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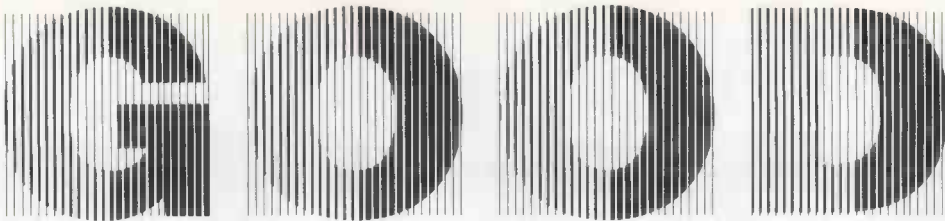
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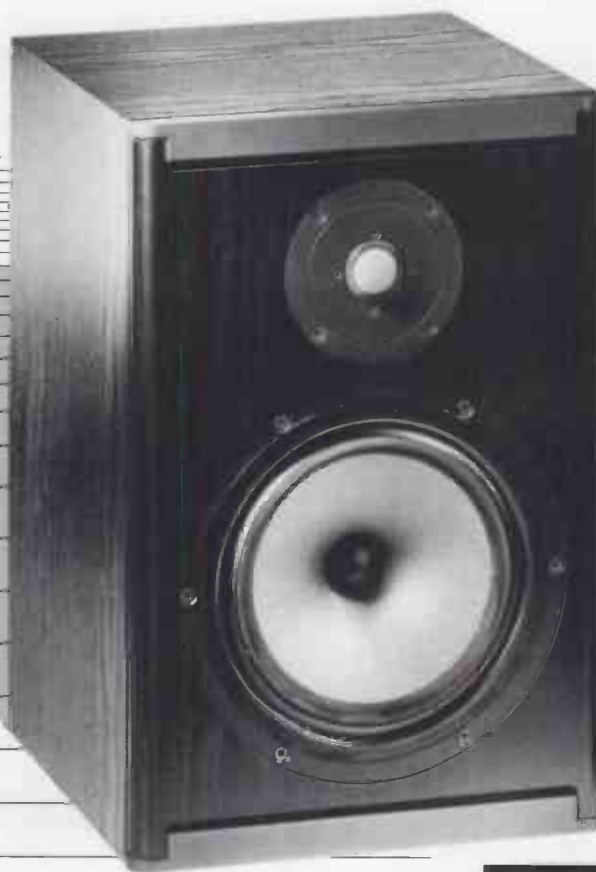
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Only the very best loudspeakers can deliver the full width of the audio spectrum. Most of the lesser models fail, not in the bass, but in the vital high frequency area around and above 20,000 cycles, which is so essential in providing the stereo imagery needed to re-create the sense of 'being there'. Wharfedale's all new 25mm ceramic dome tweeter takes you 'there' effortlessly, offering perfect piston behaviour beyond 40KHz for super sweet treble performance.

C' class

And for once this brand new, high-flying technology doesn't cost the earth – the 'C'-class precision 515 can be making your system hit the highspots for less than £260 per pair.



515

PRECISION SERIES



WHARFEDALE



ARISTON'S MUSICAL MAXIM

Vinyl experts Ariston have announced the £429.95 Maxim CD3 Compact Disc player, due in the dealers' windows in December. Reflecting their twenty year association with turntables, they say they have produced a CD player with a character close to that of the finest analogue replay.

Fixing on a Philips 16-bit 4x oversampling chipset, and their own de-emphasis circuit and audio filters, the Maxim uses a dual-mono circuit design. The 1.5mm thick steel case and 3mm thick extruded faceplate hide polypropylene capacitors and metal film resistors on high quality fibreglass boards. Controls on the front are kept down to the essential minimum, with the remote handling these and the extras like track programming, three-speed search and direct track entry. The display can be switched off, and analogue and co-axial digital output sockets are gold-plated.

CERWIN VEGA! CRUEL TO BOOKS

Latest in their "campaign to destroy the hearing of the nation" are the £149.99 bookshelf sized L-7s. They will blow most of your books back to W. H. Smith, they say, making a room the size of an outhouse sound like an opera house. They take up about the same space as a well-fed (and preferably deaf!) house cat. A new 7in driver, they claim, will go down to 40Hz, and a self-resetting overload protection circuit prevents damage by Karaoke renditions of Ice-T's Greatest Hits. Affordable dB's for the Reggae, Hip hop and House Music freaks; where we might query the enthusiasm is when Cerwin Vega! tell us the L-7 "brings the works of Bachman Turner Overdrive to the same level as the works of Shakespeare." Expect a Measured Performance Column - if we dare review them - to include comparative SPLs for Hamlet and Othello.



NEW SINGALONGA KARAOKE TURNTABLE FROM THORENS

Taken by the praise for the arm-less TD-3001 turntable and the recent 'best turntable under £200' TD-280, used with a Rega arm, Thorens have decided to produce a version of their TD-166 MkVI for the UK market. The TD-166VI/UK has the classic Rega RB250 arm fitted as an option, but without cartridge, for £269.90. With Thorens' own TP50 arm complete with Audio Technica AT-95E cartridge, the TD-166VI costs £239.90.

The '166 is a classic three-point floating suspension, belt driven turntable, in a similar vein to the classic TD-150/160 models. According to their PR agency, Rob Follis Associates, the platter is made from 2.7kg of "Zamak Singalloy". Does the platter sing along with the record? Or might this just be Mazak Zinc Alloy? Garbled telephone conversations will doubtless ensue. The turntable, whatever the platter is machined from, will be available during December 1991.



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

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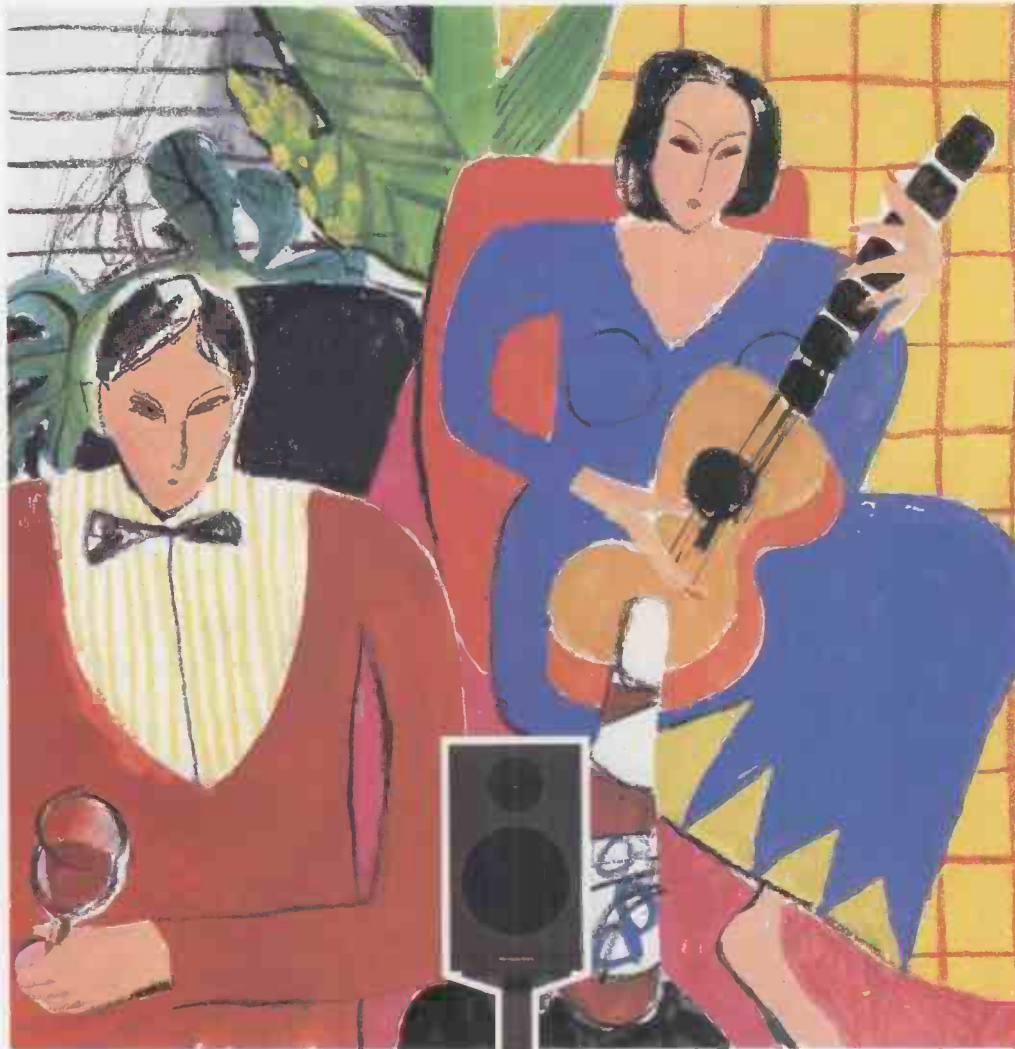
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MR CABLE AND MRS CARPET

Audio-Technica have brought out flat, oxygen-free copper speaker cable oddly named Mr Cable. Made of multi-strand copper conductors, twisted, wound, and knitted in a transparent PVC sheath, they should run discreetly under the carpet or along walls and skirting boards. They are also suitable for car installations. Mr Cable is available in three grades: 64 strand at £1.59 per metre, 192 strand at £2.59 per metre and 312 strand at £3.59 per metre.

KENWOOD AT THE CAFE ROYAL

Kenwood chose one of the most famous caffs in the world for their autumn hi-fi launch, the Cafe Royal in London's Regent Street. Alas, not to be seen mingling with the journo's sampling the salmon and champagne were even the spirits of Oscar Wilde or James Whistler.

