as the original. Comparing source with tape had one friend unable to tell the difference, but another commented she felt the tape was less "acute". There was, on recording, as had been discernible on pre-recorded tapes, a softening of focus between the speakers.

There was also the same over-round bass which sometimes slowed the Teac's otherwise exemplary rhythm and timing. In this area it is a difficult machine to fault, even when it's being compared with an extremely good CD player.

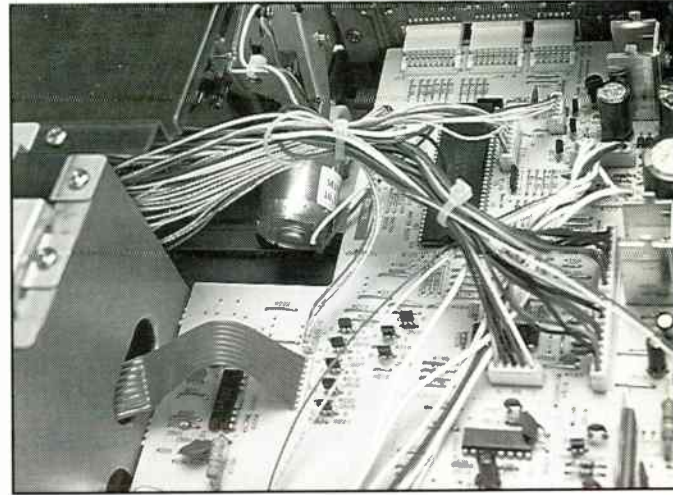
A piano recording - while supremely stable, and in this respect awesome - was affected by some dull and thickened lower notes. Yet it is very seldom indeed that you can sing along to either stave of a piano piece as was possible with the V8000S. However, generally, instrumental textures were close to perfect; I was very impressed by some col legno bowing in one piece, with a clarity simply not expected from tape, however good.

No Problems

There were no problems with chrome or ferric, either; the tonal balance, textures and degree of focus remaining consistent, just diminishing somewhat in absolute quality. Some care needs to be taken with tape brands; though TDK chromes had a lighter, tighter sound in the bass, which I liked, I couldn't tune them in to avoid a commensurate thinness in violins or at high frequencies, which I didn't.

It's a pleasure to have a cassette deck of this quality around. Especially with

metal tape and Dolby S. Teac's 'S Deck' maintains Compact Cassette as a viable quality source. Even better, it does it at an attractive price more than commensurate with its quality. It doesn't shame the high end either on those days when the pocket only stretches to cheaper ferric tapes. I wouldn't take bets this year on whether cassette will survive the century, but on the evidence of the V8000S it deserves to ●



Wires are untidily bundled internally; the transport lies hidden under a black cover at left.

Measured Performance

The transport of this deck is a dual-capstan type, a complex but effective principle used to achieve low flutter. By reducing high rate speed variations (i.e. flutter), clarity is improved and colouration reduced. To reduce wow as well (low rate speed variations) Teac have used quartz controlled direct drive to the main drive capstan. The end result is pretty impressive. The wow and flutter meter needle remained all but motionless. The spectrum analysis shows the purity of the basic test tone when recorded then replayed, in the sharpness of the spike at right in the picture.

In a nutshell, the Teac transport is one of the best I have ever tested. It gets cassette almost up to CD standards of pitch stability - an amazing feat.

The other critical item in any cassette deck is its head. Teac fit the usual independent but siamesed record and replay heads. Variable bias has been provided for metals as well as ferrics and chromes. I found That's MR-X PRO matched perfectly, giving a straight line response to 20kHz. TDK MA-X was next, being almost as good. Anyone wanting to use TDK MA-XG will need to increase bias slightly to +1 (of S). Maxell Vertex needs bias reduction to -3 for perfect flatness, but MX doesn't match. So whilst the V-8000S can be tuned to any metal tape, it matches higher performance types best.

The inconsistency I have found in the past with Teac was evident on the V-8000S. Whilst our deck had been adjusted to match premium grade metals at 'normal' bias, it hadn't similarly been adjusted to match premium chromes. In fact, it did not even match standard TDK SA unless bias was reduced slightly. This meant that there was barely enough range to cope with high performance chromes like Maxell XL-IIS, and record equalisation was not especially appropri-

ate for dual layer chromes like TDK SA-X and BASF Chrome Super II.

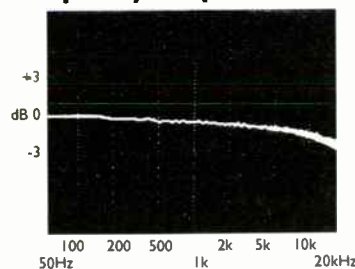
The situation was different again for ferrics. High performance types from TDK (AD, AR-X) had too much treble, standard types (TDK AR, D) too little, but new Maxell XL-IS matched perfectly.

I usually find a pattern in tape matching with cassette decks but - as with other Teacs - not with the V-8000S. It has to be diligently tuned to match; standard bias seems have been set haphazardly - or according to some mystic law I know not of.

Teac have chosen not to crank the overall level of bias up too far in an attempt to achieve impressive Nakamichi-type headroom figures. The best figures came from metal tape, as usual, TDK MA-X giving +SdB (MOL31S) at normal bias and MA-XG +7dB when tuned flat. These are respectable figures. Recording levels can be taken right up to maximum of +10 on the display (9dB digital readout) with these two tapes and treble quality still holds, due to high treble overload margins.

Chromes and ferrics can be taken a few dB over zero when recording. Strong treble levels in music can be tolerated too, because of the low overall level of bias used. However, it favours treble at the expense of mid-band levels.

Frequency Response



Standard metal tape at normal bias has falling treble, so bias must be reduced.

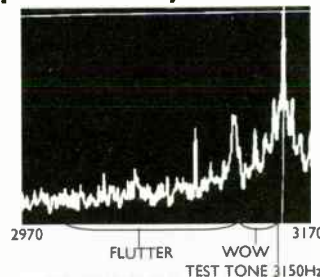
The noise reduction systems all worked well, suppressing hiss by the amounts expected. Dolby S pushes hiss (CCIR weighted) to -78dB. Since a good metal tape will hit +6dB, that's 82dB of dynamic range in all. That's some indication of how effective cassette has now become.

The V-8000S had a slight but peculiar plateau lift in bass output through its replay amplifiers. This adds some weight to the sound from prerecorded cassettes. **NK**

REPLAY (prerecorded tapes)
 Frequency response (-2dB) 30Hz-20kHz
 Speed accuracy +0.3%
 Hiss (70uS, Dolby out) -60dB

RECORDING (blank tapes)
 Frequency response (IEC Primary Refs.)
 ferric (IECI) 12Hz-20kHz
 chrome (IECII) 12Hz-19kHz
 metal (IECIV) 12Hz-20kHz
 Separation (1kHz) -S0dB
 Distortion (31SH) 0.6%
 Hiss (70uS, Dolby out) -S7dB
 Speed variations (DIN total) 0.02%
 Flutter energy (3-3.13kHz) -32dB
 MOL/SAT (IEC Refs) 31S/10k
 IEC I (ferric) +3.4dB/-3.2dB
 IECII (chrome) +2dB/-2.SdB
 IECIV (metal) +4.SdB/0dB

Speed Stability



Sharp test tone spike at right indicates excellent speed stability.



The rear panel has level and frequency adjustment controls at left, a Cannon input and amplifier protection fuses.

enough to take over where small speakers leave off. My own work with loudspeakers and, in particular, development of an electronic crossover to match Celestion SL-6000 sub-woofers into the Quad ESL-63s, showed me that around 100Hz is the wise upper limit. The Stadium's upper limit of 125Hz is just right.

Whilst my own crossover eliminates bass from the Quads, allowing them to go louder, the REL does not affect the main system at all. It's a back-up subwoofer, a feature that helps it to integrate more easily. It senses the signal on the output of main amplifier and amplifies the bass portion only. This is a simple but very effective technique I found and, although the Quads don't go louder, the system itself does.

Unpowered sub-woofers of the sort commonly partnered with matching satellites are in fact ordinary bass cabinets. They don't go down low enough to be true 'sub-woofers' in the generally understood sense of the word in hi-fi circles. A proper sub-woofer should go below 40Hz, preferably to 20Hz (i.e. one octave below 40Hz), or even lower. REL claim 20Hz is the lower limit of the Stadium, so it is meant to be a true sub-woofer, something that sets it apart from many similarly named but simpler items.

The high powered Volt drive unit and the reflex port both point downwards towards the floor.

QUADS & THE STADIUM

The in-room frequency response analysis (see Fig 1) with my Quad '63s clearly shows that it extended bass response of the system down to 8Hz in our 16ft x 12ft listening room. That is low - very low. In practice it meant that the Stadium reproduced some joke/heart-stop tracks with deep bass very effectively. So REL are conservative in their claim of a 20Hz lower limit. The Stadium is a true subwoofer that will reproduce two octaves lower than most loudspeakers - even big ones. This is an impressive achievement.

Frequency Response

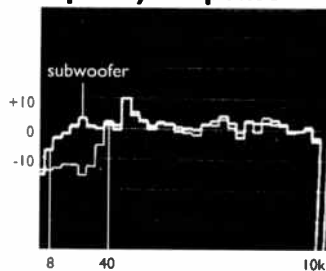


Fig 1 - The in-room frequency response of Quad ESL-63s with and without the Stadium sub-woofer. Below 40Hz bass output falls off without the sub-woofer (lower trace at left). With the sub-woofer bass output extends down to 8Hz (see upper trace at left). A small peak at 20Hz is visible at left.

So much for downward extension. It is in frequency response smoothness that 99% of sub-woofers fall down. To get big bass from a small cabinet they are often tuned to boom, usually around

60Hz. This sounds awful in practice, giving 'one-note' bass that destroys bass lines and becomes thoroughly irritating after a while. REL have done a lot to avoid this problem, something that contributed greatly to my appreciation of the Stadium. It does not boom or overhang, reproducing bass cleanly and playing a bass tune well.

However, even before measurement I suspected there was slight emphasis very low down, in the sub-bass region, since a very deep 'boof' occasionally made itself known, which rattled the room quite strongly at times. This was most frightening with a live VHF radio transmission from a studio where the presenter kept thumping the table or microphone; I had to jump up and turn the volume down quickly before something got damaged or our windows fell out.

Analysis revealed a small sub-bass peak at 20Hz (just visible in Fig 1). After tuning, the 'boof' disappeared; in truth I had had gain up too high. The gain control needs to be used with care I found. Those kettle drum strikes at the start of Carmina Burana can be given any degree of intensity and power; they rattled our windows and sent shudders of vibration through my body until I found that with the Quads the Stadium was best reined right back to 43Hz maximum frequency setting (low) and zero on the gain control (this does not take volume to zero).

The small 20Hz peak can get excited by one or two records. The 'heartbeats' at the start of the Floyd's 'Dark Side of the Moon' have a dominant 20Hz component. With the Stadium switched down to 'minimum everything', the beats were still shaking the room. Luckily, few CDs have low frequency signals as loud as this.

Another that does however is Billy Idol's 'Charmed Life' CD. On Track 2 there is an interesting low frequency event - a trick played by the producer I suspect. A door closes with an enormous subsonic thump, acoustically illustrating the lyric: "I walk through your door". This sent a huge subsonic impulse through the building, better felt some 30ft away down a corridor than in the listening room. Few loudspeakers even hint at the existence of this trick. The Stadium didn't flinch from reproducing it at full level.

So much for subsonic fireworks. Although it is possible to keep them down to being audible but not dominant or intrusive with the Quads, I feel. REL could usefully provide lower minimum gain all the same, in order to give more variation with the ESL-63s, because of their insensitivity.

Bass Playing

And now on to the final hurdle for a subwoofer - bass playing. This is difficult to assess properly with an add-in subwoofer, since the main speaker does much of the work and can mask subwoofer weaknesses, such as waffle and one-note effects. With the main speakers disconnected, my ears/body



Frequency Response

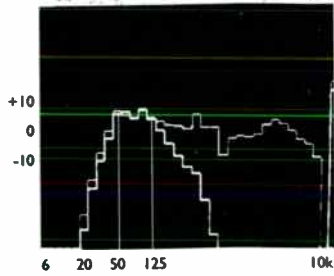


Fig 2 - Bass output from the subwoofer was nearly identical to that from the amplifier, showing it reproduces bass lines nearly perfectly. This is an analysis of Robbie Shakespeare playing 'Make 'em Move', which has powerful fundamentals from 50Hz up to 125Hz.

told me the fundamentals from Robbie Shakespeare's bass playing on 'Language Barrier' were all there. However, I have learnt that it is best to measure this sort of thing to be sure, since hearing acuity is limited below 100Hz. The bass playing analysis (see Fig 2) shows the bass line being reproduced by the amplifier (i.e. the electrical output signal), with the output of the Stadium superimposed upon it. They are nearly identical.

This proves beyond any doubt that the Stadium is accurate in its bass reproduction - in fact it is unusually accurate. There's barely a few dB variation in reproduction of the bass line, from 50Hz up to 125Hz (above 125Hz acoustic output rolls off, as it is meant to). This subwoofer plays bass with uncanny ability in a room. I know from my own work that to get such good results in-room takes a lot of work. That's why good subwoofers are so rare.

With the Quads working, Robbie Shakespeare's rumbling and repetitive bass riffs, which supported the earlier Grace Jones albums so manfully, really strode along. There wasn't any note slurring, nor any loss of power, nor any peakiness that favours one note over the rest. You get the tune, not a floundering representation of it. The bass power and the sense of control was superb.

This makes the Stadium great for Reggae, all Rock and - of course - for Organ works. Oh yes! The room shook - did it ever shake! - as Peter Hurford worked his way sinuously through Cesar Franck's Choral No 2. The analyser showed vast levels at 30Hz being generated in the room, but my neighbours knew all about it without one. Those sustained notes got the building going - and the one next door - and the one after that.

Getting a subwoofer to reproduce this sort of thing cleanly demands huge power handling ability. I never got the Stadium to show signs of stress all the same. REL have got the problems inherent in good subwoofering beaten. I only got more and more impressed as I used it.

**GOODMANS
MAXIM 3s
& STADIUM**

The Goodmans Maxim 3s are meant for wall placement to reinforce their bass. This also produces peaky bass with emphasis around 60Hz, which makes smooth matching and an even sounding bass performance of the sort I talked about earlier difficult or impossible to obtain. Whilst the Stadium worked with the Maxims against the wall, I found it better to move the Maxims out, keeping them on stands. This gives a more open sounding stereo stage with firmer images as well.

After some fiddling, I found that the frequency controls were best set to maximum (i.e. highest cut off frequency of 120Hz), with gain kept right down close to minimum. Since the Maxims are sensitive, the Stadium does appear to have too much gain, meaning the control has a very sudden and coarse action. Properly adjusted however, the Stadium and Maxims worked from 20kHz right down to 10Hz (-6dB) - an astonishing range. The frequency response analysis (see Fig 3) shows smooth bass. There is a narrow suckout at 50Hz and a small (+5dB) peak from the subwoofer at 20Hz. As in-room bass goes (far field), this is a very even performance in measured terms.

Frequency Response

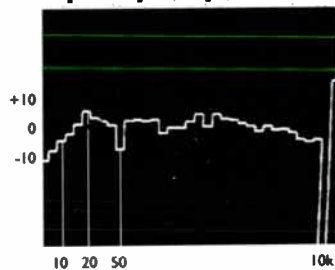


Fig 3 - In-room frequency response of the Stadium with Goodmans Maxim 3s. Bass extends smoothly down to 10Hz (-6dB). This gives the miniature Maxims a huge sound. The small peak at left is at 20Hz.

The Maxim 3s have wonderful imaging and staging properties. They are dynamic sounding and very forward and immediate. With the Stadium, bass quality was smooth, seamless - and endless. I was glad to have to make the Stadium work over its entire frequency range, because this was more revealing. It stayed tight as a drum in sound quality, providing deep, clean bass and massive subsonics, when they existed on a CD of course.

The whole presentation was dramatic - and more 'out-of-box' and generally ethereal than usual. These items in combination offered some of the best bass I have ever heard and, generally, a standard of performance I

can honestly say is quite unusual. I have never come across a system of such enormous ability before at such a low price. The Stadium showed that, when partnered with the right items, it is a magic ingredient, turning a small budget system into a giant slayer.

Practicalities

Now to practicalities - and blemishes. Ideally, the Stadium should be sited between the loudspeakers. It is big, measuring 575mm wide, 520mm high and 352mm deep. Being a large, black box, weighing 23kgs (50lbs) it is hardly beautiful. However, the cabinet could double as a small table. Just bear in mind that vases placed on it will have to be bolted down and coffee will exit the cup vertically, ending up in strange places - like your shoes. The cat isn't likely to sit on the cabinet, unless it is in training for the next Shuttle mission.

The signal sensing wires are fragile, but the sensing arrangement, with 'earth lift', is well thought out. I experienced no difficulties. Switching between different frequencies on the coarse tuning control occasionally 'opened' the filter, allowing a short blast of programme through the box. This was more disconcerting than dangerous.

The instructions could usefully be more succinct and illustrated. The controls need to be calibrated, then the tuning-in process could be better explained. Exactly what the Stadium does and, therefore, how to tune it was not clear I felt. It takes time and a lot of experiment to get right. In fairness, however, our sample was the first of the Stadium breed; the tuning dials are said to be better calibrated in later Stadia.

Finally, potential users need to be aware that LP warps can be a problem when any subwoofer that goes below 10Hz, like this one, is partnered with a preamp lacking a warp filter. Cone flap and warp noise will result, because the Stadium is a bass reflex unit with little natural damping. I used CD alone.

Conclusion

The Stadium subwoofer was more successful than I could ever have imagined. It reproduces bass right down to the lowest frequencies (10Hz), it adds no colouration and it offers the tightest, smoothest bass quality available from any loudspeaker. Anyone wanting to hear smooth, yet strong bass lines, with no slur or overhang should check it out.

I suspect I will be using one with my Quad's in future; it is more compact and practical than other arrangements and it will just 'tack onto' any system that is in use. Quad owners should be delighted with the Stadium, it matches so well. However, most people I suspect will be more interested in using the Stadium with good, miniature loudspeakers, like Goodmans Maxim 3s. It's a fascinating and unique combination that is difficult to beat for both drama and fidelity ●

...continued from page 9

have been a little bit conservative in their views on the future of hi-fi. Might we not develop an audio equivalent of virtual reality, as developed for computer generated imaging. Additionally, headphones are generally sniffed at in hi-fi circles, but are capable of very believable acoustics. I fondly remember some BBC binaural transmissions some years ago.

I believe DAT, DCC and CD are red herrings as a path to better recorded sound. Come on Hi-Fi World, let your hair down, excepting NK of course! Let's have your visions for the future. Where will the REAL advances be made in the future?
**J.B. Ledger,
Coulson, Surrey.**

As our prize winning letter suggests, advances don't initiate or direct development these days; profit motive does. Having said that, an innovative element is still crucial to any new technology if it is to appear attractive to buyers. But headphones are unlikely to take over, in spite of what one might think after a tube journey.

It's difficult to see in technological terms how any further great advances can be made. Surround sound may - just may - be revived, but there are intractable physical problems with extra loudspeakers.

Then there are loudspeakers themselves; box designs are going nowhere, although the active/equalised loudspeaker always shows promise.

I personally feel that DAT and Minidisc are unlikely to succeed. Compact Cassette may prove tenacious, in which case it could get killed off by a retail non-stocking policy, since DCC makes more profit. I suspect DCC will start to adversely affect CD sales after a few years, especially if its quality surpasses that of CD as a result of development. **NK**

CD FROM ABROAD

Alan Sircom mentions that CDs are £3 to £5 cheaper in Europe, and a reader's letter suggested that the same is true of the USA. Although the reader mentioned that he does successfully import all his CDs, neither he nor Alan gave any address through which such an arrangement might be made. Do you know of any mail order catalogues in Europe or the USA who could help?

**David Reynolds,
Kingswood, West Midlands.**

Foreign mail order operations advertise regularly, particularly in American hi-fi magazines. We haven't had experience of them ourselves, so would hesitate to name names. The saving in the end may not actually be very great unless a fair number are ordered, because the American companies expect to be paid in dollars and VAT is chargeable at 17.5% by HM Customs and Excise on arrival in this country. **EB**

ROYAL DAY OUT

I am writing to say thank you for the superb day out and Tannoy 603's which made up my prize in the Westminster Royals competition.

I'd also like to commiserate with David Reynolds, who, having suggested the whole idea in the first place, was unable to join us on the day.

When Eric telephoned to tell me I'd won I was thrown into a state of shock. I had recently made a conscious decision to start entering competitions and the Tannoy one was my very first entry!

The morning listening session with the 603's was a revelation. I was quite unprepared for such a big, confident sound from such small (but beautifully formed!) speakers. In my own system the 603's image better and have a better overall balance than my previous speakers, which incidentally work better in the smaller room to which they have now been banished.

As for the Westminster Royals, what can I say? Not being an accomplished reviewer I won't attempt to describe the sound in Hi-Fi jargon. I can say though that I was stunned by the presence and authority conveyed by these speakers. I half expected to see a conductor emerge from the curtains behind the Royals to take a bow. Eric commented that he felt like applauding. These huge cabinets seem to be able to handle everything from the smallest timbral detail to the biggest bass 'thud' with equal ease, and the last time I remember having my entrails scrambled quite so effectively was at a live Cream concert in the sixties!