Quite what Oscar would have thought of the surround-sound demonstration featuring the film Top Gun is hard to imagine, but he would have found a pithy phrase for sure. All those howling jets were certainly very - well, very cinematic. For the price of going to the real cinema about once a week for a year the home movie buff can buy what Kenwood call "high quality TV sound" through the £300 KR-V7030 AV receiver. Not only does the amplifier section have a three-channel output to feed a Dolby Pro-Logic or Dolby 3 signal to a centre 'fill-in' speaker, but a 2 x 15W rear channel output for surround sound. As a 'straight' stereo amplifier the KR-V7030 delivers 110W per channel, and has a built-in FM/MW tuner section.

However, for those who prefer just the sound in soundtracks, Kenwood showed off two couch-potato amplifiers, the £219.95 60W KA-4040R and the £269.95 80W KA-5040R, both with remote control and circuitry which uses gas-filled relays instead of electronic control switching to isolate the control circuitry from the audio path.

Kenwood are also joining the burgeoning sub-£200 tuner market with the KT-6040 for "the serious radio listener" which features both automatic and user-selectable IF and RF switching. For the seriously lazy radio listener there's an optional remote control so the worst presenters' inanities can be tuned out without having to leap out of the chair and tread on the cat.

Just to point up the moral that Kenwood believe in making music they brought in Christopher Warren-Green's London Chamber Orchestra, whose spirited but sombre snippet 'The Death of Falstaff' from William Walton's film score for Henry V made the Tom Cruse soundtrack seem pretty pale by comparison.

EIGHT HOUR STEREO

Akai's two new mid-range Video Cassette recorders, the VS-F410EK and F510EK, both offer eight-hour recording, with the '510 also providing a built-in Nicam stereo decoder. The two units utilise Akai's new 'Intelligent HQ' circuitry, which is supposed to maximise the performance of different grades of tape, and is clever enough to put instructions and displays for programming it onto the TV screen. Remote controlled, allowing for eight recordings to be programmed over a calendar year, the VS-F410EK costs £349.99 and the VS-F510EK is one hundred pounds more at £449.99.

On the audio front, Akai have announced two small 'mini' systems, designed to be no larger than their bookshelf speakers. The £349.90 MX 90CD and its more powerful and sophisticated brother, the £399.99 MX 100CD are designed to be 100mm smaller in width than the standard midi system. Curiously, the amplifier section of these mini systems has a series of preset tone settings to suit particular music: Classic, Pop, Vocal, Jazz or 'BGM'. This tone control can also be switched out for a cleaner sound.

SILLY COMPETITION WINNER

In the November issue we invited readers to answer three simple questions and invent a caption to a photograph. No, the photograph was not of a bat in the seated position; yes, it was the editor of a rival magazine, and his name is Steve Harris, Editor of Hi-Fi News.

The lucky recipient of a year's free subscription to Hi-Fi World is Mr R. H. Mackie of Inverness, who provided, we thought, the most apt - and printable! - caption:

As Eric would say, 'Not a Savile Row silk suit, more off-the-peg serge. Not rough, exactly, but comfortable.'

Eric has been delegated to inspect the labels in Steve's jackets next time he bumps into him, and will report back.



TECHNICS 'FLY FREE', INTEREST FREE

As a Christmas treat, Technics are offering two special promotions for purchasers of particular products. First, those wishing to buy one of five Technics midi systems can purchase them on no-deposit, ten months interest-free credit.

Secondly, for those wishing to buy SL-XP1A or SL-XP300 portable CD players, Technics offer to pay for the cost of the flight on ABTA holidays in Europe and the USA. The voucher, when filled in by the purchaser is valid for a year.

Finally, Technics have also launched a £349.95 receiver with facilities for the Home Cinema enthusiast. The SA-GX505L comes complete with a AM/FM tuner, remote control, a servo assisted volume control and a four-band parametric equaliser. In addition, the 100W amplifier section has two ten watt outputs for rear and centre front channels for use with its inbuilt Dolby Pro-Logic circuitry. It also has a Phantom surround effect to simulate the Dolby Surround Sound on videos without Dolby encoding.

IN BRIEF

AMSTRAD BACK IN AUDIO

Alan Sugar's Amstrad giant has joined up with Tomei of Hong Kong. The new company, Amstrad Tomei (UK) will supply and market audio brands Amstrad, Fidelity and Cascade. "We will be able to re-establish ourselves as a major player in the audio sector," said Sugar.

RURAL PRESENCE

Presence Audio, distributor of London, Glanz, Kiseki, Milltek and Odyssey cartridges along with Spica speakers, have moved further into the euphonic-sounding Sussex countryside. Their new address is Woodside, Spronketts Lane, Bolney, Haywards Heath, W. Sussex. Tel: 044485 611.

TOKYO TAKES TEWKESBURY CHINA

Those amazing ceramic-encased amplifiers made by OMCElectronics of Tewkesbury which look like a Mandarin's biscuit barrel are being distributed by Pioneer in Japan for five years. The range - the 'Acoustic Arts Collection' - includes the Amphora omnidirectional loudspeaker whose shape takes after its name. Or vice-versa, of course.

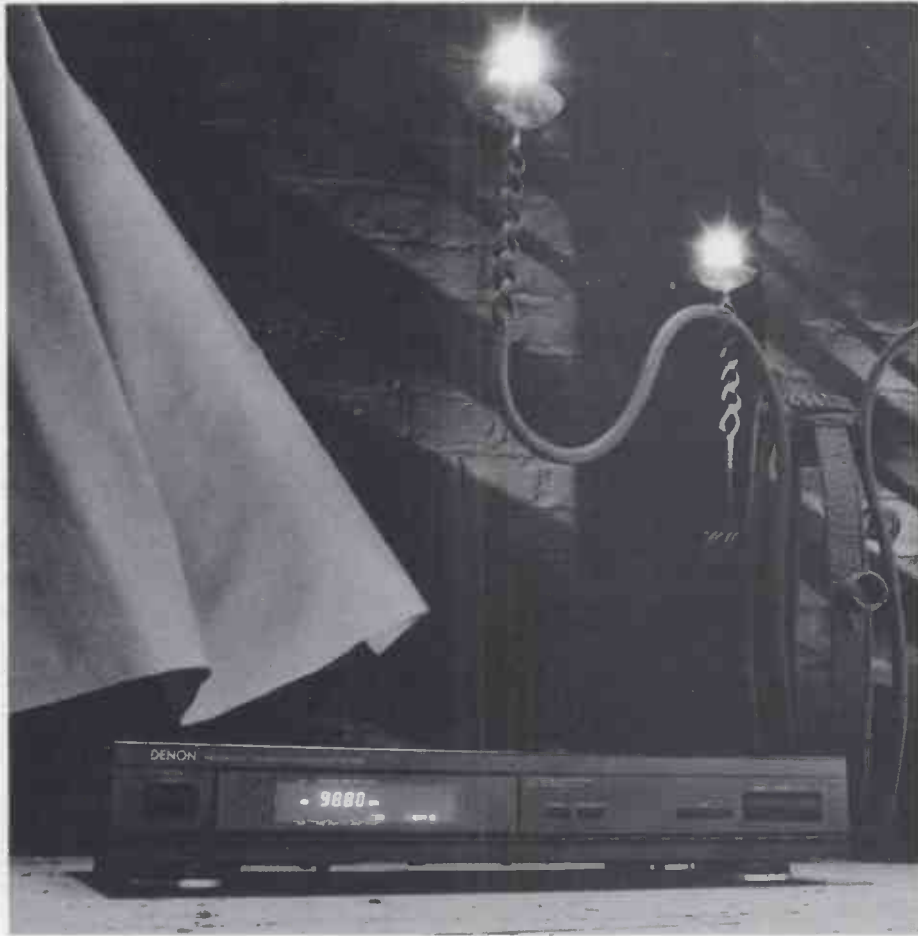
AUDIO-TECHNICA UPGRADE

Psst! Wanna buy an Audio Technica Moving Coil cartridge cheap? No, they don't come from a fake Rolex sweatshop, nor are they a foreign offer which looks a bargain until H.M. Customs slap the VAT on. This is pukka. A-T are offering thirty per cent off the recommended retail price of their moving-coil cartridge range when you take your worn-out one - no matter what make - to an Audio-Technica dealer. The AT-OC5 would thus cost £85.95 instead of £122.95; the high end AT-ART1 loses almost £250, and could be an upgrade for £572.95.

PHILIPS CHEQUE OUT THE SERIES 300

Yet another promotion, this time from Philips. Purchasers of the Philips F310, F320 and F330 can claim back a cheque for £30, £40 and £50 respectively. This is designed to promote their no-fuss 300 range of midi systems, which start at £420 for the 2 x 55w F310, rising to £630 for the 2 x 100w F330. The offer closes at the end of January 1992.

The TU 260L Tuned to perfection



As a leading manufacturer of equipment for broadcast and recording studios worldwide, Denon has applied its extensive knowledge in making marked advances in basic tuner performance.

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EARLY METALS

Contributor Richard Kelly is right in thinking that the GEC loudspeaker unit was not the first to sport a metal cone. The moving coil loudspeaker was introduced to the world in a famous paper presented to the American IEE (Institute of Electrical Engineers) in April 1925 by Chester Rice and Edward Kellogg of the General Electric Research Laboratory. Their paper (not a patent as so often stated) was reprinted in the July/August 1982 edition of the AES Journal.

One of the variants described therein incorporates a spun aluminium cone with a centre dome and rubber surround; apart from the use of an energised magnet this might well represent a contemporary design; so many 'modern' developments turn out to be rediscoveries of pioneer work which was dropped because methods and materials were lacking in those days. Because of this their eventual choice was for a paper cone and RK loudspeakers were extensively marketed in the U.S. and under licence to BTH in this country. The BBC used them in their standard pre-war monitors, as did Murphy Radio in their Console receivers and Radiograms of the '30s.

From a reading of the entire 1925 paper, which is quite fascinating, one can deduce that their experiments must have been going on for some years and it is reasonably certain that theirs is the first use of a metal cone in a moving coil design. Of course suspended aluminium cones with other types of drive are much older, e.g. S. G. Brown's headphone, patented in 1910.

The loudspeakers shown in your article are a late elaborate version of the original single unit design. The Periphonic principle used two units out of phase to form an air pump, closely coupled so that the 'umbrella effect' distortion cancelled out - revived in some of the recent KEF coupled cavity arrangements. Incidentally, the 'Presence Unit' became better known as the Celestion HF1300 of which many thousands were made and subsequently used by a multiplicity of loudspeaker manufacturers.

Anyone interested in early loudspeakers might also seek out a copy of a paper by R. P. G. Denman of the Science Museum given to the Royal Society of Arts on March 13th 1929 and subsequently reprinted in their Journal of May 17th that year.
Geoffrey Horn, Oxford.

MORE METAL

As my interest dates back to the early 1950's, I was very interested in Richard Kelly's contribution. The G.E.C. metal cone speaker was very good indeed, but very expensive in its periphonic enclosure. The 'presence unit' was a very sophisticated hard dome tweeter which lived on as the Celestion HF1300. This unit was used in the incomparable Sendor BC1 and some Rogers monitor speakers, as well as by the BBC. I believe it is still used in the Sendor SPI. The co-axial construction of the metal cone plus presence unit was, of course quite different from the contemporary Tannoy Dual Concentric units.

Keep up the good work.

**D. Pearson
Dartmouth, Devon.**

METAL POSTSCRIPT

Trapped in a traffic jam the other day, on our way to hear DCC, Martin Colloms told me more about the Presence unit that ultimately became the much used Celestion HF1300. Apparently, it was transformed from pumpkin to princess by the loving hands of BBC engineers. For the original design was a loud hailer intended for use in a tank! It was a compact, high power loudspeaker that enabled the driver to communicate with the commander. I suppose it helped transmit The Ride of the Valkyries clearly as they rode into battle. Wonder where they kept the LPs? **NK**

ON A WING WITH A PRAYER

This week started off badly for this particular survivor of the great Mortgage Rate Purge of 1990. After months of squirreling away the loot for an Arcam 70.2 CD player I turned up, bloody but unbowed, at the portals of Five Ways Hi-Fi. Shock, horror...Discontinued!!

But somebody, somewhere, loves me (as well as my mum, that is) because contacting Arcam revealed that they had 7 left...and were prepared to sell them at £500! Needless to say, a couch potato was seen moving at near-light speed back to the emporium.

The next day I found out exactly who it was that loved me. Hi-Fi World. Whilst I figured you might get around to the Tannoy visit as a competition, I read it several times before I convinced myself I hadn't died and gone to heaven. I get to go!!!



readers' reply

Send your letters to:

Hi-Fi World Letters

Page, 64 Castellain

Road, Maida Vale,

London W9 1EX.

Never has my gob been so smacked, or my flabber so gasted. I had opened the mag in the office, so when the cheerful chuckle turned into a 102dBA cackle of maniacal glee I had some explaining to do. During the resulting chorus of "you jammy b*****d" I remembered that these things happen in 3s... so I quickly filled in my pools coupon.

As Senna the soothsayer said (about cheap tape decks!)... "wow, wow & thrice wow." By air too! My only flight was a whizz around the field in a Piper Cub, aged 10 - thirty years ago, and I loved it. I am truly emotional, and deeply grateful.

As for Bitstream versus Multibit... My friend Dr. Phil, who lured me into real hi-fi, says "what about slew-rate limiting at higher frequencies? Smooth treble doesn't necessarily mean accurate treble if the kit is interpolating like crazy." As for DAC7 giving better slam and dynamics, I recall Meridian going in print at the dawn of Bitstream, saying "the slam of multibit is a flaw of the system & not accurate"... Things to make you go Hmmm??

**David Reynolds
Kingswinford, W. Midlands.**

You wait 'till you hear the slam of Tannoy Westminster. Forget Hmmm. Try Yeoooo! And don't forget your flying goggles. **NK**

NIFTY DIGITS

This letter was born out of a lack of large pots of money. Not having the wherewithal to lash out on a major upgrade, I decided to investigate cables. Having successfully replaced a very ordinary link between my Black Box 3 and Naim 32.5 amp with Audioquest Quartz I approached the connection between the DAC and my Delta 170 transport.

Now, having worked with computers for fourteen years, I was deeply sceptical about bringing about any improvement, let alone a worthwhile one. I mean, a number's a number isn't it? If I'm expecting to receive a four digit number, then once sent, 0101 (for example) is a hard and fast fact - there's no element of quality involved here.

I was allowed by a very amenable Sevenoaks Hi-Fi to borrow Audioquest Video Z and Furukawa FV-1010 cables to compare with that provided free by Arcam, and there was no

Hi-Fi that speaks for itself:



8000A Integrated Amplifier



8000P Stereo Power Amplifier



8000C Pre-amplifier



8000M Monoblock Power Amplifier



AUDIOLAB

doubting that both sounded better than the original: sharper images, more air around the music and, very noticeably, less glare. In the end, I plumped for the Video Z because it kept slightly more of the frequency extremes, and I am very happy.

But, for goodness sake why? I've read the theory that incorrect resistance might cause reflections along the cable and affect the timing, but two top-quality 75ohm cables sounded different. Does one transmit a niftier 0101 than the other?

Given that the purpose of the cable is to deliver a series of numbers when the DAC needs them, wouldn't it be possible to use equipment used by computer network technicians to actually monitor the traffic on the line? It may not have been apparent so far, but this is actually the whole point of this letter - I'm hoping that this sort of thing will be right up your street.

I suppose ultimately, if the timing of the data arrival proves to be so critical, then a better solution than toying around with interconnects would be for the DAC to store a (relatively) small amount of the incoming data and then to feed it to itself at the required clock-speed (much as a PC printer buffers data)?

**Nick Lees,
Tunbridge Wells, Kent**

We asked Rob Watts of Deltec to comment:

The problem with interconnecting transports to DAC's is in fact quite a complex one. Essentially there are two areas of sonic degradation that we have identified. These are jitter and RF noise.

Jitter

This is due to poor timing of the clock signal. The problem with the SPDIF (this is the standard for connection between digital inputs) is that the clock is derived from the data signal itself. To recover the clock a phase lock loop circuit looks at the SPDIF signal and generates a clock synchronized to the edges of the data transmissions. In the process of extracting the clock, noise is added which changes the frequency and timing of the clock in a random fashion. Much more importantly, the clock signal itself varies with the digital data. This change in the clock timing is known as jitter. It is this digital data, i.e. changes in the clock signal with respect to the music signal itself that is

so very important subjectively. In short, the clock signal changes with the music signal itself. This gives a very complex and highly audible form of distortion. The ear does seem to be unbelievably sensitive to this.

Unfortunately a RAM store such as Mr Lees suggests will not remove this problem as there is still the essential problem of clock recovery and it has evidently to be synchronized to the digital data itself. The easy way to avoid this problem is to use double phase lock loop techniques, one phase lock loop to generate the clock and the second to clean up this clock to remove the signal dependent jitter. This will not entirely eliminate the problem but it goes a long way.

An additional factor is the loop filter of the phase lock loop and it should be set to below the audible band width. The difference in sound quality this makes is a change in instrument separation, warmth and sense of solidity. The only real way of eliminating this problem is to have the clock within the DAC itself.

However, the cable transmission properties themselves (particularly rise time) changes the timing which in turn increases jitter. Rise time does vary considerably with different 75ohm cable constructions.

RF Noise

The other important area that can upset the sound quality is RF noise. The RF characteristics of the cable in terms of how much noise it injects in to the system itself influences the sound quality and accounts for grain, hardness and poor treble quality. Essentially the cable generates RF noise which is picked up by the analogue sections. How well the cable is screened and the quality of the insulation makes a very big difference.

**Robert Watts
Managing Director,
Deltec Precision Audio.**

BOXLESS IN BLETCHLEY

I was interested to read Noel Keywood's article on 'boxless' moving coil loudspeakers (November '91) issue).

In fact your readers might be interested to hear that I had a pair of 'boxless' speakers made for me a couple of years ago, by a local woodworker. They are of open baffle construction, with the baffles angled back at 45° each side of the drivers (rather

like the SD OBS)

The drive units consist of a Lowther PM6 (more or less full range, up to about 8kHz), and a supplementary super-tweeter just to fill in the top octave.

This arrangement needs no electrical crossover network, as the drivers have complementary natural roll-offs. In order to damp out a good deal of the rear radiation, I have hung a towel down the rear of each baffle unit.

Results? Well, as far as I can discern, they outperform any box speaker I have heard in terms of "closest approach to the original sound."

Of speakers I have heard, only ESL63's beat them, mainly in terms of midrange detail.

Cost?? With drive units and the above woodworker's labour, about £400 for the pair.

Disadvantage? They are large (1.5m high, floor standing, and just over 1m wide), in order to deal with bass cancellation effects.

By the way, as they have a high sensitivity (mid 90's dB/W at 1m), I employ a low power pair of Concordant Quad 2 power amps to drive them.

**David Cooper-Smith,
Bletchley.**

Thanks for letting us know about your loudspeakers. It shows just how simple good, effective hi-fi can be.

I use curtains of heavy felt carpet underlay behind my Quads to absorb as much rear radiation as possible, spaced back six inches to avoid "felty" colouration from forward reflections. The thought of using them as a towel rail with 5,000 volts on it doesn't appeal to me at the moment. **NK**

WICKED RHYTHMS

Ridim Wicked, Ridim Nice.

Roughly translated that means "Those rhythms are really great, they are fantastic." That was my immediate reaction upon hearing the sample CD supplied with the November issue.

I must say it's comforting to know that the reviewers at Hi-Fi World listen to real music, with real artists and instruments, simply recorded and full of emotional impact. One can fully appreciate the creative source (from the soul) of the music be it Salsa or Wassoulou.