As if all this wasn't akin to overdosing, we were also treated to a tour of Tannoy's design and production facilities which was fascinating. All in all a thoroughly enjoyable if exhausting day out which I am sure I'll never forget.

Can I also take this opportunity to compliment you on a great mag? For me, you have the

right balance between analogue and digital, old and new, mega bucks and budget gear etc., all suffused with a mildly sardonic humour which keeps everything in perspective.

Keep up the good work and once again, many thanks.

**Colin Berresford,
(Tannoy Competition winner)
Billinge, Lancs.**

Delighted you're delighted,
Colin. EB

EXTRAVAGANT CLAIMS

I am fairly new to audiophile territory and whilst far from being an expert I am learning fast.

Following guidance from a patient B.A.D.A. dealer and taking time to appreciate subtle audible differences in setting up and cost effective tweaking I have come to the following conclusions. We should all be wary of extravagant claims made by companies offering a product to enhance CD sound quality.

Tweaking a CD player is all well and good and we would all welcome any steps to take us closer to digital Nirvana, but I can see or hear no real differences in many so called tweaks until the fundamentals of system setting up are recognised.

After reading a favourable report of the Audio Technica 6274 stabilising discs I purchased one. Upon trying it at home I felt I had wasted twenty quid. It was not until I upgraded my interconnect from that supplied, to AudioQuest Ruby, that the system revealed more information to me. Upon inserting the disc, lo and behold a definite improvement, resolution, ambience, timing and dynamics all audibly improved. With the addition of sorbothane feet under the CD and Michell Support Cones between speaker and stand the stabilising disc goes on improving. I do not own my aspirational system yet, it is currently a Denon 1460 CD, PMA 350 amp, Teac V5000 cassette deck and Celestion DL8II speakers.

My message is, before getting bogged down with CD tweaks, get the fundamentals right: support, isolation and positioning, none of which cost a lot. The benefits far outweigh the cost and disillusionment can be avoided.

**G. Brereton,
Exeter, Devon.**

Absolutely. I couldn't agree more. For one thing, a well-set up system always improves the sound. Most tweaks are fairly

subtle in their effect and require an initially balanced system before they show their worth. **EB**

TROUGHLINE TRIP

During my visit to London in January I got the February issue of your magazine. In several articles (mainly Noel Keywood's Kaleidoscope) there was an upgrading kit described for the Leak Troughline tuners, designed by Tim de Paravicini and costing around £60. As an owner of this tuner and other Leak equipment I would like to know where I can get or order it and how to install it.

**Volker Heinze,
Essen, Germany.**

Your request is answered below.

TROUGHLINE TUNING

I was interested to read Noel Keywood's review of the Kenwood KT7020 tuner in your February edition, not so much for his opinion on the Kenwood, but for his views on the Leak Troughline used as a reference. I too have spent many happy hours with my Troughline. Alas it is now in retirement due to the need for a thorough overhaul. Can you help this veteran back to work by telling me where I can obtain a service manual, circuit diagram and valves to restore it to full working order?

As a new reader I was also pleased to see no bias towards or away from valves or transistors. Both have things to offer. The transistor has brought true hi-fi to many people who would otherwise be restricted to record players and radiograms. How about a report on the quality of sound from the average television (atrocious) and from a Nizam receiver via a good hi-fi (very good).

**Geoffrey Gale,
Uxbridge, Middx.**

Beware! Old Troughlines commonly need realignment, in addition to a new set of valves and, possibly, some other work if components have deteriorated. Realignment is a difficult process requiring appropriate knowledge, experience and expensive test equipment, namely an RF signal generator and various meters, etc.

Good people to contact are Radlett Audio Consultants, at 141 Watling Street, Radlett, Herts. tel: 0923-856497. They stock a mass of valve equipment, old and new, including Troughlines. Better still, they

are in contact with **Graham Tricker**, who repairs and restores valve tuners, and also with **Tim de Paravicini**, designer extraordinaire. Alternatively, you can contact **Tim** direct at his factory - tel: 04804 53791. He repairs, aligns and restores Troughlines.

TROUGHLINE TIPS

Your discussion and advice on the subject of Troughline tuners has been interesting, and I would like to offer the following information about sensitivity. The tuner has a switch for adjusting sensitivity. It appears to do this by switching in a resistor to drop the HT voltage slightly. Now Leak often used pairs of resistors connected between the HT rail and earth to form potential dividers to supply intermediate voltages. These resistors tend to change value with age, often up to 100%. In my Troughline they went low in value halving the HT voltage and eventually damaging the mains transformer. So if sensitivity is poor it is worth checking these resistors. My mains transformer delivers a low HT now, having ruined a few windings by driving the heavy load offered by the aged resistors.

I would be very interested in the valve decoder kit but am puzzled why everyone thinks it should occupy a wardrobe of space. Armstrong made tuner amps containing valve decoders and early examples from Quad used stereo decoders having only a handful of transistors in them. I assume that the confusion arises because digital decoders contain so many transistors packaged in chips and the immediate conclusion is that decoding the stereo signal in a tuner needs similar technology. However, you make valve amps with fewer components than transistor amps, so why not make a stereo decoder with valves and use fewer components? It all depends on how you intend to do it. The conclusion is all too often 'Lets do it digitally, it will take thousands of transistors but we can get them all on one chip'.

I read a history of 'vacuum tube' development the other day and found details of the 211 triode overshadowed by its big brother the 212, rated at twice the power. The book even contained pictures of the transmitters that used the 211 and 212 triodes. Why was the 211 produced instead of the 212? The 212 looked very impressive indeed. I see that Mullard produced some big

triodes for audio work in the 1940's. An advert in a bound volume of the 1947 'Electronic Engineer' said that a pair of Z-200 series triodes (though on proof-reading this I think it might have been M-200 triodes) in Class AB push-pull gave 1100 watts-rms output. How about it, P. M. Components?

Another interesting old idea, more common in the days when men were men and not afraid of a few thousand volts HT, was to couple the stages of the valve amp directly without using capacitors. The circuit was very simple with no capacitors in the signal path. High HT voltages are needed and some good designs by Mullard used this technique. A suitable design was published in *Wireless World* in the late 40's/early 50's. The author claimed superb results but it was ridiculed by the likes of Williamson. 800 volts of HT seemed a bit much in a 30 watt amp even in those days.

How about some details on the PYE single ended valve amps mentioned by Haden Boardman? I heard one using an EL84 and an EF80. It sounded better than many more complex and powerful designs. I would be interested in the bigger EL34 design.

Thanks for producing a decent magazine. By the way I do buy modern kit also.

**Paul Preston,
Cambridge.**

Yes, men were men - but not for very long. They soon became fried crisps.

OK, so most people just about survive a 400V belt, but it's not something to lay bets on. As you note, higher powered valve amps use HT lines up to 1000V. We have a monstrous circuit in 'An approach to audio frequency amplifier design' by GEC for a 1100W valve amplifier using V1505 triodes. The HT rail is quoted as 2000-2500V! I suspect that the Health and Safety Executive might object to us encouraging people to build it though.

Valve stereo decoders that followed transistor decoding techniques would be as big as broom cupboards. That's why phase locked loops and such like were once uncommon. However, there are simpler methods that have been used before, as you so rightly point out. Tim, of course, has come up with something different again. He uses valves for the sum (mono) channel, together with an MC1310 chip to provide the stereo difference

information. We've got one and it sounds wonderful - more in the next issue we hope. NK

CHINESE GLASS

When I read Alan Sircom's review of the Cary CAD2A3 amplifier (March issue) and saw that they are using 2A3s, I thought that the Cary boys must have found a big box of them in an Ohio barn, much as people are always finding old Rolls Royces.

But then, come the April (1st?) issue and I see that they're coming from China via P.M. Components.

I used the 2A3 in the thirties and found that the directly-heated filaments were not conducive to a hum-free background. However, they were cheaper than PX4s with the dollar at four to the pound (Sterling as well as weight).

I got round the hum problem by using 2 volt lead-acid cells, three or four fairly hefty ones in parallel would last for a few hours, and an all-night trickle charge perked them up for the next day.

2A3s were still in the Sylvania 1939 catalogue, but so was the 6L6 and some 230 other types - there was a lot of development around then.

I don't remember anyone using the 6L6 as a triode, but of course, Williamson did it with the KT66 in 1948, and we never looked back. If Shockley and Co. hadn't come along and spoiled everything...

What about this Cary amplifier? It had Alan worried and I can see why. You have to decide early on whether you are going to design an amplifier with negative feedback or not, and if not, not.

The extra transformer is easily explained - by the time they'd got the primary, HT and 2A3 LT windings on there was no room left.

At least it was rhythmical, according to Alan. The only rhythmical amplifier I ever owned was a Williamson that went rhythmical at about two cycles per second (Herz to you) and blew the cone out of a brand new Rola G12. It was my fault, I'd been messing around with the negative feedback, and I think it went positive.

With all this renewed interest in thermionic devices and Troughline tuners, when can we expect to see the first (second time around) all analogue transmission - reception - reproduction chain in action? And shall I buy more CDs whilst they're still around?

And that reminds me - I've

heard that one's hearing deteriorates with age, but I can't hear the 20kHz test tone on the Pierre Vemay test disc at all, and it doesn't make a bit of difference which way round the speaker cables are. Is Bitstream not all it's cracked up to be? Or do I need a set of Furukawa leads?

Happy listening.

**Norman Butler,
Harrow Weald, Middlesex**

Bitstream will only work properly when Philips bring out an all-valve digital-to-analogue convertor, as we keep telling them. Tim de Paravicini says he's working on one. Trouble is - we believe him! NK

ENCYCLOPAEDIC KNOWLEDGE

After reading a reader's letter (Feb '92) enquiring about Audio books, I was wondering if you, or any of your team, could answer a query I have.

I recently acquired three volumes of "The New Electrical Encyclopedia" by S.G. Bloxland Stubbs O.B.E. (publ. Waverley) and wonder if this has any value on antique/collectors' market. Please excuse this rather cheeky enquiry but one needs extra pennies for hi-fi upgrades. (Is that an LP12 I see before me?)

Any reply or advice (book dealers) would be gratefully received.

**Simon Baker
London W3.**

We've never heard of this one. Perhaps someone else can provide enlightenment. However, even the rarest books don't go for LP12 prices. For example, the Radio Designers Handbook, which is a sought after valve bible, sells for £12 or so. The first ever book on TV, which is extremely rare, sells for a few hundred at most. NK

A COMMERCIAL BREAK

Just a short note to actually thank someone for a change!

My TDL Studio 0.5s recently became very sick after I was pressurised into putting them up for a party. After phoning TDL a week ago I am now listening to a pair of fully revitalised speakers. Quick service? Yes - but it was my fault and I'm out of work and warranty. You can therefore understand my gratitude when all of this has been done free of charge.

... continued on page 98

Popular myths about valve amplifiers

Myth 1 "You have to change valves every 2 - 3 months."

You don't. Good quality valves will last up to 5 years or more. Even then, you may only be losing about 5% of *maximum* power. Changing valves is as simple as changing a lightbulb. Changing to a higher quality valve such as Groove Tubes will significantly upgrade the sound of your amplifier. Something you cannot do with solid state designs. Resistors and capacitors deteriorate with time and they are difficult to change. But nobody tells you that, do they?

Myth 2 "Valve amplifiers are more unreliable than solid state designs"

Not true. Modern valve amplifiers usually have higher quality components in them and have to be hand-made. They cannot be made by production line methods. Because of this care and attention, they are as reliable as quality solid state designs.

We believe it is the sound of valve amplifiers that matters. It's different. Let your ears be the judge, not hearsay.

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readers' queries

THE VINYL FRONTIER

My current system is composed of the following: Ariston RDI IS/Mission 774/AT OC5/Philips CD 473/custom-built valve pre-amplifier/Tannoy SR840/Allison One speakers.

I am increasingly dissatisfied with the performance of my turntable in comparison with the CD and I am considering changing from Ortofon T5s to a Michell Iso to enable me to use the superior line stage.

However, after eleven years I am wondering if I should change the deck. I had in mind the Pink Triangle Anniversary, Michell Gyrodec or Roksan Xerxes, each with the Roksan Tabriz-zi. Which of these decks would be the better buy, or would I simply be better off having the Ariston serviced?

**G. A. Davies,
Denton, Manchester**

The Philips 473 was fine in its day, but not one of the ultimate players. If the Ariston/Mission/A-T combination is disappointing by comparison, then something is seriously wrong. You say the pre-amplifier is custom-built; one has to wonder whether the phono stage is up to scratch. If not, then the Michell Iso would be a good idea. Just make sure your preamp has enough input sensitivity to accommodate it. We suggest a trial first.

If you have tried your turntable with another pre-amplifier and felt the same disappointment then a change of turntable is in order. The RDI IS is now quite old, and if it turns out to need more servicing than re-adjustment it may well be uneconomical.

Write in with your

problems to Hi-Fi

World, 64 Castellain

Road, Maida Vale,

London W9 1EX.

Our panel of experts

will endeavour to

solve them or at

least offer some

practical advice.

The three turntables you mention would each meet with our approval, though they all differ from each other somewhat. Briefly, the Roksan injects life, speed and excitement into a recording, the Michell is more warm and spacious while the Pink tries not to tamper with the sound of the recording in any way.

If you wish to keep your existing Mission arm (unless it's damaged in any way), this may preclude one of the turntables mentioned. We have heard a 774 work extremely well in a Nottingham Analogue Spacedeck, but we have not heard it in any of the decks you have mentioned.

Price is a serious consideration, the Anniversary being nearly twice as much as the other two in basic form. However, the gap closes adding the Gyrodec's power supply and Iso. We would strongly advise an audition of that combination and the Roksan with Artaxerxes to see which you prefer, and then the Pink. It is unlikely, however, that you will be able to arrange to hear all three at a single dealership, unfortunately. **EB + AS.**

ELECTION FEVER

I have just read in the March issue of your magazine that the small horn loudspeaker kits you supplied will no longer be available.

This being the case, would you know of any other company who are supplying small or medium sized horn kits capable of being driven by



After eleven years, try a Pink Triangle Anniversary?

my thirty watts per channel Trio amp bought about fifteen years ago. I know the amp may not be up to modern types but after building some new speakers, it will be replaced. Any suggestions?

I would be grateful for any advice.

I must explain I am 60 years old and would like to build speakers and replace my whole hi-fi outfit before the depression and a change of government overtakes us all!

**J. Garner,
Budleigh Salterton, Devon**

It is with regret that I have to announce that horn loaded kits are a bit thin on the ground these days. Ever since they taxed sawdust, things just ain't been the same.

Because of the complexity of building a horn, they are difficult and time consuming to build. Those who weaned themselves on Gilbert Briggs' loudspeaker books would have little difficulty, but those who become phased by an MFI wardrobe would not be able to progress further.

Try IPL Acoustics, 2 Laverton Road, Westbury, Wilts., BA13 3RS, Tel (0373) 823333 or Wilmslow Audio, Wellington Close, Parkgate Trading Estate, Knutsford, Cheshire, WA16 8DX, Tel (0565) 650605. Although they may not list a horn kit, they will be able to advise you on likely future availability. **AS**

MONEY, MONEY, MONEY

At the moment, there is a problem with my combination and I badly require advice. It includes Marantz CD12 CD transport and matching DA12 DAC, both of which are sitting on spikes. I also use a Nakamichi Dragon cassette deck. These are feeding a Conrad-Johnson Motif MC-8 preamplifier and MS-100 power amplifier into a pair of B&O Beolab Penta loudspeakers. Finally, the cables are by Van den Hul and Monster.

I have discovered that the B&O speakers are lacking in depth and detail. They are also too high in the treble for my system. I'm considering changing them to something of a better standard and sound quality. Price is not a concern. I have to admit that I'm an audiophile myself and love

spending huge sums on components that suit my tastes in music, that include Blues, Rock (e.g. U2), Jazz and Spanish Guitar solos. Any suggestions?

**Kevin Chu,
Berkshire**

Huge sums, eh? Listen very carefully. I want you to close your eyes, open your wallet and repeat after me "help yourself."

But seriously, a system of such high quality deserves a seriously good loudspeaker to match it. Anything short of the very best would be a waste of time and money. The Motif power amplifier is dynamic, powerful and smooth for its 100 watts, sounding almost valve-like, while the MC-8 preamp is very neutral.

Ultimately, the power output of the MS-100 limits the choice of loudspeakers somewhat, precluding big panel loudspeakers like Apogee Divas or Martin-Logan Quests. The Audiostatic ES100, Magneplanar models or Apogee Centaur Minor panels should work well, as would the hybrid Accustats. You have to be very careful at this end of the market to make sure they match both your tastes and your home.

An unusually successful 'big' loudspeaker combination is the Quad ESL-63 electrostatic with REL Stentor subwoofer. The Quads must be put up on stands and the Stentor takes a lot of tuning, but the combination is quite awesome in every area. It should suit your requirements. A test with the less expensive Stadium appears in this issue.

Moving away from panel designs, box loudspeakers by Audioplan, Dynaudio, Duntech or Hales (System Two, not the more demanding Signature version) would possibly prove successful. The Hales loudspeakers have a tight and focussed bass, which can sound lean to those used to hearing the overhang instead of bass itself. Try to listen to these loudspeaker in the home, instead of the demonstration room, as the dealer will have more time to discuss tables and cables etc, etc. **AS**

IN THE BUSH

My present system consists of Audiolab 8000C/8000P pre/power, Pioneer PD73 CD player, Pioneer F91 tuner, with Van Den Hul D102-111 interconnects, Garrard AP7C turntable with Goldring 1012 cartridge, and Bush Arena LS20 speakers.

I plan to upgrade my turntable at a later date; my main problem is deciding on the speakers. I have short listed the B&W Matrix 805, Acoustic Energy AE1, Linn Kaber, Castle Chester. My room size is approx 11' x 12' and my listening is Soul, Jazz & Fusion music.

My budget is about £1200 which includes speaker cable. Maybe Van den Hul CS122. I am looking for a well detailed good imaging sound with a good bass. Would bi-wiring be essential to get the best results?

**Tony Dearden,
Ellistown, Leicester**

I would suggest that the Linn Kabers and Acoustic Energy AE-1s would prove too taxing for the Audiolab amplifier. I feel that the B&W Matrix 805 loudspeakers, together with their slate stands, would suit well, especially as you say that you are looking for a detailed sound.

Alternatively, look at ProAc's Super Towers or Response One loudspeakers, on their special Target stands. I have heard these used very successfully with the Audiolab pre/power, as they add some warmth to the neutrality of the amplifiers.

The vdH CS122 cable would work well with the loudspeakers, especially when used bi-wired with CS122 used for the LF driver and solid-core FCS cable for the HF tweeter. Bi-wiring does produce the finest results from a loudspeaker like the 805s. Using a hybrid cable such as the one suggested takes the benefits of bi-wiring one stage further. **AS**

RETIP TIPS

My system consists of a Alphason Sonata turntable with a HR-100S MCS tonearm, Atlas PSU and a Garratt Decca Gold cartridge. This runs through a Les Wolstenholme-converted Meridian 101B preamplifier and Avondale

Audio (Les Wolstenholme) 200 watt monoblock to power my Swallow ALS2 active loudspeakers.

No doubt you will have heard the news of John and Brian Garratt having committed suicide. These two clever and lovely gentlemen will be sadly missed by many in the world of hi-fi. I am wondering just where I can get my Decca retipped in the future.

I have heard of van den Hul. Do you have any knowledge of that service and do you have the address, or of any alternative.

**J.H.Devlin,
Cockermouth, Cumbria.**

Tom Fletcher of Nottingham Analogue Studios (Tel: 0773-762947) is one of the few that can provide a service to retip a Decca to the Garratt's extended contact area specifications. It costs around £230 and takes about five or six weeks to complete.

Alternatively, Expert Pickups (Tel: 03722-76604) can also retip the Decca, for about £81 with around a four week lag time. Expert are still ploughing ahead in diamond and stylii development, taking the stylus possibly a stage further than the extended contact area of the Garratt modification.

I have not had much experience of van den Hul's retipping service, I'm afraid. The good doctor has retipped many a Decca, attempting to improve it by fine tuning the suspension and cartridge body. This costs around £200, with about two to three weeks' lead time. Contact vdH's UK distributors, Teac (Tel: 0923-225235) for more details. **AS**

IN THE SWIM

It must be nearly 20 years since I last dived into the hi-fi pool and nearly drowned. This time I decided to be much more cautious and at the beginning of this month, made my way very carefully to the shallow end and put one, just one, toe in the water - HELP!

Save me, please. I'm going under.

I've decided to relegate my ancient speaker separates to car-boot sale status (Armstrong 525 tuner-amplifier; Goldring GL75 with Shure M55E; KEF Cadenzas,

plus Hitachi D555 tape deck) and I'm going to buy new gear.

My budget changes with every article and review I read and my head's spinning at 78 rpm (if you'll pardon me). If I can't get some help from a kind lifeguard, then . . .

Please, what do you think of this lot: Rotel RA 930AX amplifier, Sony STS370 tuner, Technics RS-BX606 cassette deck and an Aiwa AD-F810 CD. Are they complementary? What speakers would best suit? Could/should I use my KEFs as the second pair of speakers? Or, indeed, the only speakers and then I could use the speaker money to buy a turntable now, instead of next Spring. If I do, which turntable? Whose cartridge? How about replacing the Rotel with an Arcam Alpha 3? And would the Kenwood DP5030 be more suitable than the Aiwa? But suppose I . . .

See what I mean? And that's just two weeks!

The system's main use would be to play CDs, play pre-recorded tapes and tape both from the CDs and radio for in-car use; playing vinyl would follow when I get a new turntable.

My music is Basie, Ellington, Miles, Oscar Peterson, Pink Floyd, Straits, Sinatra, John Lee Hooker, Van Morrison, Bjorling and Robert Merrill . . . I like plenty of bass and enjoy solo piano very much - all played in my 4.5m x 3.5m x 2.4m lounge.

I know you're all double busy, but if some generous soul doesn't volunteer an educated opinion, I'll buy a Kenwood UD70 mini. But what about the cheaper Denon D-70, or maybe the D-100 . . .

**Eddie Vaughan,
Aylesbury, Bucks.**

I don't know. All this talk about swimming, you must have been watching too much Baywatch, but I can't say that I blame you.

The system that you have mentioned will work together properly, although I feel that a better CD player would be a good idea. Philips CD 618, Marantz CD52 or Pioneer PD-7700 are all worth investigating. These allow for some amplifier upgradability, making the Arcam Alpha 3 more acceptable. In addition, the Aura tuner would probably fare better than the

Sony in sound quality terms, although the Sony STS370 is still a good tuner and has plenty of useful facilities. Make certain your aerial signal is strong enough (1mV) for best results.

Yes, the KEFs would be an acceptable fit in your new system, but they are getting on a bit. Unless there is a fault with your Cadenzas, they will easily work with the system that you are considering, or you could try modern, whizzo babies like the new Goodmans Maxim 3s. They're dynamite.

This leaves you with a budget for the turntable. Here

would be advisable. My budget will be around £1000. Rather than specifying types it's fairer to say that I just like music!

I would appreciate your help and comments on how I should proceed.

**Dave Waters,
Kingswood, Bristol**

The Linn 'Lingo'/Pink Triangle 'Pink Link'/Naim 'Armageddon'/Avondale power supplies for the Linn all improve the basic sound of a Linn LP12 turntable, but in slightly different ways. Each have their own supporters, although any power supply other than Linn's Lingo can provide

GRADUATE VALVES

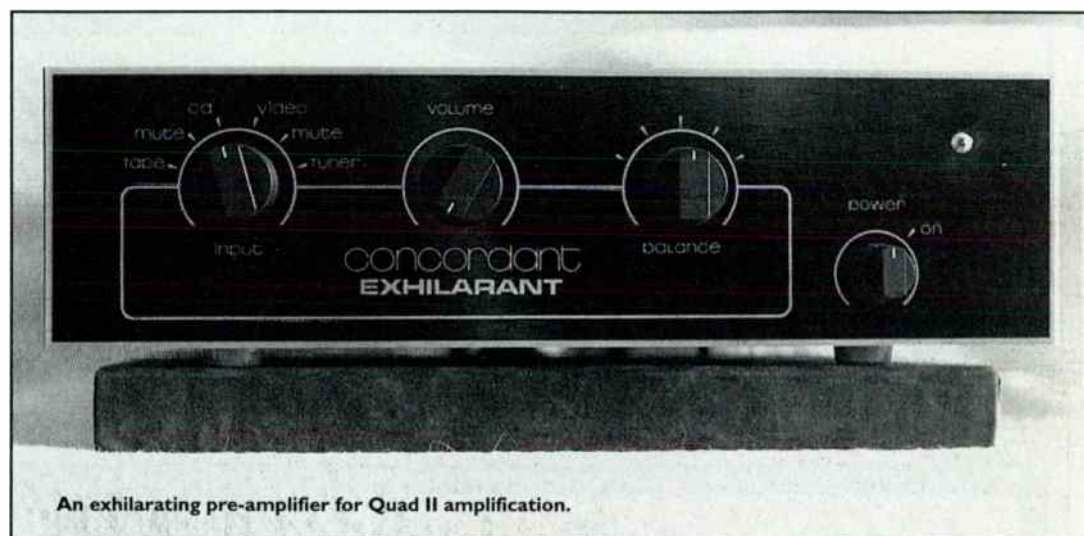
I am graduating from University in the Summer of 1992. I have £2000 to invest in the following - valve amplifier, tuner and speakers. I grew up listening to the old Quad valve amplifiers. Modern electronic amplifiers sound abysmal in comparison. So the amplifier has to be a valve model.

I listen to Radio 3 and 4.

Please give some advice on possible purchases.

**Simon Thompson,
Dudley, West Midlands.**

If you grew up listening to Quad amplification, why not try to seek out a second-hand



a Rega Planar 2 or 3, Systemdek IIX 900 or a Project 2 turntable would suffice. Fit any of these with a Goldring 1012 cartridge and you have a fine, yet inexpensive disc replay system. **AS**

COFFEE TABLE MUSIC

My system comprises an LP12/Ittok LVII/K9 with Naim 62/Hi-Cap/140 and Mordaunt Short MS20 loudspeakers. The LP12 is on a rigid wooden coffee table, the amplification being kept on top of the units storing my LPs. Interconnects are as supplied, speaker cable is NAC A4 and the speakers are on my own design of stands. The room I use is dedicated and measures 18' long by 8' wide by 7'6" high. The speakers are at one end firing down with deck and amplifiers at the other end.

My dilemma is how best to upgrade my system. I like the MS20s but can't help feeling that this is an area to be upgraded. I also feel that a power supply for the LP12

potential fitting and servicing problems with surviving Linn dealers.

Most of these power supplies, with the exception of the lower priced Avondale, are around the £500-£600 mark.

From here, think about fitting either Trampolin feet to the turntable, or better still a Mana Mini Table on top of your wooden coffee table. This will improve things no end. Ideally, I would suggest going for a Mana Reference table for the turntable, with a power supply sub-table sitting beneath and a custom-made Mana equipment table for the Naim amplifiers.

Finally, having sorted out the rest of the system, the loudspeakers could be in need of a change. I would suggest that the superb Epos ES1s, Epos stands and bi-wired NAC A5 or Linn K-400 cable would be a worthwhile upgrade. **AS**

Quad 22 control amplifier, FM2 tuner and a pair of Quad II power amplifiers, possibly even with a matching pair of original Electrostatics. Quad's near-legendary service department would be happy to repair these classic products. I would expect such an undertaking to cost well under the £2000 mark in total. In addition, some take this repair facility a stage further, offering a complete refurbishment of the products, although these updated designs may not meet with Quad's approval. Peter Lindley (Tel.0775-722346) performs such transformations to Quad and Radford amplifiers, among others.

Before you scabble around the second-hand dealers, however, some points must be borne in mind. First, the Quad 22/II design is now quite antique. While Quad products have an enviable reliability record, an old product is inherently more prone to failure than some fresh-out-of-the-box

CDS CDI C-US

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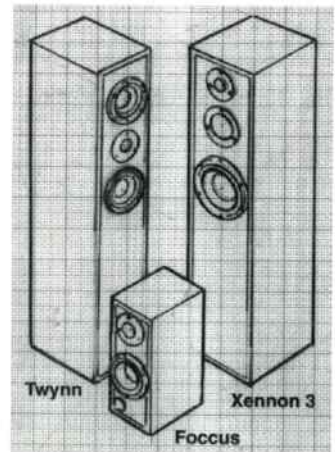
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success has not altered their independence and single minded concentration on creating products of the highest quality. Dynaudio continues to search for solutions to the basic problems of loudspeaker engineering and then puts these solutions to the test in loudspeakers of their own design. This is especially true for chassis technology. They have set the standards that others must follow.

There are three new speaker kits available from Wilmslow Audio, each kit contains all necessary components to build a superb pair of speakers. 18mm M.D.F. flat pack cabinets are also available.



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equipment. Secondly, the Quad 22 preamplifier is somewhat limiting when using current products, such as CD players, tape machines and the like. Peter Lindley's rebuild brings this preamplifier up to date, however.

Staying with new products, I would recommend a very high quality tuner, such as an Onix BWD1 (£415) and its T-SOAP (£85) or SOAP 2 (£295) power supplies, together with a high quality aerial of the Ron Smith Galaxie variety. Connect this to an Audio Note line version of the OTO tested this month and a pair of Audio Note-wired JPW AP2 loudspeakers on Huygens stands and Audio Note cable, or, using the same front end, a Concordant, VPI, Croft or Rose line preamplifier, Art Audio Quintet and Rogers LS3/5a loudspeakers on Rogers S55 or similar 'oil-rig' open design stands, such as Linn Kan IIs, or Royd's models, all connected with Kimber Kable (or similar). This would probably get you closest to that warmth and clarity that you heard from the old Quad equipment. **AS**

TECHNICS TRAUMA

Disaster has struck. The left channel of my Technics 205CM Mk3 cartridge (dark age stuff) has developed a noise which sounds like scratched records but isn't! Anyway I looked in my bits box, tried a Linn giveaway, enjoyed its bounce but couldn't live with the rough edges. Next up was a Nagaoka MP11 Boron which is still resident but I miss the sheer clarity of the Technics. (Those with hands raised in horror probably wouldn't remember that this cartridge was rated pretty highly about fifteen years ago!) So, any suggestions? It will be on the end of a Linn LVX arm which sits on an Ariston RD80. Amp etc, Quad 34, 405, FM4, Electrostatics (original, not this new fangled stuff). Cassette deck is Pioneer's CT333. The system seems well balanced (as it should be I suppose) and gives me great enjoyment. I suppose the speed freaks would mock it but I like relaxing to music at the same time as hearing what's going on. I play guitar and piano and what I hear via the

system sounds OK to me.

On to a subject covered in last month's magazine (February). VALVES! I have various bits of kit lying about, old Quads etc, but I've always fancied getting the Leaks going again. I have tried the Troughline (mono unfortunately) against the FM4 with mono on and in all honesty, couldn't hear much difference. Mind you, the Leak was on a bit of string for an aerial! I like the feel and look of the Quad so I'll keep listening to it but when was the Leak designed? Also, I have a Leak Stereo 20, minus valves, which I was

In its place, try the new Denon DL304 or a Dynavector 17D2. Both of these are said to be liked by fans of the Technics EPC-205. Both will need the moving coil boards for the Quad amplifier.

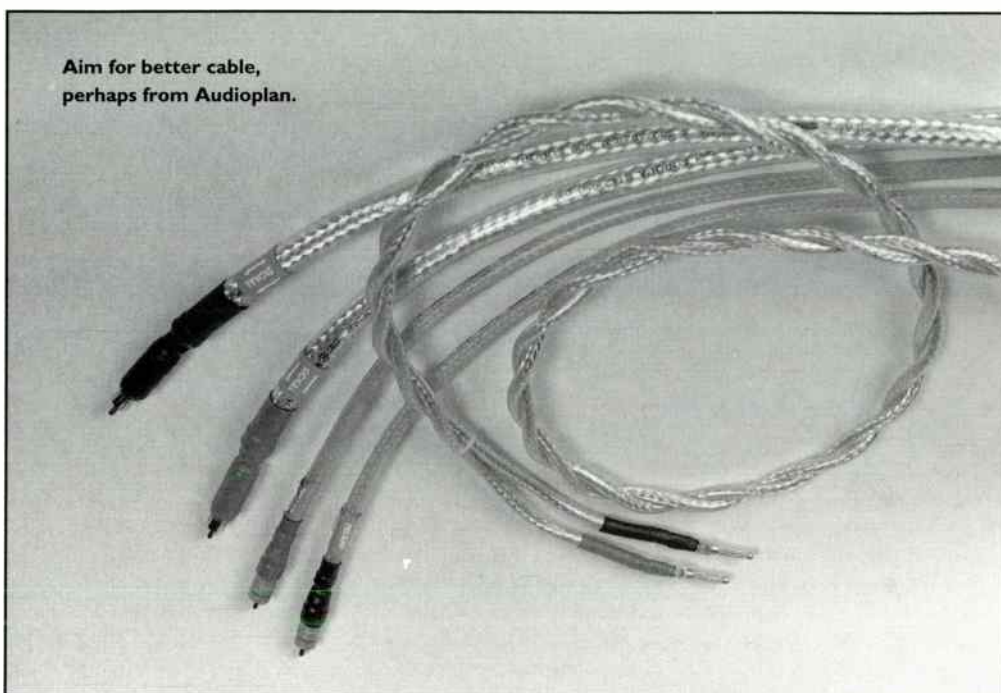
With regard to the Leak Stereo 20, as long as it is in good condition I can see no problems with using it in your system. It will compare very favourably with the Quad 405, having a warm, yet detailed sound. As with the Technics 205, the Stereo 20 is considered by many to be the pinnacle of classic amplifier design. The cost of re-valving

the Pioneer PD-9700, as these sound better than most to analogue ears. **AS**

DUST-FREE SYSTEM

Now that my son has flown the nest, I have a 12' x 11' empty (all bar a sofa) lounge/listening room where I can install the system of my own choice (subject to minor aesthetic conditions from 'er indoors).

So hence out of the door went the prospect of the Beards/Audio Innovations and Crofts, all branded as dust harbours (heaven preserve us from these peasants with



considering re-valving. How do you think it will compare with the 405? Is it worth the expense? Will it reduce the central heating bills?

Lastly, at what level do you think I should enter the CD market or should I wait to see what DCC offers? I get the feeling that DCC will be a retrograde step. I still haven't heard a CD player that I REALLY like but I assume vinyl will cease production soon so where do I get new music?

Gordon Steadman, Long Melford, Suffolk

The Technics EPC-205 cartridge was considered by many to be one of the most neutral cartridges ever made and will be difficult to replace. Technics do have limited stocks of 205 stylis, however. They are frighteningly expensive, probably costing as much as the cartridge itself.

the amplifier is not too great, as it uses four EL84 output tubes. Prices are £17 for a quartet of Golden Dragon tubes, three ECC83s at £6.50 each and one GZ34 for £5.50, all excluding VAT and postage from PM Components.

As the Tim de Paravicini designed decoder for the Leak Troughline is near, it might well be worth putting a real aerial on the end of the mono Troughline. You'll soon be able to convert it to stereo.

I would suggest that DCC is aimed at the cassette market. As a prime format, I cannot imagine DCC ousting CD from its position of dominance. Vinyl is becoming harder to find these days and CD players are getting better, so it is only a matter of time before the CD strikes! Try to listen to CDs such as the Micromega Leader, Rotel RCD-965, Arcam Alpha or

dusters). I digress.

I need your advice on my (aesthetically) acceptable choices as the dealers I have contacted are only able to partially provide the kit for auditioning.

My front end choice is the Michell Gyrodec with SME IV arm, Roksan Corus Black cartridge, (alternatively the budget moving coils, such as Audio Technica's AT-OC5/ Goldring Eroica with the Michell Iso head amp), my current Denon DCD1560 CD player with Meridian 203 DAC, amplification by either John Shearne Phase I pre/power or Alchemist Freya and Genesis pre/power through the new KEF Q90. Is there any news on Michell's forthcoming Krell beaters?

The wife likes the look of the Alphason New Concept furniture. Also, what cables and interconnects do you suggest, ▶

keeping in mind the bank balance will look a bit thin.

My choice of music ranges from Clannad, Enya, Mike Oldfield, Classical Piano/strings, Tina Turner, Quo, Vixen, OMD.

**N.R. Silverthorne,
Andover, Hants.**

The Gyrodec sounds as good as it looks and is a natural partner for the SME IV arm. In speaking to the staff at SME, many of those who used SME

the time this magazine hits the streets, his power amplifiers should have followed suit. If prototypes and the Argo/Iso preamplifier are anything to go by, the full system should be something quite special, and probably not too expensive, by high-end amplifier standards. The full Michell set-up, with two Hera power supplies, should be similarly priced to the John Shearne or Alchemist amplifiers.

All three amplifiers would

changes in equipment etc.

From the mid seventies to the present day I have spent hundreds of pounds on hi-fi components, always conforming with magazines and hi-fi reviewers advice.

I am now, thirty three years old with a wife and three little cherubs, who now rule the home that my wife and myself used to. So my Linn Sondek sits very high up a wall atop a Target wall shelf whilst the other items, i.e. Exposure pre/

put a record on.

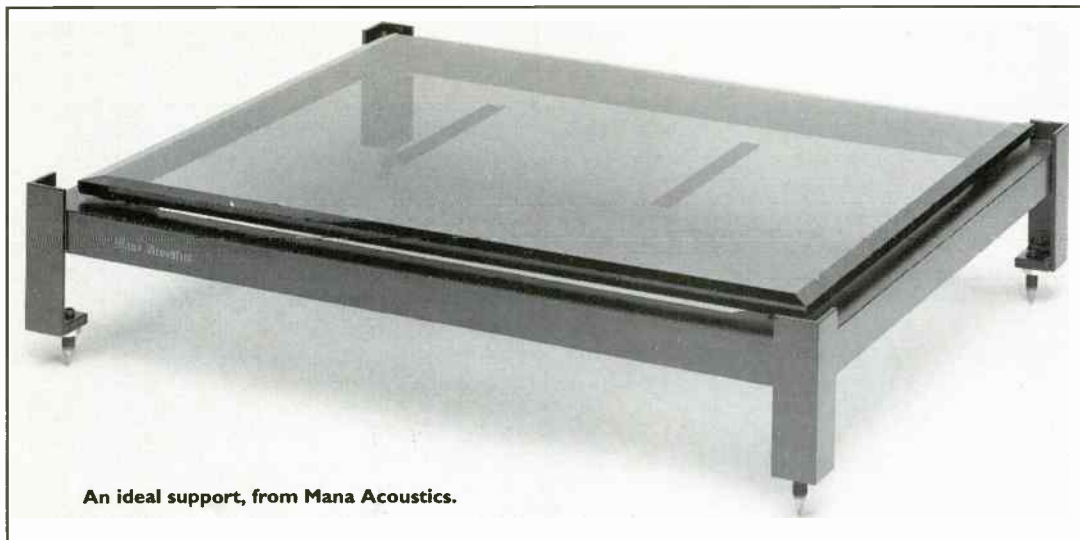
Thanks for the excellent mag. Keep up the good work, but get a second-hand equipment column going - it's a must.

**Steve Petch
Hartlepool, Cleveland**

The Target wall shelf that you use to support your Linn is more than adequate. I agree that we should be able to site the equipment anywhere and this has been addressed by the likes of the Linn Trampolin and the suspension system of turntables like the Gyrodec and the Pink Triangle Anniversary.

Most British equipment is designed for use in typical domestic British surroundings. That does not have to mean rooms of gargantuan proportions. The Linn Kabers were designed to function in 'real world' living rooms, irrespective of size, locale or demographics of the listener.

The reason why we suggest that people use banks of brand name oil rigs to support their equipment is that this represents an ideal. Not everyone can or wants to



An ideal support, from Mana Acoustics.

V arms used them on Gyrodecs. The only reason why it has not achieved greater popularity with reviewers is that the combination is only as good as the cartridge fitted.

In some respects, I would suggest stretching your budget to a more expensive cartridge, like a Denon DL304 or a Dynavector 17D2 at the least. The Gyrodec, especially with the Iso head amplifier, is capable of revealing every nuance the cartridge utters, both good and bad. Moving away from the cheaper cartridges into the two-to-three hundred pound mark reaps superb benefits in the clarity stakes.

Aesthetic qualities are even more subjective than hi-fi reviewing, but I feel that the only other turntables that look and sound good, that are not in the 'if you ask, you can't afford' class, are the Pink Triangle Anniversary and the Pierre Lurme Romance. This last does not have a dust cover however, so there may be domestic considerations against it.

John Michell's pre-amplification is already with us; by

suit the KEF Q90s well, but with slightly different priorities. I favour the John Shearne, as I feel that it gives the happiest balance of valve-like warmth, neutrality and clarity, but the dynamic power of the Alchemist amps and the sheer insight and detail of the superb Michell amplifiers must not be forgotten. The only other loudspeakers that may fit your bill are the Audioplan Kontrapunkts, which have a small 'footprint' and are beautifully finished.

With regard to cables, once again it is worth looking carefully at this area. I have found consistently excellent results with Audioplan cables in such systems, although these are a little expensive. The only alternative, if funds are short is to start with cheap cables, such as Tandy patch cords and cheaper AudioQuest Type 4 loud-speaker cable, upgrading when funds permit. **AS**

CHILDPROOFING HI-FI

Since I was fifteen years old I have had a keen interest in hi-fi and went through all natural

power amp and power supply all placed upon home made shelves. This only leaves my cherished Linn Kabers to the mercy of my children.