I commend all those at Hi-Fi World who made it possible for the public at large to experience the powerful impact non-pop or even non-processed music, not

over-mixed, overdubbed, over-edited, can hit the senses with. Well done and keep up the good work.

I look forward to future issues with zeal, because Hi-Fi World is not solely concerned about analysing high end gear, but is also concerned with giving the public practical advice and musical (or should I say emotional?) pleasure.

**D. Balfour,
London SE22**

"RUBBISH" FROM RUISLIP

I have just read your article on 'Tweaking' and find it is almost complete rubbish from beginning to end. This is not just arrogant personal opinion: just ask anybody with more than two weeks' experience of thermionic valve electronics.

For your information, valves consist of a heating element, a cathode, one or more grids and an anode, all enclosed in a glass envelope containing a hard vacuum.

Desirable characteristics of a valve are: good heater cathode insulation, good vacuum and characteristics that match those in the published data for the type. These can all be checked in five minutes on an AVO valve tester. They may also be 'microphonic' when used in high gain stages. This is easily checked by tapping with something like a pencil and listening to the result.

A valve does not possess 'distortion'; the circuit with which it is associated does. It is also not possible to "measure distortion in the heater." This is pure fantasy.

It should not be possible to modify the sound of an amplifier by selecting valves. This would indicate a) a very poorly designed amp. and b) mean that the published spec. was only valid for one sample, with one set of valves, at the moment of measurement. As soon as the valves aged, or were replaced, the spec. would be meaningless. As a good example of a valve amplifier, read the specs. for Quad. They are guaranteed regardless of valve tolerance spreads.

All the above would be unimportant but for what seems tantamount to deception in the hi-fi business, where, for example, people can be persuaded to pay several hundred pounds for a piece of mains lead or large sums for

continued on page 73 ►

One memory that will stay with me the longest of the Belfast show, along with the fun, the food and the Black Bush whisky, was that of Peter Lindley's restored Quad amplifiers. These completely rebuilt devices were the talk of the show, with all the samples quickly sold.

The Quad II valve amplifier needs little introduction to the hi-fi enthusiast. In production for three decades with only the most minor changes, it is a classic among collectors. Japanese enthusiasts have been known to pay silly prices for a mint Quad 22 preamplifier and a pair of Quad II power amplifiers.

Until that Saturday night in Belfast, I could not see why. Sure,



talk, and a bubbling Peter Lindley. In front of the group was a system that we worked out to be around the £2000-2500 mark: Micromega Leader CD, Tube Technology preamplifier, Peter's Quads and a pair of floorstanding Triangle loudspeakers, all connected with Furukawa cable.

It is very difficult to describe just how natural that system sounded. Normal subjective hi-fi terms don't seem expressive enough to cover the range of emotions that this system created. Yes, I have heard better ones, but they have usually cost more, been vinyl-based and carefully installed. This one had a mid-priced CD player and had been set up in great haste.

As it stood, it had a richness,

tion goes far deeper than most. First, Peter strips the amplifier down to its bare metal. It is then reprimed and repainted, repairing any rust spots that may have occurred in the intervening years. Secondly, every electrical part, except the wound transformers, is replaced with the highest quality current components. Even the internal wiring is replaced with high quality 10 strand, silver-plated copper wire. With the wound components, the transformers are re-wound if deemed desirable. Finally, the amplifier is fitted with high quality modern connectors.

Peter suggests that, if possible, people should go for balanced XLR connectors between pre and power amplifier. This gives the facility to specify long lengths of interconnect cable, as well as being a better class connection.

Nothing is left to chance with his restorations. When completed, he soaks tests the amplifier thoroughly by feeding it a 17watt square wave signal for 24 hours. If this doesn't show up any flaws, little else will. Obviously, the cost is quite steep, but the sound and build quality does have to be taken into account. You are getting Concours condition Rolls Royce workmanship, after all.

We talked long about the state of the industry today. He spoke with regret of all the superb valve amplifiers that end up in skips or rubbish tips, because the owner has 'upgraded' to an inferior solid state amplifier. We also talked of people who use classic chassis as a vehicle for their own designs, which he felt was the lowest form of plagiarism. He also spoke of the older Quads, Leaks and Radfords with great respect; especially the Quad, which he felt to be a 200mph design, never driven over 100mph.

He is one of the last true craftsmen in this industry, building amplifiers in the time-honoured manner, one long forgotten by the masses, but deeply respected by those who appreciate such things. He stands almost alone, like a hi-fi version of Bristol or Morgan Cars, in a sea of mass-production models ●

For those who are genuinely interested in restored valve equipment, please contact Peter direct:

**Peter Lindley,
91, Spalding Road,
Pinchbeck,
Spalding,
Lincs.
P11 3UE.**

Tel: (0775) 722346/820785

Feedback from Alan Sircom

sircom's circuits

the Quad amplifier is well built and it has a timeless character that commands respect, but it falls down against the finest amplifiers manufactured today. While the Quad II is warm sounding, it is also reputed to be soft, woolly and lacking in real bass performance.

Or so I thought. At first sight, I realised that Peter Lindley's Quad amplifiers, together with his immaculate Leak TL/20 and reference preamplifier were something rather special. While the preamplifier showed the signs of heavy use, the two restored power amplifiers were built to a standard that is not seen today in the audio world, short of the extreme high end. Even here, it is only a select few products that exude this superb aura of quality.

At first, I was still dismissive of the Quad amplifiers. Beautifully made, I agree, but still a Quad II amplifier. Some people were getting - unnecessarily, I thought - excited about the amplifiers, however; people whose values I normally respect. I couldn't fathom this out.

Peter Lindley, the man behind the restorations, was on hand receiving a sort of hushed reverence from the valve aficionados. Peter, a jovial Falstaff, who looked and sounded like a retired rugby-playing colonel, appeared unconcerned by all the attention. By this time, my interest had been aroused; what was the secret of the man with the Quads? So I arranged to speak with him on the Sunday

afternoon of the show.

On Saturday evening, after having dinner with a fan of solid state Linn amplifiers who definitely didn't see what the fuss was all about, I returned to the hotel around midnight, to find it awash with hi-fi types at play. Normally docile exhibitors seemed to have taken over the entire floor, shuffling products from room to room, playing a sort of hi-fi Pick n'Mix.

The rooms that seemed to have the most life were Tube Technology, Audioplan and Kronos themselves. Unfortunately, Tube Technology had to close their room off, because of people sleeping next door. The Audioplan room was sounding so good that few wanted to change it, so the Kronos room became the romper room for the big kids.

System after system was played with, chopping and changing with regularity. At about 2.30, I decided that enough was enough, meandering slowly to my room. Having said goodnight to everything that still moved (as well as a few walls, doors and a lone coffee pot), a wild-eyed David Campbell of Zeus ran up to me, gesticulating wildly and saying that I had to come back to their room.

"We've got the Quads going. Alan, believe me, you have GOT to hear these." As it seemed that my life depended on it, I turned back to Zeus's room. There, I was greeted by several stunned looking people, too shocked to

depth and openness that is not normally associated with systems at this cost and certainly not usually attributed to the "woolly" sounding Quads. After half an hour, I felt that I could stay awake no longer so I retired, with my values stood on their heads. How can I like a CD-based system, especially one with a pair of Quads as power amplifiers? I had to know more.

The next day, I finally got to speak with the great man. Originally Peter Lindley, together with his late wife Mary, the inspiration behind his work, formed a company to restore the finest quality amplifiers to their original form and beyond. After the sad death of his wife, Peter was too busy rebuilding his life to be concerned with restoring amplifiers, so the business was run down.

Now, he is back, with plans not only to rebuild the finest valve amplification of the past, but also to produce hi-tech valve designs for the future and act as a design consultant for other manufacturers.

Not all valve designs deserve the Lindley touch; some are best forgotten. Peter suggests that amplifiers such as the classic Radford, Quad, Leak and Lowther designs from the UK, along with Fisher, McIntosh and RCA New Orthophonic amplifiers from the States are still worth work. He will advise a customer on the re-build quality of any amplifier, however.

His thoroughness in restora-

Approaching rapidly is the synchronised worldwide launch by Philips of their new Digital Compact Cassette system. I have remained interested in the concept of a better cassette system, but sceptical about the likely sound quality of Philips' implementation. So have others. Sensing opposition and a bad press, Philips laid on a small listening session for UK hi-fi journalists recently. For the first time, we got to hear DCC under reasonably revealing conditions.

In as far as I could tell, DCC seems to do its job remarkably well. Although arranged with considerable effort by Decca, who have been advising Philips, the demo was poorly thought out and was inadequate to provide definitive answers. We were exposed to numerous Classical music excerpts, played direct or through a DCC encoder and decoder. Most of the pieces were simple recordings of just a few instruments.

The trouble with this, as Decca were prepared to acknowledge when pushed, was that DCC's adaptive coding system is at its weakest when it has to describe full level right across the audio spectrum. In other words, if DCC has problems, they are most likely to become apparent with music that is loud and full bodied. There must be thunderous bass, perhaps provided by a strenuous percussion section, a blaring mid-band of, say, close miked singers or a choir, and crashing treble provided by a simultaneous assault upon every metallic percussion instrument in an orchestra. Or they could have (and should have) used Rock music.

Restrained

What we heard was restrained in terms of performance, instrumentation and intensity over time. With A/B switchbox in hand, I could detect no certain differences between the music being played direct or through the DCC encode/decode system. This is how it should be of course. Music should come out sounding the same as when it went in. Trouble is, the music going in just wasn't the right sort to show up problems.

I wasn't the only sceptic. Others were cautious as well. The history of live-versus-recorded demonstrations was recounted, to illustrate the fact that from the turn of the century people have been deceived into believing the most appallingly grotty noises were identical to live music. Poor Decca! Nobody

was going to believe them, even though a lot of effort had been put into the demo in terms of technical ingenuity.

For my part, it was their utter refusal to use Rock music, even though it constitutes 70% of music sales and would have taken DCC right up to its performance limit, that was difficult to understand. Suspicious minds might suspect attempted concealment, but when it comes to a straight choice between Conspiracy theory or Cock-up theory, the latter is usually the right one. Although highly knowledgeable on matters digital and possessed, by self admission, of wondrous hearing powers, the Decca engineers are cloistered in their own particular world of specialised Classical recording. Consequently, they played what they knew. They reluctantly admitted it wasn't the right sort of material to test DCC properly.

The demo might have been inconclusive, but it was educational. I was fascinated by one possibility never mentioned before in connection with DCC: the ability to record and play back Eighteen-Bit recordings. It was suggested that even if slight degradation was introduced by the adaptive coding system of DCC, the higher resolution of Eighteen-Bit recording would more than compensate. This has to be balanced against an internal resolution of just Fifteen-Bits maximum within the coding system. I am left doubtful by the claim of real Eighteen-Bit quality, but if it is supported by the coding system, then it should offer a useful improvement in sound quality.

Peculiar

I have never come across a development in audio so peculiar and difficult to pin down as DCC. The Decca engineers seemed very enthusiastic about its sound quality, that's for sure. They gave the impression they couldn't fault it, at least in the presence of Philips representatives, who were employing them to act as critical listeners. However, believe it or not, the coding rules are a matter of informed guesswork. They have been devised to match our hearing characteristics - one could say to fool the ear. This is complex biological territory. We just do not know what can and cannot be detected by the ear with any certainty.

To their credit, Philips admit this. Their approach is to view conservatively the approximate rules currently available and stay outside the area where coding

limitations might become audible. In Philips' own words "With PASC we apparently (!) designed with a bit-rate high enough to get indistinguishably close to the original CD signal. For the purpose of DCC development this is considered sufficient. The ultimate limitation of the quality of the PASC encoding remains unknown to us for the time being."

Digital Compact Cassette is due to be launched in April 1992. By the time your eyes fall upon these pages, that event should be little more than four months away. Philips plan to offer two models of domestic recorder, a portable and a car player immediately. All will be Sixteen-Bit. Their Japanese



Reflections from Noel Keywood kaleidoscope

affiliate, Marantz, plan to offer an Eighteen-Bit recorder immediately though. I heard someone from Philips say that this time, they were determined not to let the Japanese run away with the marketing initiative. As a result, we can expect the keenest pricing and innovation to come from Philips and Marantz - or so they say.

Although Sony claim to have an effective rival for DCC in Mini Disc (MD) - and they may well launch it in the end - it now looks as if DCC will quickly be adopted as a replacement for the conventional cassette. Philips seem to have thought of everything with regard to its market acceptance. They watched Digital Audio Tape stagnate and have learnt the lessons. In particular, the problem of software costs and availability from the outset appear to have been tackled very effectively.

Prerecorded DCC tapes will be available immediately - and at an affordable price. I'll refrain from saying a 'reasonable price', since already cries of "it's a rip off" have been heard in response to a quoted price of £12 a shot. But since pricing is a matter of Music Biz policy, this has little to do with Philips themselves.

Blank tapes will come flooding out of Japan, meaning they'll not be priced artificially high. European manufacturers will have to follow suit. Since the plastic tape shells and the video tape inside are inexpensive

items, expect to pay at most £5. Something around £3 should be the final settling price.

And recorders? Pricing here is a bit more vague, but £250-£500 is the current range being quoted. With Japanese electrical giant Matsushita (Technics/Panasonic) gearing up to produce DCC, competition should be intense. It is possible to make DCC quite cheaply (unlike DAT) and Philips want and intend the system to gain extremely quick market acceptance - quicker even than that enjoyed by CD.

Our listening session suggested that DCC should provide excellent sound quality, both from prerecorded tapes and from recordings. That Philips should even bother to organise such a thing for some of the most critical, outspoken and 'difficult' journalists in the world shows that they are concerned with sound quality. If, as suggested by Decca, the system could give better sound quality than CD, because of its Eighteen-Bit recording potential, it would be a marvel. I remain sceptical, but in a matter of months we should all know, one way or another, just how good this radical new tape system can sound ●

I think we've let hi-fi get too house trained. Modern designers have laboured to ensure what was wild has become tame, as surely as we have bred curious wolves to become our domestic dogs. What is a house but a temple to our art? Somewhere to put the family, somewhere to sleep, an address to put on forms. What's carpet there for but to be burnt with red-hot KT66's swapped in haste? Hi-fi just isn't the same without having to make a few sacrifices, like a peaceful marriage, a livable sitting-room and a friendly relationship with the neighbours.

For a hi-fi system to be really moving it has to be big and it has



recorded message

Left by Richard Brice

to be frightening, by which I mean it has to be virtually unusable by everybody else but you. A barely tamed beast and you its keeper, a relationship of cautious and brooding respect. For instance, the amplifier has to come in at least three bits: a pre-amp, a pre-amp power supply (a real flourish that), and a power amplifier - and preferably two of those, with valves in them and no covers so casual admirers leave skin on the output tubes if they dare touch them.

These and a thousand other idiosyncrasies retain the hi-fi as a personal domain, a private joy. As far as I'm concerned, the ergonomists just haven't seen the point. Not for me track skipping, repeat playing, bottom-fattening remote volume controls. I liked it difficult. I liked the wires and the fragility of an engineering system which felt like it had to be treated like an atomic-reactor control system even though all it was doing was playing a record!

Now it's all got too uniform. Playing a Compact Disc is indistinguishable from using the microwave except that the microwave hasn't a remote control unit - next to the mobile phone, the most undesirable

florescence of our consumer society. What can you do with this handy gadget? By means of one hundred and twenty cryptic button pushes, I can play all the tracks on a C.D. in reverse order or all the even numbers first and then all the odd numbers. Do you have any idea how long is spent in production meetings deciding the order of tracks on a disc? Producers, artists, record company people lose sleep deciding in what order to put the songs so that we, with our handy remote controls, can shuffle all around again.

Nowhere has the emasculation of hi-fi been more painfully felt than in the decline of the large loudspeaker enclosure, because of the loss of true bass that this has brought about. And by true bass, I mean sub 50Hz, not sub 250Hz. Before the sad days, when loudspeakers which might easily have passed for civil engineering constructions were hunted to destruction by a callous desire to adorn our homes with television, a concrete transmission-line or acoustic labyrinth enclosure was the badge of a true hi-fi nut. And, in my book, a large loudspeaker system is still the insignia by which an enthusiast of

reproduced sound shows his (or her) true metal. Whilst I can appreciate the fine stereo image of a small pair of loudspeakers on good stands, nothing at all affects me as deeply as a big pair of boxed moving-coil loudspeakers. If you visit a home where two scale-models of tower blocks worthy of Le Corbusier adorn an otherwise genteel living room, you instantly know that you are in the presence of a soul in love.

It's very common nowadays to speak of a system in terms of "information retrieval", the system's ability, or lack of it, to tease out all of the audible data from a recording. Almost exclusively this term seems to be applied to high-frequency extension. But consider for a moment that a small enclosure may have a bass roll-off at around 100Hz, a frequency three octaves above the lowest audible frequency. If that isn't throwing information away, I don't know what is. By way of demonstration, a loudspeaker which attenuated the treble by the same amount would roll-off at 1kHz!

"Ah," I hear you say, "I listen to almost nothing but string quartets and house vibrating bass notes have no part in that music." True, there is much music of very great beauty that does not require thunderous low-frequencies but, unless you can say you never listen to music without bass drum, harp, organ or piano - all of which have fundamental notes below 50Hz, it's a bit like arguing that because you watch a lot of old black and white films there is no point in owning a colour television. (Incidentally, it's still possible to "hear" the lowest note on a piano if it is reproduced over small loudspeakers because the upper harmonics or partials extend well into the loudspeaker's range even though the fundamental frequency is missing. What is produced though, is a sound of very different timbre indeed to the original sound.)

None of this would be so worrying, were it not for the fact that the ubiquity of little speakers has resulted in an increasing tendency for recordings to be produced which "punch up the bass" in the lower-middle frequency band in order to give the record "slam" when played over typical loudspeakers. As marketing plays an ever stronger role in the record business, it is becoming more and more common to mix exclusively on small "near-field" monitors in order to ensure the record

sounds good on average systems.

For this reason, most kick-drums are regularly equalised in the mix-down with several dB of bass-boost around the 80Hz mark to add "punch and drive" to the bass drum part. Tricks like this which are regularly employed to boost the perceived bottom-end in cars, ghetto blasters and midi-systems tend to tip the sound produced by big loudspeakers over the edge - from powerful and exciting to ponderous and bass heavy.

How many times have you heard bass-light loudspeakers being described as having "articulate bass" and loudspeakers with an extended and accurate LF performance as sounding "ponderous" and "one-note"? I've heard the effect myself many times and, on several occasions, I could definitely ascribe the effect to heavy handed upper-bass, lower-mid boost on the recording itself. The neglect of true bass on modern recordings was nicely summed up by Paul White, the producer/engineer and editor of "Home and Studio Recording" recently, when he said in the magazine, "In pop music, it's pretty safe to say that we don't have to worry about much going on below 50Hz."

It's sad that these practices of deliberate tonal distortion coincide with our best chance yet to appreciate real bass. For the first time in the history of recorded sound in the home we have, with C.D, a medium which can accurately reproduce right down into the the gut-rattling, infra-bass frequency band. It's time to throw off the chimera of civilisation and rediscover hi-fi's wild, deep roots. Time to rid ourselves of the limits imposed by the tawdry 1970's bookshelf loudspeaker and rekindle interest in hi-fi's forgotten octaves. Time to let recording engineers know that if they let something happen "down there" someone's going to hear it and like it.