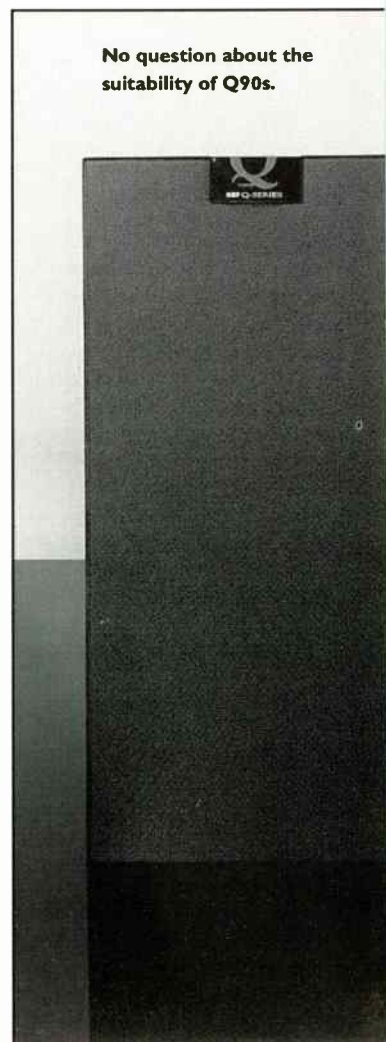
The point of my letter is this: I dare to be one of those people that despite my love of music and hi-fi (in that order), own a modern semi-detached house. Which in itself is enough to make most hi-fi technicians cringe.

With the recent addition of a CD player I am slowly running out of wall to put shelves on. I would dearly love to put all of the equipment in a good strong cabinet with locks on the doors etc., but as myself and the rest of the hi-fi buying public are constantly informed, all of the equipment should be placed on proper supports in the proper place, with spikes and posh names.

All this is fine if you live in a large house in the middle of a wood with older children or adults living in it, but what about the thousands of people like myself that live in modern dwellings with small children?

I would like to see your magazine give this problem some lineage, as I am getting fed up of standing on a box to

No question about the suitability of Q90s.



aspire to this level of hi-fi dedication, but those who are able to wrest the last few sounds from their system almost inevitably have to follow such a route. The next stage is to put Mana tables on top of every equipment support! **AS**

LIVELY

I am seeking your advice regarding the upgrade of my hi-fi system, not spending more than £500.

I seek a more lively sound than my system produces at present, which consists of Spondor BCI Speakers, Audiolab 8000A amplifier, Quad tuner, Tandberg Cassette deck and Thorens deck. No CD at present.

I am prepared to modify my Spondors or alternatively build a new speaker. Would either a Horn or Transmission line give me a better yet still 'accurate' sound?

My musical tastes are Classical, light jazz and my listening room is 15' x 12' x 8'.
G. Shorter,
Bromley, Kent

The problem does not lie with the Spondors. They are capable of much more than you are getting at present, but I feel that it may be difficult to improve matters dramatically within the budget that you have set yourself.

First, look to the turntable. You do not mention the type of Thorens, which arm, cartridge, or the age of these devices. It may well be that the dissatisfaction you are getting comes from the source and not the loudspeakers. Have your local specialist dealer assess the turntable/arm/cartridge combination. It may only need a new stylus and a reset, but there may also be more significant problems necessitating changes at the source. In the worst scenario, a new deck of a similar quality as your amplifier and loudspeakers would be closer to the £1000 mark.

If only a new arm, and/or a cartridge is needed, then the situation is not so dire. If the tonearm is needed, Rega, Linn, and Roksan all make good tonearms that fit the price bracket. Also cartridges - a bright exciting moving magnet cartridge would help matters; Linn's K-9 or Roksan's Corus Black would be an obvious choice.

Secondly, the amplification. The Spondors may need a 'ballsier' sounding amplifier than the Audiolab. This will be difficult to achieve at the price, although using the preamplifier stage of the Audiolab, with another power amplifier, such as the Musical Fidelity Typhoon or Linn Powertek may give you the results you are seeking. The Typhoon will need special phono-XLR cables made, however. I believe that using the Pioneer A-400 may also work in this case, but I cannot be certain, as I haven't used the two in combination. **AS**

AGEING COMPONENTS

I am in the mood to upgrade my present system which consists of the following: Manticore Mantra/RB250/Audio Technica F5, Audiolab 8000A, Marantz CD 75, Denon TU260L tuner and an ancient Technics cassette player (used only for the car). The speakers are Jim Rodgers 149s (remember the cylindrical

type) now 16 years old.

The system sits on a Target 5 shelf stand and the room is 14' x 13' approx., but we hope to be moving to a larger house this year.

I have lived with this system for 3-4 years now and it is only recently that the sound has a suppressed quality, lacking in sparkle and life. Would spending money on various aspects be a waste, e.g. upgrading the arm, cartridge, adding a DAC and replacing the speakers, or should I upgrade the whole record playing section, then the CD and then the speakers?

Anticipated budget for the above £800 - £1200 maximum.

I enjoy listening to vinyl but the quality of some recordings has pushed me towards CDs. I therefore listen to both sources equally - just to make your job a bit more difficult!

I look forward to receiving your comments and would thank you for a first class magazine.

Brian Ross,
Edinburgh

I think that you have what we in the trade refer to as 'knackered' components! As you suggest that this lack of sparkle is across the board, the JR loudspeakers sound like they are about to shuffle off this moving coil. I have heard good things from combining the Epos ES11s with this amplifier, but otherwise try the Rogers LS7c and KEF Q60 or Q90, all of which should suit both pocket and ear.

The next likely candidate for ageing is the cartridge. You normally expect two-to-three years' service from a cartridge in regular use - by now, your AT-F5 should have been dispatched to the Great Turntable In The Sky. Audio Technica do good upgrade deals, so you may want to try an AT-OC5 or OC10 as a replacement. Alternatively, try a Denon or a Dynavector at around the £200-£300 mark.

Lastly, the CD player. If, after changing the loudspeakers and the cartridge, the CD player sounds like a weak link, it may be time to change. Rotel's RCD-965, Pioneer PD-9700 and Arcam's Alpha CD, should all just about fit within your budget. **AS**

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At Audio Technica we enjoy a worldwide reputation for producing the delicate transducer products which turn soundwaves into electrical impulses and vice versa. Our headphone range makes the most of these skills and today offers the keen listener a model to suit any budget or situation.

From the top there's the 900 Series, offering a 'larger than life' sensation courtesy of large diameter drivers and copper clad aluminium voice coils. Highly technical stuff you'll agree, but so do the hi-fi press... *the ATH 911 performs very well overall and it would be a safe recommendation for anyone who wants good, detailed sound, remarkable comfort and extremely high standard of manufacture' GRAMOPHONE.*

Featuring many 'high end' advances, ATH 309/308 are perfect mid-sized headphones. High sensitivity, low weight and extreme comfort make them stand out from the competition. For the totally modest audiophile, our ATHL1a takes some beating. In fact nothing else did according to What Hi-Fi?, who proclaimed it to be the very best budget headphone.

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Contact Cleaning Fluid
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The dirt that Kontak removes is clearly visible on the pipe cleaners, demonstrating just what degree of contamination Kontak removes.

Users commonly express surprise at the amount of dirt and contamination Kontak removes. After application, a system regains its original life, sparkle and vigour.

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ANTI-STATIC RECORD SLEEVES

Translucent antistatic record sleeves from either Tonar or Nagaoka, according to availability. A surface treatment makes them anti-static, lessening dust attraction. This helps keep records pristine. They are supplied in packs of fifty. We suggest you regularly change sleeves in order to prevent trapped dirt contaminating records, especially after cleaning. The record label is clearly visible through these sleeves, an aid to easy identification.

LP SLEEVES (50) PRICE £7.50

NAGAOKA CD CLEANING KIT

As with cassette deck cleaning kits, we don't recommend the 'cogs and wheels' cleaners and choose not to sell any of them. Tests we have carried out with a Cambridge CD-1 CD Quality Control Unit clearly show that careful manual cleaning is the most effective way of removing all types of surface contaminants without causing damage to the disc.



Remember that CDs must not be scratched - even finely. Tests showed that the Nagaoka kit was the best all round cleaner. It has a solvent and a chamois leather pad which, together, bring the CD surface back to almost as-new condition.

NAGAOKA CD CLEANING KIT £10.50



SORBOTHANE CD FEET

Four big, round rubber feet, 50mms in diameter and 18mms deep. Made from a soft, slightly sticky feeling form of artificial rubber known as Sorbothane, these feet have the peculiar ability to soak up vibrational energy, due to their high internal kinetic losses. Some people go nuts with them, swearing they improve everything, from the TV to the fridge! We sell them for use (as intended) with CD players, turntables and various other hi-fi components that might be sensitive to vibration. They improve sound quality by providing a more stable platform. Well-nutty and a lot of fun.

SORBOTHANE CD FEET £27.95



NAGAOKA ROLLING RECORD CLEANER

The big drawback with most record cleaners is that they fail to remove all types of dirt. Brushes pick up fluff, but they redistribute

fine dust around the grooves, causing noise build up. Nagaoka's rolling record cleaner actually lifts dirt from the bottom of the groove - even fine dust. It uses a peculiar form of sticky coating on a soft foam backing. Dirt of all types - especially fine dust of the sort left by brushes - is removed completely. It is lifted from the record's surface, and no deposits are left behind. This is an effective way to dry clean a record.

ROLLING RECORD CLEANER PRICE £10.20



PIXALL MK II RECORD CLEANER

Simple in both function and design, and made in the U.K, this uses a roll of sticky tape which lifts the dust out of the record groove. Three or four passes will clean the record very effectively, and can reduce static at the same time. After each pass, the dirty length of tape can be peeled off and thrown away, reducing the risk of any gritty particles picked up being ground back into the vinyl. When the tape roller runs out, a replacement is simply clipped in. This is one of the most effective ways of cleaning an LP.

**PIXALL MARK II ..PRICE £10.75
REFILL ROLLERPRICE £2.75**

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A method of keeping your stylus sharp and bright for perfect tracking without using fluid. We're offering a whole sheet of card with an aluminium oxide micro-abrasive coating.

Cut a strip off, about the size of the striker on the side of a matchbox, and draw it gently under the stylus from the back to the front. It removes the gunge that builds up. One sheet should be more than enough clean your stylus at least forty times.

DRY STYLUS CLEANER .. £1.95

AUDIO TECHNICA GREEN CD RING STABILIZER

These are detachable green rings which are fitted round the circumference of the Compact Disc. The non-slip material allows the disc to be picked up without



touching the playing side and leaving fingermarks. It also raises the disc slightly from any surface it's placed on, avoiding scratches if you don't replace it directly in the jewel box, as you should! It also adds a tiny but significant degree of mass to the outer edge of the disc, improving its stability and reducing vibration when it rotates at high speed inside the CD player. Green absorbs stray red laser light, so reducing random reflections within the disc, much like a green pen. So the rings perform many useful functions - and they are removable too! Improvements to the sound include better focussed and firmer images, plus a generally denser and richer sound.

GREEN RING STABILIZER (5)£6.50



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We have a new style, heavy duty, gold plated banana plug with a unique type of axial solderless connection for loudspeaker cables. The wire is stripped back and pushed into a clamping collar, which is then screwed down tight. It will accept cables up to 6mm outside diameter and up to 4mm conductor diameter, holding them firmly and more evenly than the usual grub screw arrangements. They are supplied in a set of four.

BANANA PLUGS (4)£8.00

SIDE ENTRY 4MM BANANA PLUGS

Similar to the plugs described

above (i.e. gold plated, heavy duty) but with side entry for heavy loudspeaker cables of up to 5mm conductor diameter. The screw clamp grips the cable over its full diameter by applying pressure with a non-rotating cylindrical slug.

SIDE ENTRY BANANA PLUGS (4)£10.00

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SPADE CONNECTOR (4) £10.00

ARCAM RCA PHONO PLUGS

Specially made in Japan to Arcam's specification, this heavy duty phono plug will accept audiophile cables up to 7mm in diameter. The 36mm long body is nickel plated and the contacts gold plated. Superbly built, we supply in polarised pairs with one/two ring end identity to allow send/receive ends to be established to take into account directionality. These plugs must be soldered with care to cables.

RCA TYPE PHONO PLUGS (4)£15.50



LASAWAY GREEN PEN

When red laser light hits the silvered reflective surface of a disc, some of it scatters and is later

reflected back off the disc edges, causing optical interference. Because green is far removed in the light spectrum from red, an opaque green coating effectively absorbs this scattered light, reducing interference signals reaching the laser and improving sound quality. The green coating is applied to outer and inner edges. It has been formulated by one of Japan's largest companies, Mitsubishi, to be harmless to the CD itself.

LASAWAY GREEN PEN ...£7.50



AUDIO TECHNICA CD LENS CLEANER

Here's a product for smokers in particular. However, seeing the peculiar haze that can coat windows even when there are no smokers about suggests this clever little gadget is a necessity for one and all. It is a laser lens cleaner for your CD player, beautifully made by Audio Technica. Contained in the pack is a disc with fine brushes on it. Each brush takes one drop of cleaning fluid, then it is inserted and played. The brushes gently clean the laser lens, removing oil, grime, dust and other airborne deposits like nicotine (ugh!). Audio Technica recommend use once a month

CD LENS CLEANER£15.30



AUDIO TECHNICA ELECTRONIC STYLUS CLEANER

Scared of damaging your stylus when cleaning it? Try this amazing little device - an electronic stylus cleaner that vibrates gunge right off the tip! Powered by a small AA battery, it's a doddle to use and

safe too. Just rest the stylus on its high speed vibrating brush and watch dirt get driven off automatically.

ELECTRONIC STYLUS CLEANER£19.95

LASERGUIDE

The clear polycarbonate of Compact Discs scratches easily. Measurements we have carried out show that scratches, being closer to the silvered reflecting surface where the laser beam is focussed, are much more of a problem than fluff, finger marks, etc. They demand heavy error correction and often overwhelm a player's capacity to substitute in spare programme information held redundantly for this purpose. Interpolation is then used to cover up the problem - which means guessing what the missing signal was like in order to fill in the gaps.

The only answer is to fill in scratches, lessening their ability to act as optical prisms capable of scattering the laser light. Laser-Guide is an optically engineered silicone treatment that claims to do this, reducing randomly reflected light by up to 50%. It is claimed that Laserguide improves stereo depth and openness. Just apply to the disc surface.

LASERGUIDE£14.95



AUDIOQUEST OPTICAL LINK Z

This is a wide bandwidth, ultra high performance optical cable for digital links, made by Audioquest. The most common use is linking a CD transport to a digital-to-analogue convertor. It is available in 1metre and 2metre lengths with conventional TOS-link connectors.

OPTICAL LINK Z (1M)£69 (2M)£99

AUDIOQUEST QUARTZ INTERCONNECT CABLES

A fully balanced analogue signal cable with heavy duty, gold plated phono plugs and advanced Quartz Hyperlitz cables using polypropylene insulation. The Quartz cable we have chosen from our own experience as a fine sounding type. It uses FPC-6 ultra-pure copper (99.99997%) and the plugs are welded.

AUDIOQUEST QUARTZ CABLE (1METRE LENGTHS£79/PAIR (2METRE LENGTHS ...£120/PAIR

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A whole new range printed with "Hi-Fi World" and our slogan "The Magazine for enthusiasts" both front and back to prove to everybody you read probably the best hi-fi magazine in the universe. The sweatshirts and T-shirts come in white, grey, black and navy-blue in Large and Extra Large sizes; track-top one-size sweatshirts (with hoods).

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HOODED TRACK-TOPS £15.00
T-SHIRTS £7.99

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This cube has been designed by us to hold roughly one hundred LPs. It has an internal width of 37cms. Internal height is 32.5cms and depth 32cms. The cubes can be stacked or placed alongside each other to increase storage - and they can even be used as seats!

Strongly made from 15mm medium density fibreboard (MDF), the panels are milled to have strong side joints. We have specified a durable black paint finish to give it a smart, yet unintrusive appearance. The screws are self-starting, but clearance holes are pre-drilled. It comes in a flat pack with screws and Allen key for easy home assembly.

RECORD STORAGE CUBE **PRICE £42 EACH FREE!**

20 RECORD SLEEVES WITH 2 CUBES

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FOR 8 CUBES, JUST PAY FOR SEVEN (£294)

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Designed to match the Record Storage Cube, in the same black finish. Made of strong 15mm MDF, the cabinets can be stacked on each other, or on top of our Record Cubes. 400mm long, 360mm high and 150mm deep, a central shelf allows up to seventy CDs or forty two cassettes to be stored with space above for fingers to pull them out. Supplied flat-packed with screws and Allen key for easy home assembly. Price includes postage and packing.

CD CABINET £29.95

CD JEWEL CASE

To house and protect your CD.

CD JEWEL CASE £1.00

A NEW RANGE!

TDK CLEANING KITS

A comprehensive range of cleaning materials from TDK for cassette decks, Compact Discs and even connectors. There are two head cleaning kits. One, the CK-A1, includes two bottles of fluid of different compositions for the heads and the rubber pinch wheel,

and specially shaped cotton buds for applying it. The CK-TB pack has similar cotton buds but with a single bottle of dual-purpose liquid.

TDK offer three cleaning pens, about the size of marker pens, colour-coded to avoid mix-ups. Each has a soft double-ended replaceable shaped tip. The Audio Head Cleaning Pen is for cleaning cassette heads, the CD Cleaning Pen for removing finger marks

from CDs, and the A/V Connector Cleaning Pen for polishing up audio plugs and sockets.

A neat little CD cleaning kit contains a bottle of specially developed fluid and a soft pink cloth which can be used for removing grime and stains. Finally, a dandy CD cleaning tool with two soft pads at either end of a blue holder, one for applying the cleaning fluid supplied, the other for drying the CD off afterwards. Both pads of the Wet and Dry CD Cleaner are replaceable.



TDK HEAD CLEANING KIT CK-A1 £5.50
TDK HEAD CLEANING KIT CK-TB £4.65
TDK AUDIO HEAD CLEANING PEN CP-AH1 £5.00
TDK CD CLEANING PEN CP-CD1 £5.00
TDK A/V CONNECTOR CLEANING PEN CP-CR1 .. £5.00
TDK CD CLOTH CLEANING KIT CD-C2TP £6.50
TDK WET AND DRY CD CLEANER CD C1TB £8.75





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We are now offering back issues of Hi-Fi World. Unfortunately, all issues prior to September 1991 are completely sold out, but subsequent issues are available for £2.00 including postage and packaging. Issues with Compact Discs (Oct.'91, Nov.'91, Apr.'92) are available for £2.80.

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My public thanks to TDL and their marvellous staff is the least I can do!

**Stewart Robertson,
London E17.**

We're always pleased to hear of good service provided by manufacturers or dealers. It's very encouraging to discover the milk of human kindness hasn't been watered down by the recession. EB

SONIC BOOM

As a hi-fi enthusiast for many years may I indulge in a little gentle nit-picking and take Noel Keywood to task for his use of the word 'subsonic' when talking about low frequency response of amplifiers in the article Trading Standards in your April edition.

'Subsonic' means below the speed of sound (the opposite of 'supersonic') and is normally used with reference to aircraft. The word for below normally audible frequencies is 'infrasonic' which I am sure is what he means. Apart from this criticism, may I say that I found his comments most informative and the article well up to standard for your excellent magazine - long may you prosper.

**A.S. Jackson,
Ashford, Kent.**

Er, yes. Whether to use what is grammatically correct or what is in common usage always presents problems. Generally, we go for common usage on this magazine, for fear of ending up with an anachronism. Otherwise we'll end up with 'infrawoofers' and all sorts of other weird, if arguably correct derivations. **NK**

EARACHE

A year or so ago I was fortunate enough to be able to purchase a pair of EAR 529 monoblocks (the 500 watt monsters) which I understand are quite rare. After spending a considerable amount on refurbishing them I am pleased to say that they sound 'brill'. However, I have one small but sticky problem. I should explain that I am nervous by disposition. It only takes somebody to make a loud and unexpected noise (such as bursting a balloon) for me to jump 3 feet into the air. The problem I have with the EARs is that occasionally, in switching them off, there is a loud bang through one speaker (my speakers are ProAc EBS).

This happens only occasion-

ally and I understand from their previous owner that he never had this problem. Currently, I take the precaution of sticking copious amounts of tissue paper in my ears to stop myself having a nervous fit when switching the amps off.

While my wife finds this a highly amusing spectacle, I am worried about the long term effect this noise might have on my speakers. I would be grateful for any advice that you or Tim de Paravicini might have on this problem. I would also be interested if Tim could recommend any proprietary mains filters to use with the 529s.

The rest of my system is a Rock turntable with Excalibur arm, Dynavector XX-1 cartridge, Meridian 200/203 CD, MFA Luminescence pre-amp. I shall mention that I always turn the pre-amp off first (with the main switches turned to 'mute') before switching off the EARs. Thanks for an entertaining read each month.

**Nervy of Waterloo,
(aka Andy Cooke)
London SE1**

We had a word with EAR. The 529's are indeed rare beasts, with apparently only about thirty pairs in the world. They are also extremely powerful - we were told a German magazine measured their output at one horsepower! Anyway, EAR say there should be no bangs and no need for cotton wool, so something is very likely wrong somewhere, despite the refurbishment, which EAR suspect was not carried out by themselves. Before you struggle with mains filters, contact the company at Unit 11, Stukely Meadows Industrial Estate, Huntingdon PE18 6ED, Tel: 04804 53791. **EB**

BLUSHING CRIMSON?

Firstly I agree with other readers - yours is possibly the best hi-fi mag on the market.

Now to business. In reply to reader Peter Green from Middlesex (April issue), contact Crimson and have your preamp rewired and brought up to date. I have just had mine done and it is worthwhile. Also get some AudioNote interconnects. I have just bought a 4.5 metre pair of AN-A and the bass end now is really solid.