The new interest in subwoofers is to be applauded; here perhaps is a way forward to real bass without upsetting the domestic situation too much. One thing is certain. Only when we rediscover these lost octaves can we dispense with our domestic dog and enjoy the electronic wolf - wild but exciting ●



Talk about speakers

DM600 What Hi-fi Aug 1991:

Winner of eight speaker Supertest.

"... The DM600 is a super fast articulate-sounding speaker with an exquisite sense of detail. It also hits hard ... The bass was quick and agile ... gratifying fullness ... goes straight to the top of its class ... shoots directly for the stars, and scores a direct hit ... Articulate, quick and extremely detailed."

DM600 High Fidelity July 1991:

"DM600. Five stars out of five for sound quality ... the DM600s delivered a meaty wallop ... soundstage is crisply focused, their sense of timing is spot-on. These are energetic, dynamic speakers, and they'll go very loud without distorting ... their clarity is never lost."

DM600 Complete CD & Hi-fi Buyer Sept 1991 Best Buy:

"The result is one of the most detailed musically 'alive' small speakers around ... In short, the DM600 is a winner and can move right to the top of the class ... a certain 'best buy' and something for its rivals to think about."

DM610 What Hi-fi Sept 1991:

"... raw honesty and clarity ... Dynamics were forcefully presented and bass depth and power were equally excellent ... the 610 does have good timing ... the DM610 is a finely engineered product and well worth the very reasonable price demanded ..."

DM610 Hi-fi World Sept 1991:

"... The B&W's overall balance of virtues places it well ahead of the field. Strengths are its articulate and confident delivery, excellent finish and deep, tactile bass ... by unanimous consent the clear winner. ... Track after track we couldn't catch them out. Their combination of refinement, energy, life and articulation seemed to get the best out of every kind of music we played ... B&W have done their sums and got them right in a fairly spectacular fashion."

DM620 Hi-fi Choice May 1991 Best Buy:

"... remarkably well balanced and surprisingly smooth ... an impressive performer in many ways ... unusually well focused stereo ... a fine cost-effective all-round performer with wide general appeal."

B&W
LOUDSPEAKERS
B&W
ENOUGH SAID

mini-monitors for the home

High fidelity can come from small loudspeakers. We test six house-friendly monitors from £250 - £1388.

Report and tests by

Noel Keywood.

Listening by Alan

Sircom, Eric Braithwaite

and Noel Keywood.



LINN NEXUS LS250 £458/£549



EPOS ES11 £330



B&W MATRIX 805 £795



ATC SCM-20 £1388

Loudspeakers can be intrusive in the home; many people express an interest in getting very high quality from something that is small and easily positioned. For them, most manufacturers offer something loosely termed 'the mini-monitor' - a small, but ultra high quality loudspeaker. For this group test we chose six different models, ranging in price from £250 up to £1388. You have to pay for quality, but we found that price and quality are not inextricably linked. There are bargains to be had - at least, we thought so.

Choosing loudspeakers is a very personal business of course. You might think there should be something like 'absolute accuracy', a standard we could judge by, but there isn't. Loudspeakers excite more argument and division amongst so called experts than any other hi-fi component.

Measurement doesn't offer a complete solution either. A good measured performance is a prerequisite for quality - it's not a guarantee. We use it here, as always, to inform us about peculiarities, weaknesses and the possibility of greatness, rather than any guarantee of the latter. It did prove useful in showing just how accurate some of the monitors were, however.

So judgements have to be subjective. They are inevitably based upon the experience and preferences of the listeners concerned. Because of this qualification, we

have adopted a particular approach to this group of loudspeakers.

Our prime aim is to describe sound quality, in order to give you some impression of what each product offers. Measurement fleshes matters out by providing some useful hard facts. Then, inevitably, we talk about relative merits and declare, from experience, whether in our view they are worth their price.

This is where matters get contentious and, these days, many reviewers start to equivocate. But perhaps wrongly so. I feel an informed personal opinion is better than none at all, providing it is offered as an opinion, not as fact, and providing the tastes, experience and expectations of the reviewer are revealed. Then you will at least know whether you are likely to share the opinion or not. That's what I want to do here.

Three of us listened to the loudspeakers and we had little difficulty agreeing upon those we preferred. Between us, we have heard most loudspeakers available, know what the various options are in terms of preferred 'sounds' and can identify what others commonly like. And this is where we need to qualify matters a little. Eric Braithwaite and I use Quad ESL-63 electrostatics out of choice, Alan Sircom swaps boxes regularly, but has out of choice been using the ProAc Studio 1s tested here. So we have experience of both

boxes and panels.

What all of us strongly favour are loudspeakers that, above all, are easy to get along with. High drama loudspeakers can be initially exciting, but ultimately they often turn out to be wearing. So our priority is refinement, coupled with good basic quality in all the usual areas (firm deep bass, clear vocals, sweet treble, good revelation of detail, etc). We also place good imaging and portrayal of stage depth high on our list of priorities.

We expected the mini-monitors to produce a big sound - and they all did. We expected them to offer a high degree of basic accuracy; some were extremely accurate in measured terms and in their perceived sense of balance. What we didn't expect was to be able to run them from a small system. These monitors need good partnering equipment. It must be chosen with care and, inevitably quality will be reflected in cost. That's the drawback of these mini-monitors, but equally it applies to all high quality loudspeakers. We don't suggest that, because of their size, they are partnered with small systems as an 'upgrade'. You could be very disappointed.

These mini-monitors were more similar than usual in their basic presentation of music, both to each other and to larger monitors of our acquaintance. They show that high quality loudspeakers don't have to be intrusive in the home.



PROAC STUDIO 1 MKII £612



TANNOY 609 £250

PHOTO: John Bruce 071-625 6056



B&W MATRIX

805

£795

The tiny Matrix 805 carries a relatively high price tag, reflecting B&W's intended market niche for the product. Their literature suggests it can be either stand or shelf mounted. However, we found that the 805 has not been balanced to work against a wall, so shelf mounting - which we tried - will raise bass and make it sound a bit boomy. The 805s are best on heavy stands, pulled out from any rear wall. Because they are not bass heavy in their sound, a few feet will suffice.

Horizontal and vertical versions of the 805 are available, the tweeter being mounted on the longer or shorter panels accordingly. As the picture should show, B&W place the tweeter in an external moulded plastic pod (which unclips with alarming ease!). The tweeter itself is a metal dome type, with a high temperature voice coil having ferrofluid cooling. A benefit of external mounting like this is that it makes vertical alignment of the drive units for corrected phase easier to implement. The manufacturers also claim it makes the sound more spacious.

B&W use their own 6 1/2in bright yellow Kevlar (a woven and immensely durable, high temperature plastic) coned drive unit to handle the important bass and mid-range frequencies. They claim it behaves in a controlled manner above the usable operating range, avoiding nasties being produced. In spite of small cabinet size, bass extension is quoted as 35Hz (-6dB), which is good going for such a small box. The crossover is a complex sixth-order unit, contrary in thinking to minimalist types. It's funny how different manufacturers can be in their approach, yet differences are often less noticeable than might be expected.

The moulded rear connecting panel

carries four heavy duty terminals for biwiring. They accept heavy cables and 4mm plugs. Although we operated the '805s with the grille removed, their black fabric grille makes them look less intrusive.

The small, tubby cabinets measure 407mm high, 260mm wide and 210mm deep.

SOUND QUALITY

The '805 does have an extremely good weight to its bass performance. You could almost see the grey rolling storm clouds on Prince's 'Thunder'. Combined with this was a nature that proved to be both articulate and detailed, with incredible speed at all bar the lowest frequencies, all of which created the justification for the Monitor title. It does not define the complex strands of a difficult mix in the forthright manner of the ATC's or even a Quad ESL, but it is still capable of showing up the edits easily.

Imaging was so detailed as to give instruments a tangible sense of body. This was slightly marred by a noticeable lack of depth to the soundstage. We commented that it was rather like looking through a window into the recording studio, than being in the studio itself; the soundstage created seemed to have clearly defined edges, like a window frame.

It was a very wide window frame, stretching tidily across the room from beyond the edges of the boxes: the listener is not forced in among the performers, but they are clearly spread out before you like an animated mural. It is a cliché, but the boxes would have become invisible if it were not for the primrose yellow of the cones attracting the eye (with the grills off). Instrumental music was extremely articulate, orchestral music finely balanced, rock music vivacious.

As befits a monitor-class loudspeaker, the '805's have the ability to play very loud; they possess an excellent dynamic range. The quietest sounds could still be clearly discerned even within a loud mix, orchestral sections playing 'piano' never overwhelmed by the brass section blowing 'fortissimo'. They were also even-handed, capable of playing everything from Erik Satie to the Pixies without objecting. This was a result of a gentle softening in the overall tonality of the loudspeakers; the rough edges of music were smoothed out a fraction, a recording becoming a little polite compared to the actual instrumentation. The 805's proved informative without any sense of strain - an excellent quality - for they allowed the concentration either to be fixed on specific detail or to relax to follow the rhythm and melody of the music.

CONCLUSION

As both monitor loudspeakers and domestic devices, the B&W Matrix 805s work well. As a monitor, they allow the listener to follow and concentrate on any part of the mix, or the whole at will, while for domestic use they do not have that unrelenting nature associated with loudspeakers of this breed. Their speedy delivery gives them an exciting quality, but without over-exciting the music itself.

MEASURED PERFORMANCE

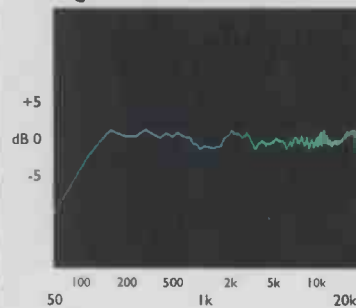
The '805 has a widely varying impedance that swings from 5.5ohms up to 15ohms. It is as close to being nominally 8ohms as any loudspeaker, which makes it - in this area at least - a well balanced design that will utilise the current delivery properties of quality amplifiers well. As a result, it is reasonably sensitive, producing 85.5dB sound pressure level for one watt on input - louder than many 'monitors'.

As a load, the 805 is fairly reactive, swinging alternately from being capacitive to inductive all the way down the audio band, phase angle hitting 30-45 degrees at 3kHz, 500Hz, 100Hz, 60Hz, 25Hz and 12Hz. The higher frequency peaks are attributable to the complex crossover, the lower ones to the port and cone resonances. Some amplifiers may not like this, so matching needs care.

The high level of research that B&W has invested in loudspeaker design over the years, their measurement facilities and experience show through in the frequency response characteristic of the 805. Few multi-driver, box loudspeakers can boast a ruler flat response like this one, especially at the high 5dB/division vertical scale resolution we use, which makes response errors look more dramatic than usual. It was maintained over a reasonably wide vertical range, but a dip appeared due to phase cancellation between tweeter and woofer when measuring anywhere above the tweeter axis. This is not unusual, but it does mean the 805 should not be placed too low. It is best listened to on-axis, meaning the listener's ears should be at roughly the same height as the bass/mid-range unit.

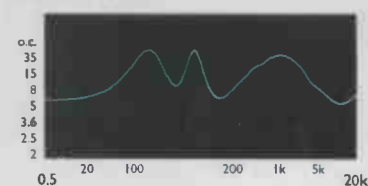
Strengths to note in this frequency response are the absence of peaks, especially from the tweeter, and the lack of a dip at the crossover point. In fact, the 805 is pretty seamless at this frequency. In measured terms, B&W offer an 'accurate' loudspeaker in the 805. **NK**

FREQUENCY RESPONSE



Very flat frequency response

IMPEDANCE



High-ish impedance

MEASURED PERFORMANCE

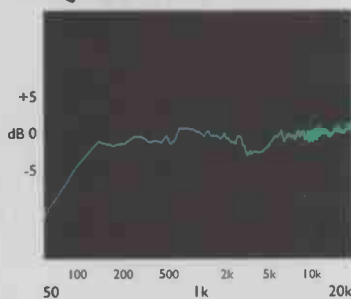
The ES11 possesses a satisfactorily flat frequency response, as the analysis shows. It varies a little according to precise listening position in the vertical plane, upper treble becoming stronger on the tweeter axis than was the case with the other 'monitors'. The characteristic shown is one averaged to give a general picture over a sensible vertical range from bass/mid-range axis up to the tweeter axis.

The ES11 needs to be mounted at ear height, meaning high stands will usually be most suitable. To enhance bass just slightly, something this speaker benefits from, it should be moved back to within a few feet of a rear wall. Experimentation is the only way of balancing this to one's own satisfaction. The tweeter in particular is remarkably flat and peak free, which is always a good sign for those with sensitive ears; peaky tweeters can hurt!

Like the Linn Nexus, the ES11 is another loudspeaker of conservatively high overall impedance. It never dips below 8 ohms across the entire audio band. Only below 5Hz does its impedance sink slowly to a minimum of 6.5ohms at DC. Across the mid-band impedance actually peaks at 35 ohms, as our plot shows. The ES11 has a nominal impedance in the 12-15 ohm region in fact. This means the speaker doesn't draw current and is a light load, but it also means it under utilises modern amplifiers, limiting their power delivery. The ES11 appears insensitive in use and measurement shows that it is, producing just 83dB SPL for one watt of input. Here there is a small problem: it needs a powerful amplifier to go loud, yet it does not readily accept a lot of power. The ES11 is not for headbangers; it has to be used with some care.

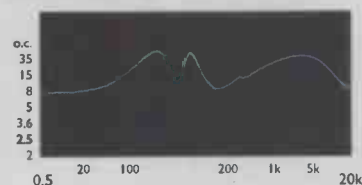
Bass unit resonance and the port produce the usual swings of phase angle, making the speaker fairly reactive. It remains so across the audio band, where it swings much like the B&W 805 from being inductive to capacitive (45 degree peaks). NK

FREQUENCY RESPONSE



Generally balanced response characteristic

IMPEDANCE



High overall impedance produces insensitivity

EPOS ES11 £330

Along with the ProAc Studio I Mk II, the Epos ES11 loudspeakers were also tested by us in our April issue. Together with many others in the hi-fi industry, we were so impressed that we could not let them go. They have subsequently been used as a benchmark at Hi-Fi World, often showing a clean pair of heels to far more expensive loudspeakers.

Nine months on, we felt that it was time to re-evaluate the baby Epos, against some fierce opposition. The ES11 itself, smaller brother of Robin Marshall's successful ES14 loudspeaker, is 375mm high, 200mm wide and 250 deep. It weighs 8kg. Epos recommend it is used with their own stands (£85), preferably about 1 metre from the rear wall.

The injection moulded front and rear panels of the loudspeaker are held together by steel rods. The black vinyl MDF cabinet wrap is placed around the formative loudspeaker. The front baffle also incorporates the 8in driver basket. This helps the driver to break up evenly at higher frequencies, as it is used virtually as a full range unit, with the metal dome tweeter acting as 'fill-in'.

Epos have compounded this approach by opting for the most minimal crossover possible. Only one capacitor is used as a crossover network, in the tweeter signal path. The 8in unit has no crossover. It sees the full audio signal and is directly coupled to an amplifier as a result.

Epos have decided to bi-wire the ES11's, an option not available with the bigger '14's. The flush mount sockets only accept 4mm banana plugs, the loudspeaker comes with a set of plug-in adaptors for those who wish to use only one set of cables.

SOUND QUALITY

As before, the Epos ES11 weaved their magic spell over our listening test. They have a civilising nature that never strays too far away from neutrality. At their worst, they can sound slightly too rich and warm; we noticed that four bassoons playing together sounded a bit like an harmonium played through a chorus pedal.

For the most part, however, the ES11s lived up to their giant-killer reputation. Vocals were portrayed with grace, being articulate without any form of exaggeration. Prince's voice and his electric guitar were slightly less abrasive than through a few of the other designs, but this softer presentation seemed to soothe the savage brow of Noel, who complained that some of the others sounded uncivilised by comparison.

The bass weight from the box was superb, especially when one considers the price and size of the little ES11's. This bass quality was tight, dynamic and rhythmic, with instruments like bass guitars and percussion easy to follow from both a timing and a musical standpoint. While the bass could become a little overblown, it never caused offence.

Imaging was unusually good due mainly to a strong depth, width and projection beyond the cabinet. This latter property divorces the soundstage from the loudspeaker giving it a seeming independence that is beguiling. In this area the ES11s are unusually strong and



for those who can position them correctly the subjective impact of their soundstaging is forceful. Combining this with a weighty sound quality, the ES11 imparted a good sense of solidity to the images it produced. While I have suggested that they are slightly civilised, almost to the point of being warm, the ES11s do have an analytical, supremely coherent and detailed nature. This is never overstated, causing the listener stress; it simply presents music in an accurate manner.

Transients, although well treated, can sound a little soft-edged, lacking the ultimate in impact and drive. Cymbals, although realistic tonally, lack some of the instrument's intensity and attack. Bearing in mind that the sound produced is supremely pleasant, it is easy to live with this kid-glove nature.

Some special effects noises, used by Pink Floyd, appeared slightly odd, as if to add credence to our view of some gentle tone shaping taking place. For example, a helicopter began to sound like a wash-board. In addition, woodwind sounded slightly too 'woody'; the softened treble overstating their baritone nature. But all this does not detract from the sweet quality of the ES11s performance.

CONCLUSION

The ES11 survived the competition well. Its coherence, subtlety and graceful presentation makes it one of the finest all-round loudspeakers currently available, regardless of cost. While other loudspeakers in the test can show more insight and detail, few do so with the finesse of the ES11s. Its flaws, such as some tailoring to remove the 'spit' from the metal dome, are minor.



LINN NEXUS LS 250

Black vinyl: £458.00

Walnut/Black Ash: £549.00

In the U.K. Linn Products are best known for their respected Linn Sondek LP12 turntable. In other markets they have a similar standing as a loudspeaker manufacturer. Their Linn Kan and Isobarik loudspeakers were groundbreaking in their day; love 'em or loathe 'em, you can't ignore 'em.

The Nexus is a more conventional loudspeaker from Linn's stable. Designed to work away from the wall and with Linn's own integral Ku-Stone stands (£109 extra), the Nexus is a two-way, ported design using a 19mm soft-dome tweeter and an 200mm carbon-loaded polypropylene bass unit, housed beneath a stocking-like removable grille.

Although the loudspeaker is easy to set up and run, the stand itself involves a little more thought in assembly. In fairness, this action will normally be performed by the appointed Linn dealer, rather than the purchaser. Once set in position, the stand and loudspeaker integrate together firmly. At the rear of the loudspeaker, two sets of terminals allow for bi-wiring. These terminals, in true Linn fashion, only accept 4mm banana plugs, but have links connected for single wiring fitted as standard. A small spanner is supplied to remove the links. It was useful, especially as bi-wiring is so strongly stressed in the Nexus manual.

The Linn Nexus is claimed to have a power handling of 75 watts. This, combined with good efficiency (Linn suggest 88dB; we found it produced 86.6dB) with a 1-watt input, creates a pair of loudspeakers more than capable of playing music at high volumes. The fourth-order crossover network is set at 2.5kHz, with close tolerance metallised polyester capacitors used in the treble section, instead of the usual electrolytic types.

One of the biggest loudspeakers in the test, the Linn Nexus' (try to find a plural for 'Nexus') dimensions are 54cm high, 25.5cm

wide and 37.5cm deep, excluding stands. The Ku-Stone stands raise the loudspeaker by about 35cm and tilt the Nexus back in the process, to point the tweeter at the listener - if the stands were level, the listening axis would be at about chest height. Our sample was finished in an attractive walnut veneer, which together with the Black Ash finish, costs £88.00 more than standard black vinyl.