Also a challenge to E.B. I would invite him to my humble abode to tell me the Crimson cannot produce bass. My quite modest system is as follows: Logic DM101, Helius Aureus

(AudioNote silver wired), Audio Technica ATF5 (new), Crimson 510 preamp brought up to latest spec, two 530 power amps and bi-wired Tannoy 609s. Also a Philips CD850 MkII. My system does produce chest thumping, wall shaking, tight and controlled bass. It is far from perfect of course but I cannot afford to make any more improvements as, as I see it, this would take very serious money indeed!

**A. Colin Camidge,
Nottingham.**

Well, mine was an original! And it is - oh - quite a few years ago now. But even so I could never get the bass from the pre I could produce out of the power amp. Obviously it's a good idea to have it brought up to date. While Crimson are no longer active on the UK domestic market, they do, I know, have a presence in the professional field and are exporting. The upgrade to 'UK spec', Crimson Elektrik tell me, involves gold-plated selector switches, higher-grade pots, Holco resistors, Solen capacitors in selected places and higher quality components all-round. No wonder there's a difference! Cost, depending on the amount of upgrading, which can also include some very expensive silver wiring, is typically from around £60 to £120 for the pre-amp or the power-amp depending how far you want to go and the state of the original.

There is a prospect that Crimson pre and power amps may re-appear in the UK market sometime this year. We'll let you know. The address is Crimson Elektrik Stoke, Phoenix Works, 500 King Street, Longton, Staffordshire ST2 1EZ. Tel: (0782) 330520.

Not many people know this, but NK has had my ears hard-wired to my system and my hands superglued to my keyboard, but if I can free myself and head for Nottingham, I'll take up the offer. **EB**

MOLS AND SATS

I would be grateful if you would be of help in my obtaining the MOL/SAT figures for my Sony DM6C (pro Walkman) - I cannot get hold of the review that HFR published (Buyers Guide), and don't know of any others which might have been undertaken.

I've found that TDK SAX, MA suit best (SAX with simple acoustic material, MA, rock etc.), but I am overloading midband

levels due to not having the above figures as a guide.

Music recorded ranges from World to Rock.

As the deck is still under guarantee, I don't want the bias tuned to suit a particular type yet - although when compared to 'master' (i.e. LP) it sounds fairly accurate.

Secondly could you tell me what the Dolby symbol set at 0dB actually relates to. (I didn't seem to understand your guide to record level settings!) Also what does +6, +3, 0dB/+4UV, -5, -10 relate to?

Finally, would one of the main amplifier manufacturer's power supplies improve sound quality - I'm thinking of NVA, Ion, Exposure etc, as the Sony PSU at present does not seem to be getting the most out of the DM6 because its performance improves on batteries.

For the record my hi-fi - LP12 Lingo, Akito, K9, Audiotech, Exposure 15, Sound Factory, Royd Eden, Kan II stands, Exposure, Kimber speaker and mains cable, Chord interconnect.

Thanks for a superb magazine, but could you review products such as Royd, Exposure, NVA, BLQ etc. as well?

**T. Lucas,
Rhyl, Clwyd.**

The Dolby symbol at 0VU means that the nominal peak recording level has been set to Dolby flux, which is a certain, defined magnetic strength, one might say by way of explanation. My tests in the guide on the WM-D6C, or Professional Walkman, showed MOL/SAT figures of +2.5dB/-2dB above IEC 0dB flux with metal tape. Since IEC 0dB is +2dB above Dolby flux, peak record level can be taken up to +4.5dB or thereabouts on the record scale. The figures relate to sound level, in dB, above or below 0VU. I suggest you experiment all the same. Try a good metal like TDK MA-X or That's MR-X PRO, not a budget, nor a premium grade metal. **NK**

JOE FROM GERMANY

One particular album has long been a favourite of mine and I have tried many times to obtain it on CD. This is Sheffield Steel by Joe Cocker. After much frustration I contacted the record company Island, only to initially be told that it was not on their label despite my having the LP and quoting the disc number. When they finally did own up to the disc being theirs they then said it was not available on CD

due to the cost of mastering and low demand. This at least seemed reasonable.

I was speaking of this to my local Hi-Fi shop (Better Hi-Fi) and the owner gave me an address to contact - The Den, Keighley West Yorkshire. He indicated that the owner, Neil, could well be able to help me.

I contacted Neil and to my surprise, not only was he aware of the album, but was also in agreement that it was a frequent one to be requested. He then really floored me by stating that he could obtain a CD copy from Germany. This he did and I now own the CD. It was expensive (£21.50 inc p+p) compared to an ordinary CD, but at least it was available. The Den's service was excellent and Neil proved both helpful and informative about many albums available on CD which record companies say are not.

Within Europe all CDs should be available to each country. After all it's supposed to be a free market. But most of all a record company should know if its own albums are available on CD in any of its markets.

My thanks to The Den. Feel free to contact them with confidence. If you have difficulty in getting any particular album theirs is a very valuable service. Thanks to Better Hi-Fi for the pointer to The Den. It's nice to get musical, as well as technical advice.

**A.C. McBride,
Liverpool.**

It is a tricky business, knowing what is available where. Record companies in different countries have different levels of demand in different markets, and historically, even the big multinationals have seldom had much co-ordination between them. EB

FERRIC FILTER FUN

More Fun With Ferric Filters. May I add a little more data to this on-going subject. I enclose details of Maplin's Computer Data Line Noise Filter. My system sounds much 'cleaner' since fitting some to my interconnects. It may also have helped by my shortening all cables as much as possible.

One tweak puzzles me and that is the use of screened mains cable. I can understand possible benefits if it were taken all the way back to the consumer unit, I cannot however see any benefit by adding 6 or 7 feet in series with several yards of 2.5mm Twin and Earth which I guess would be what most users

would do.

Any comments anyone?

**Tony Stott,
Southport, Merseyside.**

I am not sure why weird and wonderful mains cables work, either. From a purely subjective standpoint, however, I know that they do, in some systems, at least. Some have taken that supreme step in hi-fi tweakerly and fitted Kimber, Sonic Link, or Audioplan cable throughout the hi-fi mains spur.

On the other hand, following your premise ends at DNM's door with solid-core mains cables, interconnects and loudspeaker leads, with not a multi-strand cable in sight! Be warned, Mr. Stott; you are entering into dangerous waters. AS

IN DIFFICULTY DOWN UNDER

I've had a keen interest in Hi-Fi for over twenty years and I've been reading English Hi-Fi magazines since the early days of Hi-Fi Answers. There hasn't been much choice really. Apart from a brief period some years ago when we had an interesting magazine, the local Hi-Fi Press consists of two yuppie lifestyle magazines and a 'specialist' publication which is a criminal waste of trees. For example, I picked up this month's edition to find among other things, an extensive review of a midi system, a review of the NAD 5000 CD player in which the main point of interest for the reviewer was the Dynamic Range Compressor circuit, a long advertisement for some repairman masquerading as a feature interview, in which the subject claimed that anyone, amateur or professional who claimed to be able to hear any difference between CD players was having themselves on, and to cap it off, a review of Rickie Lee Jones' new album, which the so-called popular music reviewer commenced by saying he had never heard of her!

I have noted with interest that vinyl, although fading, is still surviving in the U.K. Here unfortunately, it is stone dead. Even the specialist shops which I used to haunt on my infrequent visits to Sydney have gone over to CD.

After a long period of sulking I determined that I must find a way of hearing the aforementioned Ms. Jones, as well as Joni Mitchell's newie and a number of classical releases.

I should mention that I have what used to be reverently

referred to as a DMS system, acquired at a time in the late Seventies and early Eighties when such gear was relatively affordable. The Isobariks were a more recent secondhand purchase, replacing Saras. The gear has been updated along the way, the turntable up to but not including, Lingo, and retaining Ittok/Karma, the 32 to 32.5, SNAPS to HiCap, AudioTech table etc. I also have an Akai GX995 Cassette Deck and a Sugden T28 tuner, of which I am very fond. The HiCap also drives ATH-911 headphones quite superbly from one of its spare power amp sockets. (I am still looking for the speakers which sound as open and relaxed as those phones.)

As I live 300 miles from the nearest suitable dealer, I find it difficult to audition items in my own system, which I have found over the years to be the only reliable method. Fortunately I am friendly with a dealer on the coast who will send me items on appo. I have recently tried two expensive CD players, Akai CD93 and Sony X7ESD, neither of which was acceptable, although the Sony wasn't too bad. Comparing it with a Linn Sondek though, is laughable.

I am currently awaiting the arrival of a Pioneer PD75. I hope it is better, the freight bills are breaking me. I would like to try something British, but the pricing structure is so outrageously biased I wouldn't even consider it.

For example, the Pioneer PD75 costs £800 in Britain and \$1699 here. The Arcam Alpha is about £420 I believe, but costs \$1599 here. Whoever fixes these things must think the punters are pretty stupid.

To get to the point, some time ago I wrote to Hi-Fi Review seeking advice on an expensive replacement for my ageing Karma. Because of the deteriorating vinyl situation, I didn't do anything about it. It is now desperately tired. Another dealer told me that a new AT OC5 would do a better job at a tenth of the cost. However I am sure I can recall Malcolm Steward saying some time ago that the AT range doesn't work too well in Linn arms. Is that the case, and if so, do you have any other ideas? (nothing British made though).

**Barry Smith,
Wellington, N.S.W.,
Australia.**

Malcolm says that the combination is too bright. Ideally you need an arm with a highly damped structure, namely an

SME V (or IV) or a Naim Aro. Since these are British, it might be more sensible to turn the problem around: look for an alternative Japanese MC cartridge instead. You might be able to secure a Lyra Lydian or Clavis at a good price. Or how about a Danish Ortofon MC15? AS

JUST A DECISION

The demise of vinyl is nothing more than a decision, it's not a natural phenomenon. It can be reversed in an instant, and wonderfully recorded records on first class vinyl could be in production within weeks' (At least, that's what I think, and here's why.)

Up until five weeks ago I thought CD was a bit better than analogue. I used to have a Dual 505-3 with a K5 cartridge. I replaced it with a Systemdek IIX 900 with Moth (Rega RB250) arm and AT110E.(Systemdek IIX 900). Now I know that analogue is much better than CD.

It seems that the present accepted position is that the best analogue replay still beats the best CD replay. In my experience the same situation applies at the budget end.

So, what do I mean by 'doing the business'? What would make sense is to compare CD players with turntables at similar price points. When you do CD reviews, have a reference turntable of similar price to compare them with. And the same when reviewing turntables; have a reference CD player at a similar price to compare with.

Such testing could only benefit the industry, and the public, and I think that if it became common knowledge that pound for pound analogue sounds better than CD (if indeed this is what you discovered) then this is the sort of thing that would make sense to record companies, because people would buy turntables as a way of really getting what they thought they would get with a CD player.

**Mark Wilson,
Clifton, Bristol BS8 1PY.**

I agree that comparing formats, on an occasional basis, is a good idea, as it helps to put digital and analogue into perspective.

The LP has been forgotten, driven underground largely by industry pressure and advertising hype (see our first letter/ reply this month for the commercial view). AS

Who's Music Does

Edited by
Eric Braithwaite

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Well-known names and some that are less familiar make up this month's essential listening selection.

Malcolm Steward



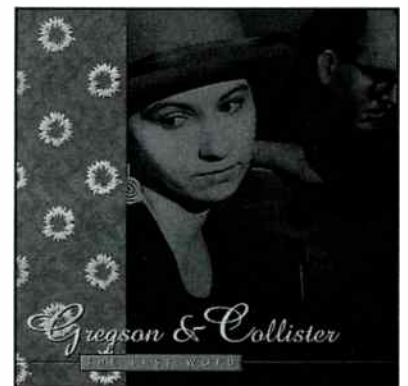
CLIVE GREGSON AND CHRISTINE COLLISTER
The Last Word
SPECIAL DELIVERY SPDCD 1045

● Clive Gregson and Christine Collister have, over the past six years, carved a comfortable niche for themselves in the independent charts. The four albums they released during that period have all been successes, both in musical and commercial terms. The release of their fifth album, *The Last Word*, will continue that tradition and comes as a welcome addition to the record collection. But, sadly, it will be the last. As the title implies, there are not going to be any more releases from the duo, although both will continue with solo careers, which is some consolation.

I don't mean that to sound in any way pejorative, because both are

talented, gifted performers; rather it reflects a personal disappointment at the loss of the peculiar strength of their alliance, which produced some magical recordings and live performances. Gregson's perceptive songwriting, cogent and effectual guitar playing, and gritty but sensitive singing, married to Collister's awe-inspiring voice made a marvellous partnership, one with a particular harmony that frequently deeply moved those who experienced it.

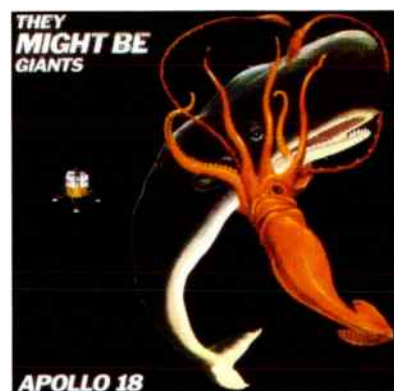
That same magic is evident



throughout this latest recording although I found that it took longer for me to get into some songs than was the case with previous albums. The brooding opener, "I Know Something", is immediately accessible, however, and sets the tone for the rest of the album - relationships that

never quite made it. In typical Gregson fashion the songs are down-key but not down-hearted: there's an optimistic undertow for those who dip below the surface of the lyrics.

Even if you catch Gregson and Collister's farewell tour, which ends at Manchester's Free Trade Hall on May 30th, *The Last Word* should be on your shopping list so that you can say goodbye to - and have a worthy keepsake of - two old friends who have provided some memorable music over the past five years. The album was produced by Gregson and recorded, like their others, at London's Ideal Sound Recorders by the deft hand of Dave Kenny. The performances sound immediate and intimate, at times, and given the circumstances, perhaps a little too much so. If I were given to using football parlance I'd be saying that I was as sick as a parrot to witness this team splitting up.



THEY MIGHT BE GIANTS
Apollo 18
ELEKTRA 7559-61257-2

● "The indexing of this disc is designed to complement the Shuffle mode of modern CD players," says the insert to *Apollo 18*. I almost believed it; I almost tried it: only the fact that my Naim CDS doesn't have this feature of dubious worth prevented me from falling foul of the Giants' sense of the ridiculous.

They Might Be Giants consists of John Linnell and John Flansburgh, two individuals with a perverse - but entertaining - sense of humour that shows no signs of abating as they reach album number four. It features strongly in their lyrics and in the music to which they're attached. Check out the song titles, which alone suggest that there's something weird going on here: 'Dig My Grave', 'I Palindrome I', 'The Statue Got Me High'. A powerful pop sensibility pervades the album, which regularly refers back to the naivety of Sixties three-minute melodies. And therein lies much of its charm. 'See The Constellation', for instance, sounds like The Monkees meets The Kinks meets The Beach Boys meets a fuzz box.

HI-FI WORLD JUNE 1992

The album's second song 'I Palindrome I' is a prime example of how the standard breezy pop tune format can be transformed into something individual by this duo. Starting with an off-the-wall hook like "Some day mother will die and I'll get the money", and adding oblique references to bullet-proof dresses and grandfather clocks plays a large part in this.

I don't think that this is the kind of album you're going to listen to in its entirety every time you pull it off the shelf. Clever word-play starts to sound like contrivance with over exposure: it's better when you treat it like a musical jamboree bag, dipping in and taking a couple of tracks at a time.

It's weird but it's immediately accessible. That in itself should be taken as a recommendation.



DAVID BYRNE
Uh-Oh
LUAKA BOP 7599-26799-2

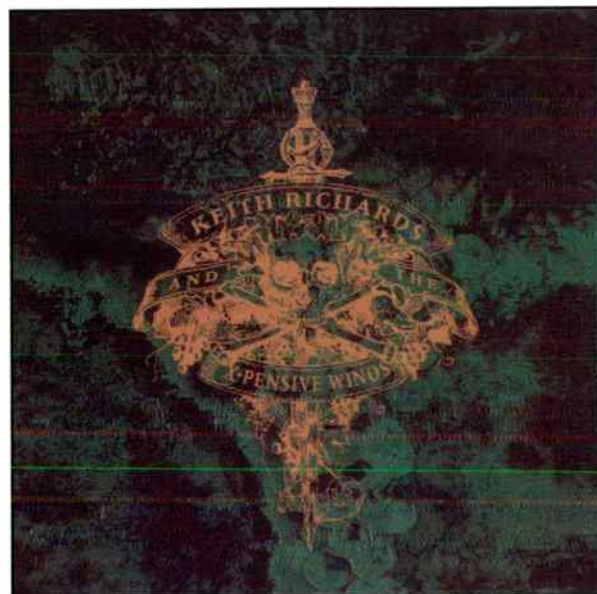
● David Byrne was Talking Heads until he disbanded it. Before you tell me that there were three other members in that particular band take a listen to *Uh-Oh*. Recognise the magic that ran through albums like *77*, *Remain in Light*, *Naked* and many more? In case you were in any doubt about it, it was Byrne's juju that lit the music's fire. And in the same way that Little Feat ceased to be a formidable musical force after Lowell George died, Talking Heads without David Byrne at the epicentre would be just another run-of-the-mill rock 'n roll band.

Byrne's music stands well apart from the crowd, despite its ready accessibility to those listeners who

don't want to stray too far from the mainstream. What gives it its individuality is his quirky outlook on life (how many other songwriters would pick as a subject a child's father having a sex-change and having to declare "Now I'm Your Mom"?), and his sponge-like absorption of world music's colour and devices.

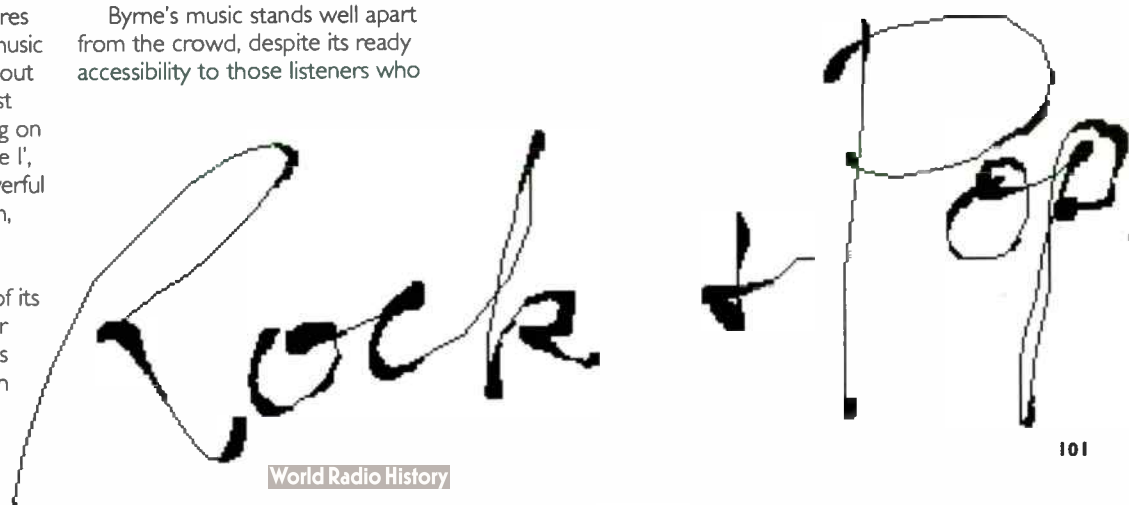
Unlike others - and here Paul Simon comes to mind - Byrne's interest in the music of foreign cultures is intense and better integrated into his songs. There's no smack of tokenism in his use of third world motifs and disciplines. His eclectic juxtapositions sound a whole lot more authentic and natural than those of most of his contemporaries; and *Uh-Oh* is riddled with diversity.

Still thought-provoking after all these years! Where have I heard that before?



KEITH RICHARDS AND THE X-PENSIVE WINOS
Live at the Hollywood Palladium, December 15, 1988
VIRGIN RECORDS AMERICA CDVUS 45.262 439

● I'm told that the video of the gig is better than the CD but I've not yet seen it, so you'll have to be content ▶



Rock & Pop.

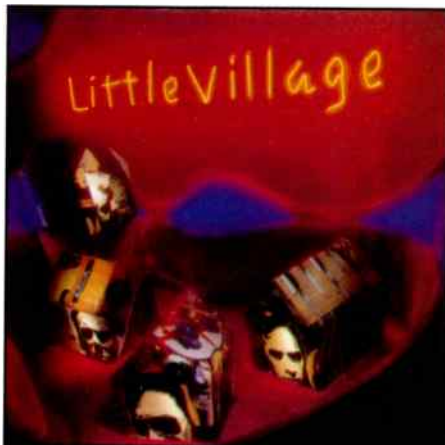
with what I've discovered from the silver disc. You'll also have to put up with my prejudice and bias, but I'll admit now that I'm an unashamed huge fan of Keef.

The film of this show was originally intended as a memento for the great man himself, so there's no super slick, multimillion dollar production involved. Which is a good thing, because that means that the visuals and the music are in perfect harmony with each other. The album captures the event better than any choreographed, orchestrated, patched-together, contrived rockumentary style recording. All the rough edges of the performance are there intact. Keith's idiosyncratic, delightfully slack guitar and voice that only a mother could love are preserved in all their shambolic glory.

Other party-goers (because this is what it sounds like - a glorious, slightly inebriated jam) featured include: guitarist Waddy Watchel; drummer Steve Jordan; bass guitarist Charley Drayton; and a Neville brother, Ivan, on keyboards. Singer, Sarah Dash and saxophonist Bobby Keys also appear. The material is mostly self-penned but there's a couple of Stones' numbers and one track that reflects Keef's love of reggae, 'Too Rude'.

I read another review of this release that complained about its dire, murky sound quality: okay, it's not the zenith of the recordist's art but the Compact Disc is neither dire nor murky on a half decent system - I presume that the writer in question was listening to a pre-release cassette on a ghettoblaster. Either that or he needs to read this magazine and get his hi-fi sorted out. On my system it sounded dirty, abrasive and sweaty, just the way rock 'n roll is supposed to sound. So what if Keef ain't Pavarotti, he still sings with enthusiasm, and that makes up for his lack of technique as far as this particular critic is concerned.

Just listen to the guitar intro to 'Whip It Up' and tell me who else could make two chords speak with the same guttural eloquence. If you think Mark Knopfler and Phil Collins are rock 'n roll heroes you'll hate this record. That's the finest praise that I can heap upon it. It's music for those who still have a bit of soul left inside them.



LITTLE VILLAGE

Little Village

REPRISE 7599-26713-2

● Little Village is a Nineties supergroup: at least, it's a Nineties cult supergroup. The names are big, but only in circles that contain rock aficionados. Unlike the produce of many such aggregations of talent, however, this album avoids self-indulgence and ego-parading. It's just musicians' musicians indulging their passion for playing.

The biggest criticism you could make of this record is that it contains nothing innovative or spectacular: if, that is, you don't find it exciting and satisfying to listen to four particularly accomplished players hitting off each other and turning out some elegant, highly polished rock music.

The quartet responsible for this album comprises three Americans and one Brit: slide guitarist and musicologist, Ry Cooder, singer/guitarist John Hiatt, bass-playing Englishman Nick Lowe, and the highly respected session drummer, Jim Keltner. The story goes that the other three so enjoyed playing on Hiatt's outstanding 1987 album *Bring the Family* that they decided that they should get together and form a recording band.

Although that band's corporate age is a hundred and seventy five - and if it were not for Lowe's inclusion it would be a West Coast outfit -

the music bristles with energy and enthusiasm, even the more laid back numbers. And it's not the reckless abandon of New-Wavers but a more mature passion, an unbridled love of playing music and playing it with skill and feeling. It comes as no surprise that all the songs were written on-the-fly in the studio. There are eleven tracks here, not all of which hit the mark, but the ones that do make it worthwhile: check out the rhythm's groove and Cooder's lead on the kitschy 'Solar Sex Panel' as an example.

FREEDY JOHNSTON

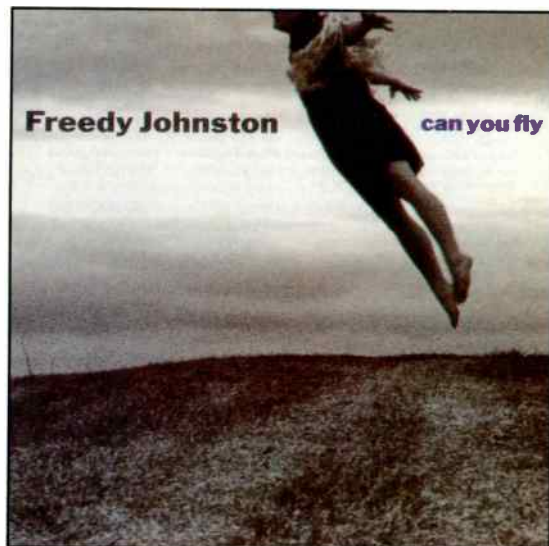
Can You Fly

ROUGH TRADE R2872

I like a band with a sense of humour. You stick Freedy Johnston's CD in your player, press the go button and, as you would expect, music emerges. Then it slows and grinds to a halt, just like you'd pulled the plug on your turntable. Only you're listening to Compact Disc and that don't happen with CD! I should have read the autobiographical notes in his press blurb first: "I got a job driving a truck but my eyesight is poor and I'm not a first-rate driver, so I had a few accidents. I'm much better at my new job. No danger of running over someone with my guitar." Nice attitude!

After the introductory diversion, Freedy and his boys (sixteen of them spread over the disc's thirteen songs) get down to some determined guitar boogie on this his second album. Backing him on this outing is a host of 'names' that includes Marshall Crenshaw, Syd Straw and Chris Stamey (formerly of the dB's). Keen sleeve-note hounds and those who listen to bass players will also spot the name Graham Maby in the credits and the mix: he provided distinctive four-string accompaniments for one Joe Jackson, you might recall.

Freedy Johnston has a doleful voice



that struck me as something of a cross between that of David Thomas (minus the most extreme excursions) and Feargal Sharkey (minus the Irish inflexions). There's a hint of Neil Young in there too, a man whose style has perhaps influenced Johnston's songwriting as well. The structure and delivery of songs like 'Sincere' suggest this strongly. Wherever his muse came from, Johnston has the makings of a singer/songwriter of note. America might be full of be-denimed Springsteen/Young/Forbert wannabees but Johnston is sufficiently individual - and his talent substantial enough - to get noticed.

CHIC CHIC-ism

WARNER BROS. 7599-26394-2

● According to Wayne Campbell, mental host of Cable TV cult show *Wayne's World*, number one in the top ten of party-killing songs is any disco tune. Disco music, Wayne and side-kick Garth would say, goes off the rect-o-meter and sucks donkeys. I tend to agree.



However, even the rather blinkered Wayne, whose personal top ten of favoured albums includes two by Aerosmith and four by Led Zeppelin (including, naturally, a boxed set at number two) might in a moment of extreme weakness admit that Chic represented a listenable departure from within the disco genre.

There can be little argument that Chic is a cut above your average non-hardcore dance outfit. On the oh-so-modest title track the band even tell you why they're so hot: "Perfection,

and we're on the brink, a live band and we're all in sync..." proclaims the bridge. The band's sheer professionalism and its unmatched ability to lay down a dynamite groove make its severe lack of humility forgivable.

Credit for the extreme funkiness of the outfit goes to the two main men, Bernard Edwards, who plays Sadowsky basses, and guitarist Nile Rodgers, who plays "anything that sounds good". Rodgers has to be an inspiration for any player who wants to refine his skinny, thin-toned chops based on sixths and ninths, while Edwards has funk bass playing honed to perfection - loads of power but as tight as a drum; and despite avoiding the cliched slap bass sound he still sounds as hard and punchy as the best of the rest.

Add to this foundation the vocals of Sylvester Logan Sharp and Jenn Thomas, plus those of guests, wholly complementary (i.e. tight and glossy) drum, horn, keyboard and percussion playing, topped off by the Chic Strings, and you have the funk equivalent to Steely Dan.

As Wayne would doubtless say: "Excellent! They shoot! They score!"

RECORD OF THE MONTH

BRUCE COCKBURN Nothing but a Burning Light

COLUMBIA COL 468898 2

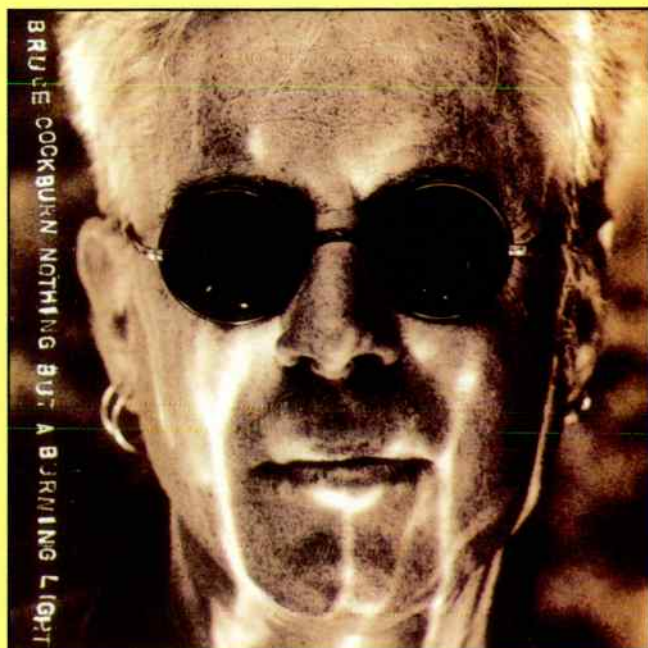
★ Canadian folk-rocker, Bruce Cockburn, is a typical example of the kind of musician I'm inexorably drawn towards. He is a cut above average in the songwriting department, the owner of a powerful and distinctive voice, and he's produced a quantity of remarkable albums. Yet I mention his name to friends who are equally avid about music and they've not heard of him. Perhaps there's a grain of truth in the axiom that quality doesn't always go hand in hand with commercial success and acclaim. The last story I heard - and although it's probably

apocryphal, it's still credible - was that Cockburn was on the brink of giving up on music and getting a real job.

Clearly, and thankfully, he hasn't signed on for the nine-to-five just yet. This latest album sees him putting T-Bone Burnett in the producer's chair, and working with the likes of Larry Klein, Booker T. Jones, Jim Keltner, and even Jackson

Browne on one track, 'Indian Wars'. It's a first rate album - in terms of content and recording - and Cockburn's songs are packaged in wrapping that makes them media-friendly: it's almost conceivable that you might hear tracks from it on the TV and radio.

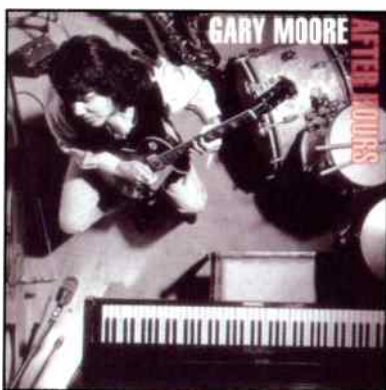
All that really stands in his way is the fact that he's earnest and intelligent. His religious, political and ecological convictions place him in the serious and concerned category and I'm not sure that that's where you ought to be if you want to sell records in large numbers. I hope he can hang on long enough for integrity to become fashionable. If you're tired of shallow, meaningless drivel, give Cockburn's back catalogue - and this album, of course - some attention. And if you think that being serious means you can't have fun, try his 1990 'Live' LP (available on the Cooking Vinyl label).





**This month's selection features
Blues, Seventies retro, American
wierdness and humour-cum-
stadium-metal.**

Giovanni Dadomo



GARY MOORE
After Hours
VIRGIN CDV 2884

● There's been talk of a Blues revival floating around for a good five years now, roughly co-incident with the major label-signing of the estimable Robert Cray. The Blues never went away of course, but recent seasons have seen the Devil's Music back in the spotlight, with not only young bloods like Cray but also die-hards like John Lee Hooker reaping the benefit. Gary Moore's decision to hang up his Metal axe and dust off his Blues one was both timely and wise, witness the soaraway success of his 1990 platter 'Still Got The Blues'. That message remains very much the keynote of this new collection, with Gazza vamping hot and cool on a smart selection combining well-honed originals and a handful of old staples. 'Want you to hear me when I say/

That blues is back...and here to stay', sings Moore on the reassuringly-titled 'The Blues Is Alright' wherein he trades licks with the brilliant Texan vet Albert Collins.

The feel that predominated - thanks largely to the almost constant presence of the great and indefatigable Memphis Horns

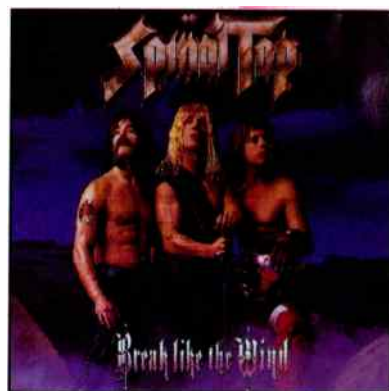
- is the same uptown, funky vein plundered so ably by the aforementioned Cray, the soulful blues most usually connected to the heyday of the Stax Records label. Fittingly present therefore is a brisk resurrection of 'Don't You Lie To Me (I Get Evil)' from the catalogue of Albert King, undisputed top dog of Stax's heydays. That other surviving King - B.B. - appears in person, adding his fluid guitar and richly emotional vocal style to the double-handed re-telling of the classic 'Since I Met You Baby'.

Gary's own introduction to the Blues doubtless came with the original UK Blues boom of the late Sixties, from which he includes a pair of sturdy evergreens: John Mayall's 'Key To Love' is a thundering workout from the classic Bluesbreakers LP that set the seal on the young Eric Clapton's career, and Moore does it more than justice here. By contrast there's one man blues band Duster Bennett's 'Jumping At Shadows', a pensive, closing-time lament which perfectly evokes the mood of the album's title.

Fans of Moore the fret-board wiz are probably better served by busy-busy items like 'Only Fool In Town', which has all the metal thunder even the most devoted headbanger could wish for. The closing 'Nothing's The Same' is the only real instance of Moore's seemingly abandoning classic Blues formulæ. But if this delicate ballad's anything to go by the film soundtrack offers (not to mention chart hits) should be flooding in any day now.

SPINAL TAP
Break Like The Wind
MCA 10514

● 'You got problems/You whine and you beg/When I'm busy/You wanna dance with my leg' - a typically brilliant line from the already classic 'Bitch School' latest in what's surely going to



be a fairly long line of mega-hits from Spinal Tap, easily the rockiest band of the age. Fans of their cult classic film biography have been familiar with the names of David St. Hubbins, Nigel Tufnell and Derek Smalls for some years now; with the release of *Break Like The Wind* these popstastic rock'n'roll visigoths are already well on the way to world conquest. Quite simply, *Break Like The Wind* is a staggering achievement, leaving rank upstarts like Guns 'n' Roses, Metallica and Iron Maiden quaking in their boots. From the thundering opening chords and St. Hubbins slaving, salivating, pectoral-popping first vocal salvo all bets are off. Here is a band that makes Ozzy Osbourne look like a stamp collector; here is a band that can fill three pairs of leather trousers more stitch-stretchingly awesomely than a dozen Jon Bon Jovi's; here is a band whose pheromone output makes Arnold Schwarzenegger look like the sad sack he is.

And the rock establishment knows it too - *Break Like The Wind* features hoardes of established names obviously present in the vain hope that some of the glory will rub off on them. Here's Cher, for example, vainly trying to match 'pipes' with St. Hubbins on the life-affirming 'Just Begin Again' - a rather pointless exercise, but the poor old stick could obviously do with the exposure. Like it says in the typically lush poetry of the lyrics: 'Rise! For you are cream.' Enough said. The album's title track allows Nigel Tufnell to show that few guitar-players can hold a candle to him when it comes to playing the guitar. Left gasping in amazement and hopelessly shown up are Jeff Beck, Slash, Steve Lukather and Joe Satriani. Give the old dinosaurs their dues, they've probably never played better than here - and the result is an axe-fest made in heaven.

So it goes on - on 'Diva Fever' it's Dweezil Zappa's turn to be humiliated, and on 'Stinkin' Up The Great Outdoors' it's Waddy Wachtel who trades licks and loses.

Incidentals aside, this is one rockin' record. Take 'Cash On Delivery', with its thunderous guitars, awesome drums, god-like vocal power and -

cherry on the cake - such brilliant lyrics as 'You look like a million - including the tips' - T.S. Eliot would have given his right arm to come up with a line like that! On 'Rainy Day Sun', one of several songs about the weather, Spinal Tap get to show their gentler side, the poignant melody couch in orchestral arrangements and featuring some fine keyboard-tinkling from veteran Nicky Hopkins. By contrast there are blazing tours de force like 'Christmas With The Devil', with memorable lines aplenty ('Silent Night, Violent Night' etc., etc.) and enough guitar bravado to fight several world wars with.

One could go on and on savouring the myriad delights that make up Break Like The Wind. . . but why spoil it for you? It's the kind of record that makes you glad that God gave us ears and - more importantly - had the good sense to put them on the sides of our heads, from which points one can best enjoy a treat like Spinal Tap's new disc. It's a corker!



THE FUZZTONES
Braindrops

MUSIC MANIAC MMCD 0044 91

● U.S. maniacs The Fuzztones have been lurching their amiably dotty way around the independent circuit for the better part of the past decade and to this reviewer the only real mystery is that they haven't made a bigger name for themselves. That said, they have a loyal and international following (Music Maniac are West German outfit, latest of a small legion of labels to have supported the band) so their continued and highly welcome presence on the recorded and live scene seems assured.

The Fuzztones do for late-Sixties US garage and proto-punk rock what the Cramps did for rockabilly, dusting off great lost gems and writing fresh gems of their own in that wonderfully loopy sub-genre first mapped out by rock historian Lenny Kaye's classic Nuggets compilation. This new album, for example, includes a brilliantly crazed re-run of Love's great '7 And 7 Is' as well as an equally striking rendition of 'The People In Me', a somewhat dustier item first released

by John Bonniwell's Music Machine, a long-dead aggregation whose best known recording is the still classic Talk Talk (after which Marc Hollis' band were named, trivia fans please note). There's an entire album of live covers which is also highly recommended to those with a penchant for the likes of The Standells, Shadows of Night, Electric Prunes etc. etc. So steeped in rock history are they that it's almost impossible to tell a Fuzztones' original from a cover. There's at least one song here - the cracking 'Look For The Question Mark' -about which I'm totally foxed...it's just so, y'know, period, you dig? And, like a living Nuggets compilation, there's a whole variety of musical styles submerged within Braindrops, from spookily murky psychedelia ('Ghost Clinic') through beaty drug anthems a la ur-Ramones ('Romilar D') to more or less straightforward one-hit wonders that never were. If Brian Jones haircuts, stovepipe pants and purple granny glasses are the stuff of your dreams, then this here's the sound-track.



BIG STAR
Third/Sister Lovers

RYKODISC RCD 10220

Live

RYKODISC RCD 10221

not available on LP

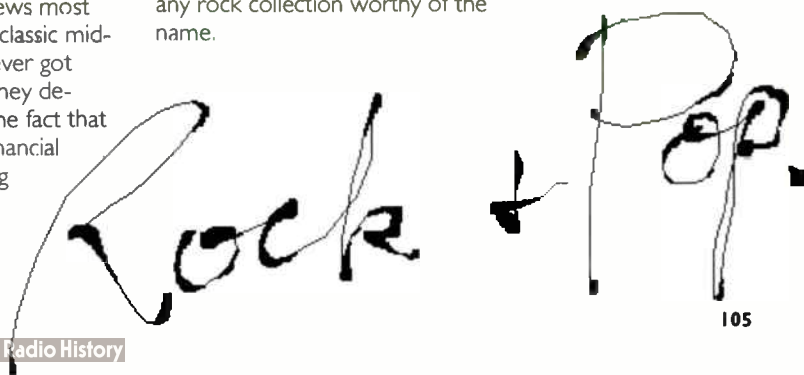
● One of the great lost bands of the early Seventies, Big Star hailed out of Memphis and were the result of a coalition between wunderkind Alex Chilton (who at sixteen toured and recorded with The Box Tops of 'The Letter' fame) and Chris Bell, an equally talented singer and songwriter. The quartet were the first rock band signed by the legendary Stax label and released two albums - No.1 Record, and Radio City on the Stax subsidiary Ardent. Despite rave reviews most often comparing them to classic mid-period Beatles, Big Star never got anything like the success they deserved, thanks largely to the fact that Stax were having major financial problems (eventually going

down the tubes completely) and with the result that the group were never really promoted or distributed properly. Bell quit during or just after the recording of the second LP, while Chilton soldiered on with various line-ups for a while longer.

In the event the third LP featured here was never released and the group became the sort of legend treasured by collectors. Chilton, of course, continues to record and play live and is the object of a by no means negligible cult following. The live album was the result of a session played for a small audience at a New York radio station late in 1975. To anyone familiar with the justly acclaimed classic original LP's, neither this nor the incomplete sounding third LP are evidence of Big Star at their best.

Chilton's voice is rather weak to carry most of the older songs on his own and the band sound - doubtless raw and underproduced by current standards - was further hampered by the fact that their bass player had only been with them for a few weeks. This said, Chilton's guitar-playing is almost consistently brilliant and his vocal shortcomings (surprisingly enough he sounds a lot better when, as on several cuts, he sings solo with just guitar) are easily overcome by the still powerful quality of Big Star classics such as 'September Gurls', 'Mod Lang' and 'I'm In Love With A Girl'.

Similarly the third album sounds more like a good demo than a finished recording, especially alongside its almost impeccable predecessors. Reservations aside there are several high-spots on both records, not least of which are many previously unheard items, including a neat cover of Loudon Wainwright's 'Motel Blues' and a stomping 'Til The End Of The Day'. Overall there's plenty here to delight the convinced Big Star/Chilton devotee, but ultimately what these two welcome but minor recordings add up to is rarely more than a postscript to the tale, whereas No.1 Record and Radio City should be in any rock collection worthy of the name.



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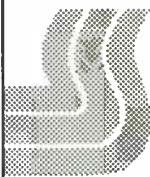


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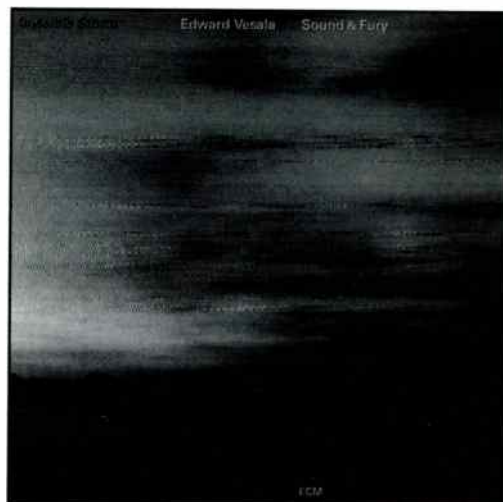
New directions in big band sound for the Nineties and a new label.

Simon Hopkins

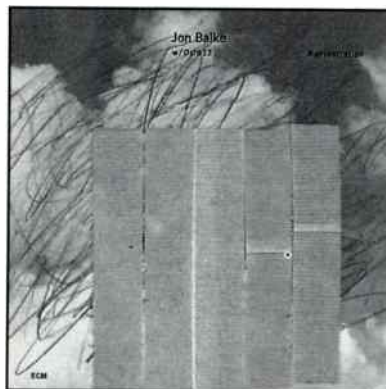
jazz

The term 'big band' isn't exactly one which reaches out to a fan of contemporary jazz; the sound of the classic big band seems something inevitably stuck in the past, its structure and instrumentation unbending to the vagaries of experimentation. But the three records here go some way to subverting that notion, albeit in very different ways.

**EDWARD VESALA/SOUND AND FURY
Invisible Storm
ECM1461**

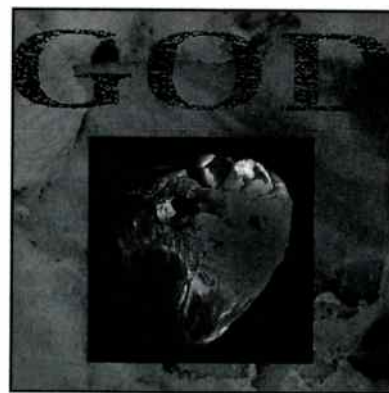


● The Finnish drummer Edward Vesala has been leading big bands since the 70s; Invisible Storm is his fourth for Manfred Eicher's ECM label and follows on directly from Ode to the Death of Jazz, the ECM debut for his current band Sound And Fury. The title of that album and the name of the band give a pretty fair idea of what this music is aiming for: dark, stormy horn arrangements that seem to plunge to the depths of the sun-starved Finnish soul, driven by Vesala's shifting drum patterns, and filled out with keyboardist Iro Haarla's psychotic electronic bleeps and blurts and Jumi Sumen's searing, distorted electric guitar solos. Here and there the mood changes; the Finnish penchant for tangos brings out arrestingly danceable rhythms and some of the horn part writing is engagingly sing-song. But even these moments teeter on the edge of dissonance, and the mood throughout isn't exactly one shot through with sunlight. But this is further evidence that Vesala is becoming one of the key figures in European jazz, and a must for ECM-ophiles.



**JON BALKE
Nonsentration
ECM1445**

● The Norwegian keyboardist Jon Balke's Oslo 13 aren't as intense an affair as Sound And Fury, but Nonsentration is still an enjoyable crack at modernizing the big band. Balke mostly sticks to piano, and his playing often approaches our own John Taylor in style - a hotch potch of post-bop lines and folk melodies. These are set against the tight and rhythmically strident horns of an all-Scandinavian band who nonetheless sound a whole lot closer to the American mainstream than Vesala's lot. What really makes the set is the rhythm section; bassless, it features two percussionists and two kit drummers (including Jon Christensen, veteran of sessions with Keith Jarrett and Jan Garbarek). Their playing recalls the rhythms of North Africa and the Indian subcontinent as much as those of Northern Europe.

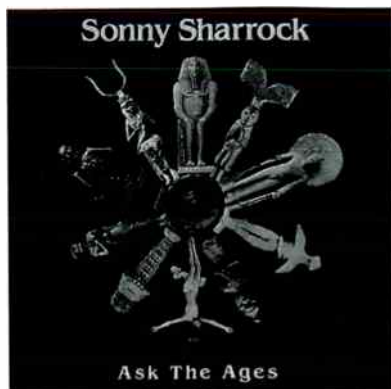


**GOD
Possession
VENTURE CDVE910**

● If ever the statement "what makes this set is the rhythm section" could be applied to any big band then it's to the London based industrial-jazz-rock collective God, who are practically ALL rhythm section. Heavily tipped in this column at the end of last year, God consist of two drummers, three bassists, assorted guests (watch out for the ubiquitous John Zorn and the guitarist Gary Smith, whose debut we raved about a couple of months ago), and a lot of saxophonists, including Henry Cow veteran Tim Hodgkinson and Techno Animal person Kevin Martin. Possession is their studio debut and improves massively on last year's live album. The hypnotic, swirling sax parts and undying industrial propulsion remain, but the rhythm section has come down with a powerful dose of funk; not the anodyne funk of so much jazz rock, but the street beat that propels the hardest rap. And then there's the huge dub effects, the fuzz-bass solos you haven't heard since the best 70s jazz funk, Martin's part whispered, part-shrieked vocals (scat singing from beyond the Styx)... and on and on. Possession bears out, I believe, what I maintained of Loco: that God remain an accurate picture of the way a lot of jazz is heading, I certainly hope so.

Three releases from a welcome 'new' label ('new' because these records have been available in the States for a good while but are only now being released in the UK). Axiom is the brainchild of New York-based producer/bassist extraordinaire Bill Laswell, whose production credits range from Herbie Hancock to Mick Jagger and whose own projects have included the avant-funk supergroup Material and anarch-jazz-thrash terrorists Last Exit. The label is a collaboration between Laswell and Island Records founder Chris Blackwell and seeks to promote the sort of synthesis of pan-global sounds, cutting-edge jazz, hard rock and R'n'B that has fuelled Laswell's career as

producer and musician. Laswell sees no essential break in continuity from the scorched earth tactics of Motorhead to, say, the cascading kora playing of the Ghanaian Foday Susa Muso, both of whom he's been responsible for capturing on vinyl.



SONNY SHARROCK
Ask The Ages

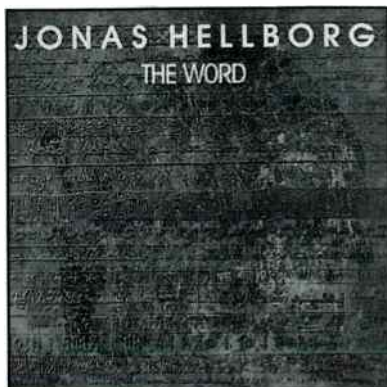
ISLAND/AXIOM 422-846 957-2

● Electric guitarist Sonny Sharrock remains a largely undiscovered gem amongst jazz guitar buffs, held dear by a coterie of modernists but known only as a point of reference to the McLaughlin-Metheny axis of mainstream guitar junkies. A great pity. And ironic when one considers that no less a music writer than Charles Shaar Murray, in his Hendrix biography Crosstown Traffic reckons that Sharrock is the successor to the guitarist who remains rock's greatest innovator.

Sharrock emerged as a contemporary of Hendrix, introducing the electric guitar to the groundbreaking 'New Thing' ensemble of saxophonist Pharaoh Sanders, to whose piercing squalls and gut-wrenching blues wailing Sharrock's thick-toned, feedback-drenched guitar provided the perfect complement. In the intervening years, Sharrock went generally unnoticed but was championed in the 80s by Laswell, who asked him to join Last Exit, alongside European free jazz sax monster Peter Brotzman and the avant-funk drummer Ronald Shannon Jackson.

Ask the Ages sees Sharrock reunited with Sanders for the first time for something like twenty years, with the phenomenal Elvin Jones (the powerhouse behind arguably Coltrane's greatest sessions) on the drum stool. The outcome is, in a word, blistering. The album opens with a massive, swinging backbeat underpinning, a temple-bursting Sanders solo followed by a possessed high-register guitar solo that you never want to end (although you fear it might stop you breathing), and the pace is set. There's a couple of ballads in there too, which give a good insight into Sharrock's playing: where so many of jazz's electric guitarists are techno-freaks, his playing is almost

rockist in its lack of attention to the mere details of good technique, and by eschewing any gratuitous display of ability, Sharrock comes closer to the sound and to the spirit of a saxist like Sanders (or, for that matter Ayler, Shepp, or his role model Coltrane) and makes 'Ask The Ages' the sort of visceral battering that, in a parallel world, earns Crazy Horse or Sonic Youth a life-laying-down following.



JONAS HELLBORG
The Word

ISLAND/AXIOM 422-848 374-2

● The Swedish bass guitarist Jonas Hellborg shot to (relative) fame as one of the young lions in John McLaughlin's reformed Mahavishnu Orchestra. That group barely deserved the name, turning out fairly bland jazz-rock in place of the intense pan-ethnic electric jazz of the guitarist's earlier groups, but Hellborg was a revelation. He is an undoubted virtuoso 'chops merchant' of the sort that muso mags write 20 page eulogies on, but nonetheless shows sufficient eclecticism of influences and naked punk aggression to make one think that his was an ascendant star. In fact, beyond a few appearances on sundry European jazz dates and an inauspicious (and widely unavailable) debut a couple of years back, he's been barely visible.

I'd like to think that The Word will change all that, but there's every chance that it's a tad too left-field to do so, not least in its line-up. Hellborg plays mainly acoustic basses alongside drummer Tony Williams and a small string section. Williams was the driving force behind Miles Davis' pre-electric virtuoso groups of the early to mid-60s, and he's lost none of the fire thirty years on. His mind-boggling poly-rhythms and HARD swinging became the template for a billion jazz-fusion drummers, but the evidence here is that he was always earthier than that. Still, this is nothing if not a sparse setting. The string arrangements are austere, sometimes recalling the Mahavishnu Orchestra in their quieter moments, half quasi-Asian melodies, half late-Viennese harmonies, and above them Hellborg improvises clever,

searching lines that never lapse into technical displays.

There are, perhaps, times when you'd like Jonas to plug in an electric and really go for it (which is what you might expect with Williams behind the kit and Laswell behind the desk) but this remains a moving and impressive major label debut for Hellborg.



RONALD SHANNON JACKSON
Red Warrior

ISLAND/AXIOM AXCD3008

● The most disappointing release of the three, surprisingly, is that of the Texan Shannon Jackson, whose drumming career goes back almost as far as Sharrock's. Over the course of twenty-odd years he's become known as the drummer to bridge the gap between the abstraction of modern jazz and the relentlessness of hard rock; Ornette Coleman, Albert Ayler, Cecil Taylor have all called on his services, and his own downtown funk supergroup Decoding Society was a hotbed for talent as diverse as the ultra-modernist violinist Billy Bang and Living Colour's Vernon Reid. (It's also worth pointing out that his power trio Power Tools provided the most aggressive context for the sometimes overly-withdrawn guitar work of Bill Frisell.)

On Red Warrior, Jackson leads a sextet (himself, three guitarists and two bassists) that blends funk, open group interplay and metal guitar solos in a way that promises to come on like Ornette-meets-Black Sabbath (this reviewer's idea of bliss). But it doesn't quite come off. The soloing is all a bit perfunctory, certainly not the furious avant-metalling it should be, and the rhythm section (very surprisingly) doesn't absolutely gel. All a bit of a mess really; a real one, and not the "glorious mess" that Ornette's Prime Time and Jackson's own Decoding Society often seemed. Unessential.

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& Peter Herring
present . . .*

An important set of five extended single CD's comprising recent works by British composers is featured this month.

Pieces by Beethoven, Liszt and Schubert are reviewed - although not necessarily favourably! - we take a listen to the talented Finnish cellist Arto Noras, and wallow in the sound of the organ as played by Christopher Bowers-Broadbent with scores from Pärt, Maxwell-Davies and Glass.

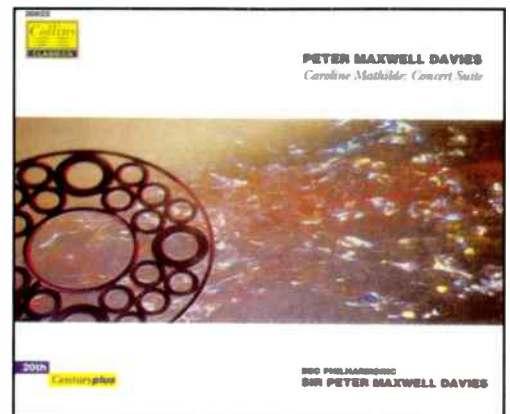
TWENTIETH CENTURY PLUS 5 CD's - Can be purchased singly.

These discs celebrate modern British music at a modest cost and represent a repertoire of music by composers ranging from the relative elder statesman in Sir Peter Maxwell Davies and Sir Harrison Birtwistle, both of whom were born in 1934 - the year that saw the deaths of Elgar, Delius and Holst - to John Tavener (born 1944), Robert Saxton (1953) and Benedict Mason (1954).

SIR HARRISON BIRTWISTLE Earth Dances

BBC Symphony Orchestra; conductor, Peter Eötvös
COLLINS CLASSICS 20012 (DDD/37.21)

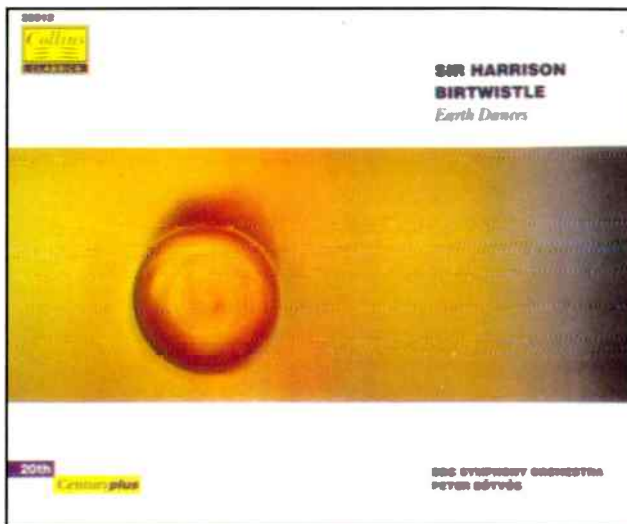
● A live performance, recorded at the Royal Albert Hall at last year's Promenade Concerts, this piece fairly bristles with intricacy. Six layers of material-sound appear and reappear throughout, representing vast geological time-scapes and charting earth tremors and tidal waves alongside passages of exquisite timelessness, where a peaceful repose becomes the order. Birtwistle calls these layers of sound 'strata', hence the work's title; The ever changing relationships between the layers of strata creating the energy - often hostile - to make the earth engage in some form of geological dance. The scoring involves the use of an interesting miscellany of instruments, including piccolo trumpet, piccolos, brass and upper wind. It is all held together with complete precision on this performance by Peter Eötvös whose contribution is both engaging and essential to the work's stark majesty.



SIR PETER MAXWELL DAVIES

Caroline Mathilde: Concert Suite
BBC Philharmonic; conductor, Sir Peter Maxwell Davies
COLLINS CLASSICS 20022 (DDD/25.05)

● Recorded live at the Cheltenham Town Hall in July last year, the concert suite from the ballet *Caroline Mathilde*, exemplifies the composer's skill of musical parody but, sadly, not his ability to hold the theme totally together at the work's end. But never mind that, this is a fine musical excursion into eighteenth century Danish history. We find the fifteen year old Caroline Mathilde being sent to Denmark to marry her cousin, the barking mad King Christian VII in order to strengthen the ties between Britain and Denmark, Caroline being a sister of King George III. There are four movements to the suite, commencing with *A Public Square*, where the couple meet, then we go *Inside the Castle*. This is where the hapless Christian has an epileptic fit which causes a small pandemonium, saved by a strange doctor called Struensee who effects a cure for the King and wins the affection of Caroline. In *The Queen's Chamber* Caroline has much to think about and this prepares her for the dramas involved in the finale, *The Royal Chambers*, wherein all sorts of hanky-panky takes place. And all this from this from the first act! There will doubtless be a *Caroline Mathilde II*.





ROBERT SAXTON
In the Beginning
 BBC Symphony Orchestra;
 conductor, Matthias Bamert
**Music to Celebrate the
 Resurrection of Christ**
 conductor, Stuart Bedford
**COLLINS CLASSICS 20032 (DDD/
 29.55)**

● The two pieces here-gathered reflect the composer's interest in religion. *In the Beginning* has twin themes, those of the first book of the Bible, with the Creation of Order and Light, and those of the concept of growth and re-birth. There are three related movements, the first marked 'Slow, sustained, mysterious' begins with an idea which holds the base from which all the music of the piece is derived. The remaining movements, bearing the titles 'Agitated, quick' and 'Fast, joyful' are intended to leave the listener, at the work's conclusion, with, as the Jewel Case notes imply, 'the fundamental images of the work - darkness and light opposed.'

Music to Celebrate the Resurrection of Christ centres on Coventry Cathedral, the brooding symbol of re-birth from the darkness of war. The BBC2 television producer Jonathan Fulford made a video film in conjunction with this work which lasts just over ten minutes and is in one movement. The opening music manifests echoes of the death of Our Lord, becoming serene before rapidly increasing in speed to a dance of joy and a radiant conclusion. Both performance are exemplary.

BENEDICT MASON
**Lighthouses of
 England and Wales**
 BBC Symphony
 Orchestra;
 conductor, Lothar
 Zagrosek
**COLLINS CLASSICS 20042
 (DDD/15.58)**

● Lighthouses of England and Wales won the Benjamin Britten Competition in 1988 - and well deserved it was too.

This short piece is deliciously complex and highly enjoyable 'being a guided tour around a chorus of the main English and Welsh lighthouse phases. . .' During the Summer of 1987, Benedict Mason visited all the main Trinity Lighthouses and put together this work based largely on factors such as weather, sea, flashing lights, distance and scale. There are leanings towards the sea-scapes of Debussy of even Bridge at times but generally romanticisms are avoided and a more architectural and mathematical rhythmic outcome is achieved.

Arguably, this is one of the most wholly pleasing small works to have been written by a British composer this century.

JOHN TAVERNER
The Repentant Thief
 London Symphony Orchestra;
 conductor, Michael Tilson Thomas
**COLLINS CLASSICS 20052 (DDD/
 20.28)**

● Anyone with a passing interest in contemporary classical music will be aware that John Tavener is the subject of much recent press acclaim for his extraordinary work for cello, *The Protecting Veil*. This latter piece, *The Repentant Thief*, should be equally praised and stands with the Birtwistle as the most significant composition in the five-disc set. Tavener's music lacks the discordant aggression to be found in so much modern music. Searching for Truth and Beauty - so unfashionable these days. Tavener's sound-world is of a similar nature to that of the Estonian composer Arvo Pärt, whom Tavener admires, and whose links with Orthodox Christian religion he parallels. The Thief in this work is one of the criminals crucified with Christ who asks of Jesus, "Remember me when you come into your kingdom", and is told "Today you will be with me in Paradise". Andrew Marriner's glorious clannet playing executes the progress of the thief to Paradise, a sort of blind dance to salvation, pausing for lamentations. Michael Tilson Thomas's



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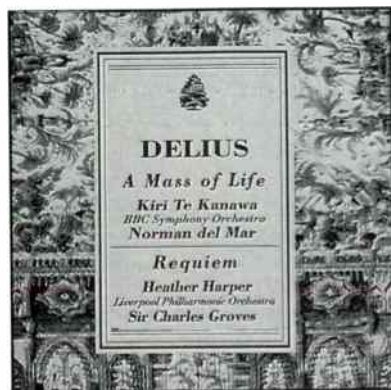
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exacting baton draws much from a small group of strings, divided up into fourteen parts, with percussion (including handbells) and the solo clarinet.

This is a work of no small stature.

In summary, *Twentieth Century Plus* offers an instant and accessible route to modern British music which, on this showing alone must now be the envy of the world. Once described as *Das Land ohne Musik*, Britain is surely and demonstrably at the forefront of twentieth century serious orchestral music.

A highly recommended set.



FREDERICK DELIUS

A Mass of Life

BBC Symphony Orchestra;
conductor, Norman Del Mar
Requiem

Liverpool Philharmonic Orchestra;
conductor, Sir Charles Groves
INTAGLIO INCD 702-2 (2 CD'S ADD/
67.00 & 67.16)

● Now here's a gem for those wise and unpretentious enough to realise that Delius was one of the most important British composers we shall ever know. Broadly, the truism holds that one either loves or loathes Delius - I can hear you now categorising yourselves. Well, those of the latter school can pass on to the next review because they won't much care for what follows.

Delius read Nietzsche's *Also sprach Zarathustra* during the first years of this century and was so struck by it that he was given to conclude that it was one of the most important events in his life. Delius's monumental disregard of Christianity and its (according to Delius) weak and unrealistic values matched those of the philosopher and it was not surprising that in 1905 Delius had completed a large scale choral work, *A Mass of Life*, extolling the virtues of man's self fulfilment, immortality and hedonism. The first performance was directed by Sir Thomas Beecham in 1909 but was not received with overwhelming praise, indeed the only major gramophone recording of the work for years remained one of Beecham's until EMI

issued a Charles Groves reading in 1972. However, in May 1971, a recording of *A Mass of Life* was made in London with Norman Del Mar conducting the BBC Symphony Orchestra, BBC Chorus and BBC Choral Society together with one Kiri Te Kanawa (soprano), Pamela Bowden (mezzo-soprano), Ronald Dowd (tenor) and John Shirley-Quirk. This performance has emerged on the *Intaglio* label - and what a joy it is! The 'mass' - for a Mass in the religious sense the is surely not - is divided into two parts. The singers give voice to the sentiments of Zarathustra, personified in the baritone soloist whilst the score, dramatic and powerful, gives tremendous purposefulness, strength and determination to the work. The 'mass' ends in a mood of immense hope and fearlessness on a grandiose scale echoing Nietzsche's philosophies of Life's Joy.

Delius's *Requiem* is dedicated 'To the memory of all young artists fallen in the war' and reflects the composers horror at the sad carnage of World War I. Another pagan work with an insistence on pantheism, man being depicted as a proud independent spirit at one with nature, the *Requiem* has been much neglected, indeed this is only the second performance. Recorded live in Liverpool in 1965, Charles Groves conducts the Liverpool Philharmonic Orchestra and Liverpool Philharmonic Choir with Heather Harper (soprano) and Thomas Hemsley (baritone). Transfer to digital format, as with the 'mass' is almost perfect, the recordings hardly lacking in precision if not both a little over-bright at times.

Whilst I know non-Delians won't be won over by this twin CD - they should give it a hearing at least. As for Delius admirers, this is an essential issue.

TRIVIUM

Trivium : Mein Weg hat Gipfel und Wellentäler : Annum per annum : Pari intervallo

Arvo Pärt

Psalm 124 : O God Abufe

Sir Peter Maxwell Davies

Satyagraha : Dance IV

Philip Glass

Christopher Bowers-Broadbent,
organ

ECM 849 655 (DDD/58.26)

● Twentieth century organ music is not often heard, a fact due mainly, one



presumes, to modern composers writing so little for what without doubt can be a most daunting instrument. Here we have a splendid collection of works played on a new organ in the Grossmünster Zürich and recorded in October 1990. Christopher Bowers-Broadbent, who is Professor of Organ at the Royal Academy Of Music, is well known for his enthusiastic commissioning of new additions to the organ repertoire, and has given first performances of works by both Arvo Pärt and Philip Glass.

The Pärt compositions are typical of the composer's most recent output, *Trivium*, the work which gives its name to the recording's title, is almost alarmingly fresh and incisive, producing a gloriously colourful sound-portrait amidst contemplative passages that could only have been written by Pärt. The slightly longer *Mein Weg hat Gipfel und Wellentäler* continues in a similar vein, perhaps meandering a little too soulfully at times but nevertheless still capturing the sense of quiet humanity that Pärt relays with all his music.

Maxwell Davies's version of *Psalm 124, A Song of degrees of David*, if my memory serves me correctly, is a wonderful oddity, both eccentric and serious, a reflection, maybe, of the composer himself. *O God Abufe*, all one and a half minutes of it, is more conventional in style and brings out some of the best of Christopher Bowers-Broadbent's playing.

As for Philip Glass, well he should not be allowed within ten metres of an organ let alone write a score for one! Whoever told Glass that he was a serious composer wants a clip round the ear. His *Dance IV* is unbelievably tedious and meretricious.

Buy this one for Pärt and Maxwell Davies. They write music, not noises.

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HENRI DUTILLEUX
Concerto for Cello and Orchestra
VLADIMIR AGOPOV
Concerto for Cello and Orchestra

Finnish Radio Symphony Orchestra; conductor Jukka-Pekka Saraste
 Arto Noras, cello
FINLANDIA 544012 (DDD/50.11)

● This recording is more interesting for the quality of the cello playing than the actual content, although don't be put off by that notion, both works are fine examples of a modern cello concerto and not without merit. Henri Dutilleux completed his *Concerto pour violoncelle - Tout un monde lointain* (A Whole Distant World) in 1970. It commences with an interrogative air - *Enigme* and continues to the final movement, *Hymne*, without any conclusions but with much to consider within the piece, particularly in terms of the emerging mirror imitations.

The Finnish cellist Arto Noras glides through this distant world with determined mystical elegance, praising the score with shadow and shafts of light, lingering here and there to allow us to take in the puzzled questions posed by the cello. It's beautifully done and makes for an excellent short musical journey, albeit with no firm final destination. The twenty-three minute *Finnish-Armenian Cello Concerto tres vie* was written by the young Armenian born composer Vladimir Agopov in 1984, six years after he had moved to Finland. It is a one-movement exercise in conversation, the solo cello taking part in a seamless dialogue with the percussion and harp.

Out of these talks strides an excited theme which causes the orchestra to pause, the chug into a final epilogue made up of a solo cadenza and ending in a thin gasp from the strings. Again, the solo performance graces the work, lending it a certain texture and form which I think probably add to the piece, making a good composition an endearing one. Even the catatonic passage - which reminds one of Stravinsky - is wonderfully handled.

Well worth seeking out.

Andy Giles



FRANZ SCHUBERT

Goethe Lieder
 Elisabeth Soderstrom, soprano; Paul Badura-Skoda, piano
ASTREE AUVIDIS E7783 (DDD/47.10)

● This collection of thirteen of Schubert's *Goethe Lieder* begins with *Erlkonig*, in a somewhat overcoloured version for my taste. It continues with the medievalism of *Der Konig in Thule*, the two settings of *Suleika*, the felicitous and eternally popular *Heidenroslein*, and the optimistic *Musensohn*. Three songs from *Wilhelm Meister* follow and the recital ends with the confessional *Nahe des Geliebten*, the profundity of *Ganymed*, the beauty of *Meeres Stille* and the entreaties of *Gretchen am Spinnrade*.

It is therefore a representative collection and, for the most part, sung with great sensitivity and dramatic intensity by Elisabeth Soderstrom. It is impossible not to be impressed by her pacing and articulation, and by an awareness of the underlying emphasis of each setting. There is nothing bland or detached about these interpretations, and the power of the voice is fully exploited, if at times at the expense of beauty.

Mention must also be made of the vital contribution of Paul Badura-Skoda, playing a Graf piano built in Vienna around 1824 and therefore ideal for Schubert performance. This is the art of the accompanist at its finest, supportive yet adding so much to the character of each song. The equable balance of the recording ensures both voice and piano get a fair hearing, the passionate rendering of *Gretchen am Spinnrade* being a prime example, as the piano gives voice to each turn of the wheel.

The recording dates from 1984, with a comparatively short running time. As it



stands, though, it is a varied and well-rounded recital and, with just a couple of reservations about Soderstrom's contribution, a recommendable one. A pity, though, that no translations are included of the texts.

LUDWIG VAN BEETHOVEN
String Quartet No. 13 in B flat Major Op. 130 (arranged for string orchestra by Maurice Broussard)
FRANZ LISZT

Two pieces for string quartet or string orchestra: *Angelus-Priere aux Anges Gardiens*; *Am Grabe Richard Wagners*
 La Primavera String Orchestra; conductor, Maurice Broussard
PARTRIDGE 1124-2 (DDD/58.56)

● To quote the press release: "For the first time on CD Beethoven's great string quartet Opus 130 with all the possibilities of expression and tone colour of a string orchestra." And Maurice Broussard has made a fine job of the arrangement, but I still found myself asking, "Well, yes, but why?" The gains strike me as few, if any, and the losses are substantial: the wonderful cavatina should be an intimate discourse, not a slice of overblown romanticism. The *andante con moto* and *presto* sound perfunctory, at least as played by La Primavera. The only movement that really comes off is the rollicking finale, which sounds quite splendid on a larger scale and is played with great zest.

This isn't the first time a Beethoven quartet has been subjected to such treatment; I recall a performance of the Op. 131 which was a lot more convincing than this. Strictly novelty value, at least for me, which is a pity because the two Liszt pieces are magnificent and so rarely heard. Here, the rich, warm sound of the ensemble comes into its own and the playing is far more sensitive than in the Beethoven. These are apparently the only two compositions by Liszt for string orchestra, the first also appearing for piano solo in the 'Annees de Pelerinage' and the second one of no less than four pieces he wrote on the death of Wagner. Its sonorous solemnity could be straight from the pages of 'Parsifal'.

For those who are attracted to this disc, I should add the recording is full and lively, if a little grainy.

Peter Herring

Classical

REVIEWERS RIGHT...

This letter is just to say a big thank-you for turning me on to the music of Mary Black.

It was the free CD with the first issue of Hi-Fi World which contained the No Frontiers track which gave me my first taste of her gorgeous music. I now have all of her CDs (some tracks twice thanks to your free CD with the April issue).

My wife and myself were two of the fortunates to have attended her Albert Hall concert at the end of January this year. It was without doubt for both of us the most thrilling and enjoyable night out we have had in years.

We enjoyed the concert so much that a few days later I felt inclined to write to Ms Black to tell her.

Imagine our surprise when about 10 days later a post card popped through our letter box, post marked Dublin. It was hand written and signed by Mary herself!

She said she appreciated the comments made in our letter and said that the Albert Hall concert was filmed for Channel 4 to be shown sometime in April - my video and a blank tape is on standby! She also said she would be back touring England in May (confirmed by the notification page in April's Hi-Fi World). Needless to say we will be booking tickets to see her and her terrific band again. A tip for anyone who enjoys seeing/hearing a guitar being played properly. Do yourself a favour and see Declan Sinnott in action - a true craftsman!

I now regard myself rightly or wrongly as Mary Black's biggest fan - thank you Hi-Fi World.

Keep up the good work; your magazine remains for me the best of the lot.

**Jon Hudson,
Oakham, Leics.**

Self-administered pats on the back all round. EB

AND WRONG?

I have never found it necessary to write to a magazine before, but I find Malcolm Steward's comments arrogant, not to mention completely insulting, in his review of the Two Live Crew album 'As Nasty As They Wanna Be'.

It is not the fact that Mr. Steward didn't like the album, that is a matter of taste, but his comments made before he actually got around to reviewing it.

For those who missed it I shall re-iterate it in part:

"I would rather that half-arsed hopefuls confined their music-making to their bedrooms and let the rest of us enjoy the output of more talented individuals like those who can play . . . sing etc."

Now considering the state of the popular music scene, I found these comments rather amusing. How many 'successful' artists can actually play or sing with the likes of Milli Vanilli and Black Box, both of whom were caught using session singers, or the various forms of 'rave' music using computers and synthesisers?

Surely, with the exception of the likes of the Sex Pistols who used the media, all bands start off as "half-arsed hopefuls", who through time and practice become the more "talented" individuals Mr Steward speaks of.

Most if not all bands grow through time and experience; listen to a band's first album, then a later one and you will find that there are a lot of changes e.g. Nirvana's Nevermind and the earlier Bleach. In the short time between the releases they have not only changed labels but have expanded their repertoire to include at this moment two big selling singles and a double platinum album.

In this transition period, a band have gone from "playing in their bedrooms" to signing to a small independent label to signing with the same label as Guns 'N' Roses. So naturally vast improvements in quality of playing, material of recording can be noticed.

I just find that in this, the era of the re-release, up and coming "half-arsed hopefuls" should be given encouragement and not written off by the likes of Mr. Steward.

In the past I had always thought that a reviewer's job was to try and be as neutral and unbiased as possible, now I really don't know what to think, and until Mr Steward changes his attitude I shall treat his comments with the contempt they deserve.

**Scott Flood,
Glasgow.**

PS I am not a fan of Two Live Crew.

Nor am I a fan, but I'll leave Malcolm to reply. What I do want to say is that on hearing the Two Live Crew album I agree with our reviewer's comments which have generated a degree of controversy. My own view - and I'll take responsibility for any controversy it generates - is that it was simply produced for a high shock factor and a good

acreage of press attention which was not going to put the musical content in its context, which I believe Malcolm did. EB

My comments about the Two Live Crew album merely reflected how appalled I was by the disc, which goes off the scale where arrogance and insult are concerned. Whatever the state of the current popular music scene, this disc struck me as wholly without merit.

I think that your reference to session musicians, sampling, synths and computers is too general: artistic talent doesn't slot neatly into categories like being "able to sing", "able to play piano" etc. Bands like The KLF demonstrate that even punching numbers into a mobile telephone can be done in a creative and entertaining manner.

I do try to be neutral and unbiased when reviewing records but it is extraordinarily difficult when facing the record industry's blind pursuit of fashion. Its cynical attitude towards the most important cultural medium we have epitomises arrogant and insulting behaviour. MS

AUDIOQUEST REQUEST

Could you please get Malcolm Steward to review two LPs on Audio Quest's label. (I think there are only four available).

They are by a man called Robert Lucas. I've got his first LP 'Usin Man Blues', his second LP is under the name of 'Name of the Locomotions'. I got his LP from a hi-fi exhibition in Edinburgh but can't get the second LP here in Scotland. The LPs cost £15 each and are of great quality, Malcolm will love them and so will Alan as they are totally analogue recordings done by Tim de Paravicini using valve equipment over in America.

It's a great story how AudioQuest came across R. Lucas and his country blues are great. Please pass these LPs on to M. Steward. I'd love a mention too.

Could you please, please, stock AudioQuest's LPs so I can buy his second LP.

**George Smart,
Edinburgh.**

I would be pleased to try these discs though I normally give audiophile pressings a wide berth. It would be a rare pleasure to find one where the quality of music and performance approached that of the recording. MS

As one would expect from such a label, the recording quality is exemplary. This gives a good, solid acoustic, saying much about the hall it was made in.

What is surprising is the quality of the musical content. The track listing filled me with dread, as it includes a number of Robert Johnson numbers. I expected these to be murdered by an 'audiophile' bluesman; imagine Luther Vandross performing 'Purple Haze', or Spandau Ballet playing Motorhead's 'Ace Of Spades'.

Robert Lucas' interpretations of Delta Blues standards never once sounded like an audiophile 'artist' at play. Lucas' voice, while lacking years of pain and racist attacks, doesn't sound like a white boy, either; it is a voice bathed in grit and cheap liquor from an early age, together with a guitar style that no Bert Weedon Play-in-a-Day book could ever teach. A white man playing Son House and Robert Johnson tracks is treading on shaky ground. Robert Lucas succeeds where many respected white bluesmen would never venture.

The biggest drawback is that one almost expects such raw music to be recorded badly. When every musical detail is laid bare, it shows up the rough edges that give the Blues life, detracting from the overall performance. For assessing equipment, the disc is superb and I have been using it as such over the past few months. It also serves as a good introduction into the blues for the hi-fi 'buff' - although you'll be lucky to find recordings as good as this one throughout the blues catalogue. **AS**

SOUND QUALITY

I bought an Aiwa XC700 CD player following your review and it has turned out to be an excellent partner for my Armstrong 626 receiver (fed by a Galaxie 14 aerial) with Infinity Reference 20 speakers fed through Supra 4mm cable.

Now the problem starts 'cos the front end of any system can, surely, only be as good as the ROM software diet on which it feeds?

So, again, I consulted the experts - buying copies of Gramophone (which included a preview copy of Classics) and The Good CD Guide 1992.

But now the problems grow worse!

If we analyse the reviews in Classics, we find that from the 51 discs under scrutiny only two are awarded 10/10 for sound

quality. The rest are awarded sound quality ratings from three (down-right grotty?) to nine (quite good?) with an average over the 51 discs of 6.8 - not very encouraging!

If we then turn to the Good CD Guide, we find that they award a quality symbol to "those recordings which truly merit the epithet 'demonstration quality' ". By logical inference the rest must leave something to be desired!

If we analyse the first hundred discs in this guide we find that only eleven are awarded the quality symbol (for sound) and this from an already carefully selected field of "good" CDs. This analysis would seem to indicate that if we require only the best sounding CDs then the scope is going to be very limited indeed.

I sent for three 'Audiophile Quality' discs offered by another magazine at Rolls Royce prices in an effort to establish a reference point. These discs turned out to have sonic shortcomings when compared with some full-price CDs bought in the High Street and I have had to return them with a request for a refund of my fifty pounds - yes, fifty pounds for three discs and still imperfect.

My best discs so far have come from Tactus and BIS - both recent DDD issues - though it seems that DDD is no guarantee of quality! Would it be possible for you to make a small regular feature of publishing the names of record labels on which you have habitually found top-class recordings?

At the moment it looks as though my Aiwa XC700 may be able to outperform most of the available software - Naim CDS owners must have an even worse problem.

The record companies seem to be quite content to re-issue vast collections of old analogue recordings from the Sixties and earlier that on my system (modest though it is) show less than perfect fidelity even when broadcast by Radio 3 with all the limitations of the VHF system. (We are often told the recording date of new releases when played on Radio 3.) No doubt these discs sound O.K. (well, sort of) when played on a midi-system or ghettoblaster but they just ain't hi-fi! Comments?

Oh! and while I'm on this hobby horse give your jazz reviewer Simon Hopkins a clip round the the ear. I'm perfectly well aware that jazz fanatics are not too fussy about sound quality; you have only to listen to the old gnat on Radio 3's Jazz



Record Requests - but Simon is contributing to a Hi-Fi magazine (not a Jazz magazine) where surely the reviewed and by implication recommended discs should all be of the latest hi-fi quality soundwise.

My local record shop is full of old second-hand Miles Davis and John Coltrane (on CD) from recordings made twenty or more years ago and they all sound poor compared with the latest digital wonders.

Come on, Simon, demonstrate that at least one jazz reviewer is not living in the past. **Rod Smyth, Portmadog, Gwynedd.**

This is going to be a tricky one to reply to without offending someone somewhere. There are four issues raised, some of them, I think, based on misconceptions. First is that digital recordings must necessarily be of perfect sound quality. There are too many variables - and too many second-rate conductors and third-rate orchestras, let alone the quality of the mechanics involved, for that ever to be true.

Second, that twenty year old recordings must be worse in sound quality than those made last year. If this were true there would not be the thriving market - and frighteningly high prices, ranging from ten to over a hundred pounds - there is for Decca, RCA, Columbia and EMI LPs from the late 1950's and early 1960's. Or for that matter, many jazz recordings of the same period on the Blue Note label!

Third, that there is some absolute criterion of 'sound quality'. I wouldn't necessarily

agree with all the Penguin Guide's 'Rosettes', for instance; but 'demonstration' quality sound, by which is meant a startlingly - even shockingly - clear, detailed and accurate recording coupled with a superb performance, has never been easy to attain. No easier than the perfect soufflé.

A list of 'recommended' labels, I fear, would be misleading. Few record companies - in my experience, none, in fact - manage to make consistently superb recordings throughout their entire catalogue and lifespan. Robert Von Bahr's BIS label is certainly very consistent at the moment; it's a small concern, relative to many others, and he therefore has considerable say over the purist recording techniques he advocates. Hyperion in England are another with a similarly consistent approach, as are Gimell.

Nonetheless, there are ups and downs, and their history is highly complex. Some recordings are highly prized because of the engineer: Kenneth Wilkinson is a respected name, for example. He recorded in the Sixties for Decca, but also for RCA. (Decca made a number of recordings for the American company.) That does not, by any means make all RCA recordings recommendable in terms of sound quality. Tony Faulkner, 'Mr Bear' or Suvi Raj Grubb are more recent well-regarded names.

Then again, a hair-raising performance to which one might listen again and again, feeling a new frisson each time, does not equate with pure, accurate sound quality either. Just recently, I played Ferrier's 'Che Puro Ciel' and 'Um

Mitternacht' to friends who had been unimpressed by recent digital recordings of Gluck's Orfeo. They sat in awe, emotions fully engaged: yet the orchestral sound is abysmal, and the recording is mono.

How Classics come by their rating system, I think is best left to Robert Cowan, the editor, to explain - or defend - and I wouldn't presume on his behalf. Suffice it to say that our reviewers comment when they feel the quality of a recording is sub-standard. Here comes the fourth issue. If we reviewed only top-notch sounding releases we might all miss out on some interesting music - or worse, be tempted by a name we all know and suddenly discover (I can think of two recent examples) the quality was terrible. I am very glad of one recent warning.

Attempts to recommend "hi-fi" recordings in the past, I feel, have been less than successful and often led to disappointment later. I recall one label which specialised in "hi-fi" sound - and dreary performances of which no musically minded person I know has ever been able to listen to more than one track.

For all these reasons, Simon need not fear violence to his person. As it happens, he will by the time this issue is printed, have reviewed far more new first-time releases than re-releases.

I try to remember that, particularly in the Jazz field, there are readers who were not born when some of the great classic performances were recorded. That includes even the early seventies! We try to strike a balance for a wide variety of tastes in a relatively small number of pages. **EB**

I have to admit that when I took this column on I fully expected admonition for not reviewing enough 'classic' or 'mainstream' material. After five months of going on about 'cutting-edge' artists like John Zorn, Jan Garbarek and God, I'm a bit shocked to be asked to demonstrate I'm not living in the past! As Eric points out, I've reviewed only a couple of re-issues in five columns, not bad going, I reckon, in these days of re-issue filled record shops. Further, many of the labels I've reviewed (Elektra/Nonesuch, JMT, Venture and, in particular, ECM) are renowned for their high production standards. **SH**

next month!

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