SOUND QUALITY

This loudspeaker has 'Linn' written all over its sonic performance. Imagery, while better than most Linn loudspeakers, is not the strong point of the Nexus. It produces quite a wide image, but not one that is especially deep. In addition, instruments within the soundstage are quite vaguely located in space; there is none of the rock-solid image placement of the B&Ws or the ATCs.

Aside from its vague image definition, the Nexus did have the sense of rhythm and timing normally associated with Linn Products. The bass line of every piece of music is played with aplomb. Rock rhythms particularly are played with strong drive and pace. In some respects this sense of timing was artificial; we noticed that on certain classical pieces with melody after melody struggling for dominant position (e.g. Tchaikovsky's Capriccio Italien), the Nexus seems to miss out on the lesser melodies, only concentrating on the dominant one.

This, together with the cluttering of the images, creates an impression of some instruments and even some frequencies being neglected in favour of others. The measured performance of the Nexus suggests otherwise, but in practice the Linn loudspeakers have a peculiar ability to exaggerate certain aspects of a musical performance.

This may preclude the Nexus from many people's short-list of loudspeakers, but for those who enjoy pacy, tight Rock, the Linn loudspeakers suit like no other in our group. Recordings like The Cult and Prince have a provocative intensity and drive that the others could only approach. The Nexus did make their own interpretation of the music, but they did it with style and guts. On the above tracks, The Cult's bass guitar and drum breaks had a power the music seems to need; not exactly accurate, but reflecting the feeling behind the performance.

In terms of presentation of detail, the Nexus performed adequately well. It did seem to overpower finer nuances, however, in favour of the overall musical performance. Vocals were clear, distinct and easy to follow, although group vocals were harder to differentiate. The Nexus also appeared to have a slight lack of body on some instruments, especially on classical programme. Dynamic range was powerful, but the quietest information could get overwhelmed.

CONCLUSION

The Nexus has strengths in the portrayal of certain types of music, but limitations in other areas. Given music with a simple, powerful rhythm, the Nexus slips the leash and sets feet tapping. Unfortunately, they try to bestow their unique character on all kinds of music - and it doesn't work on everything. Those who enjoy their music uncomplicated, fun and ballsy will love what the Nexus can do, however.

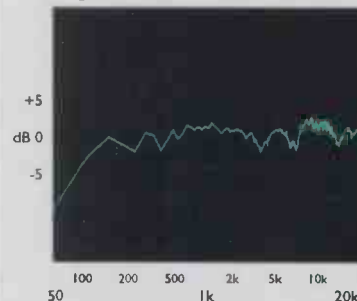
MEASURED PERFORMANCE

As a load, the Nexus is reasonably easy. The impedance plot shows that 8 ohms is a minimum figure, from DC right up to 20kHz. At 1kHz the value rises to 25 ohms, for example. The gentle curves indicate a substantially resistive component in the load too, measurement of phase angle showing less extreme swings than many speakers over most of the audio band. Whilst the Nexus will not draw much current from an amplifier, high impedance usually reduces sensitivity. Yet in this case, because of sensitive drive units, the Nexus plays loud with quite moderate inputs. It has a high measured sensitivity of 86.6dB sound pressure level for one watt of input, making it second only to the Tannoy in loudness for any given input.

Frequency response of the Nexus was a lot smoother than Linn loudspeakers of the past; they seem to have left behind the idea of engineering 'a sound' with little regard to basic balance. All the same, the Nexus offers the Linn type of sound - forceful and dynamic - without being compromised by possessing an even tonal balance. Considering our vertical scale is expanded to highlight response errors, the Nexus is unusually flat, being bettered only by the B&W 805 in this group. It maintained this characteristic over a reasonably wide vertical range, without phase cancellation or response change occurring. However, like the 805, the Nexus should be listened to on-axis - not from above. The Ku-Stone stands tilt the cabinet up to fire more directly at listeners. Higher stands can be used; they give slightly lighter bass but a smoother, more integrated sound.

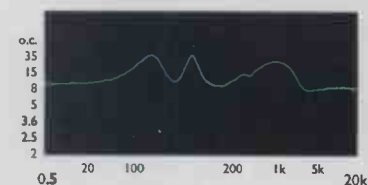
NK

FREQUENCY RESPONSE



A generally balanced overall response characteristic gives the Nexus a good sense of basic tonal balance. Some brightness might be explained by the small treble peak.

IMPEDANCE



High overall impedance limits current drawn from an amplifier.

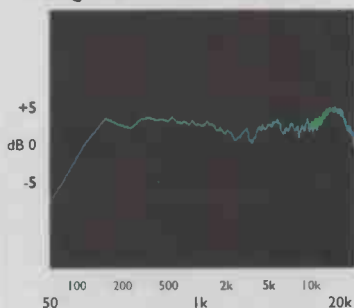
MEASURED PERFORMANCE

The Studio I has a higher nominal impedance than most loudspeakers; it measured around 12ohms, as the analysis shows. Much of the curve rose above 15ohms. Only below 10Hz does this speaker sink beneath 8ohms, but since little signal exists here, high currents will not flow. Whilst high impedance makes a loudspeaker an 'easy load' in the sense that it doesn't draw high continuous currents from an amplifier, it has the drawback of reducing sensitivity. All the same, the Studio I is not insensitive against its rivals. It produces 85dB sound pressure level for one watt, which is a respectable figure.

Phase angle swung through alternate twin positive and negative peaks around drive unit and port resonance; all ported loudspeakers have a lot of reactance swings at low frequencies. Across the audio band the Studio I was less reactive than many models, especially above 3kHz where it stayed largely resistive. As a result, the Studio I is not especially difficult, in relative terms, as a load.

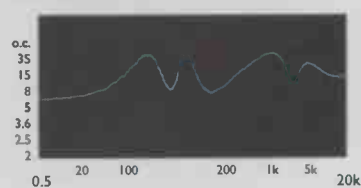
ProAc combine measurement with listening in the development of their loudspeakers. They design for fundamental accuracy. The success with which this has been achieved can be seen in the frequency response plot, which varies by only a few dB right across the audio band. Some slight overall bass emphasis, which adds some warmth, can be seen, plus a small lift in upper treble, above 10kHz. The latter keeps treble in the picture, as it were, rather than letting it become overshadowed and apparently muted by the lower frequencies. The response shown was maintained over a satisfactorily wide vertical listening range, but again the ProAc is an on-axis loudspeaker; it should fire directly at listeners. Listening above the tweeter axis will introduce phase suckouts and response lumpiness. **NK**

FREQUENCY RESPONSE



A steady rise upward in low frequency output, seen here, emphasises bass

IMPEDANCE



Very high impedance makes the ProAc an easy load

PROAC STUDIO 1 MkII £612.25

The attractive light oak, real wood veneer of this loudspeaker makes it look both modern and less sombre than the black boxes that have now become so popular. A light fabric grill of acoustically transparent Crimplene can be used to cover the drive units if desired.

Small dimensions allow the Studio I MkII to fit into the home easily, which was a prerequisite for this test. Regular readers will know that Alan Sircom uses this loudspeaker at home; it is one of our own favourites, deliberately slotted into this group as a yardstick and as an example of the sort of sound that is well regarded generally.

ProAc drive units are manufactured to their own specification. The Studio I MkII uses a soft dome tweeter, with ferrofluid cooled coil for better power handling, manufactured by SEAS of Denmark. This replaces a metal dome tweeter to give cleaner, more easily acceptable treble. Soft dome tweeters have traditionally sounded sweeter and more neutral than the current crop of metal domes which, in contrast, can usually be identified by their brightness and slightly 'scratchy' or 'tizzy' quality. The latter are arguably more 'hi-fi' sounding but have only become popular and accepted recently. ProAc understandably have reservations about metal dome tweeters.

The bass/mid-range unit has a treated fabric cone, for low colouration. The small cabinet is a bass reflex design, a loading method traditionally favoured by ProAc. This loading method usually results in deeper bass than that from sealed (infinite baffle) cabinets, at the expense of damping and bass speed. Most manufacturers prefer reflex cabinets these days. The port faces forward, sitting at the bottom of the front baffle. The cabinet itself is sturdy, and is lined with acoustic foam to absorb internal energy, preventing reflections. Connection is by a pair of heavy duty, gold plated Michell terminals on the rear panel. They accept thick cables or 4mm plugs, but biwiring is not catered for.

Because of its small size, the Studio I MkII has to be stand mounted. ProAc recommend Target stands, model HJ20/2, or similar heavy duty types. Like so many monitors, where imaging is given greater priority than convenience of room positioning, the Studio I's need to be kept away from boundaries, namely walls and floors.

SOUND QUALITY

The entire listening panel are quite conversant with the ProAc's and have a good deal of respect for them. While loudspeakers like the B&W are essentially studio designs which can be used in the home, the ProAc's have more domestic considerations in mind. They are capable of acting as a near-field monitor like the others reviewed, but their primary function is to play musically, analysis being a secondary function.

Very much a spirited performer, the Studio I Mk II's produce more bass than the more expensive loudspeakers. Some of this is sheer artifice, with the front reflex port making a claim for itself. This results in a slightly boomy character, making it difficult,



for example, to differentiate four bassoons playing in harmony. It was not impossible, however, and in fairness, very few loudspeakers can sail through this test without some degree of muddle appearing.

Imagery was reasonably precise, perhaps lacking in depth compared with the best in the group. Instruments and singers displayed adequate weight and authority. The Studio I Mk II's strongest point was their coherence and their ability to 'go with the flow' of music. As such, they scored over the more analytical loudspeakers for 'listenability'. Tonally, the ProAc's are on the warm side, taking the edge off Prince's vocal pyrotechnics for example. They also had the strange ability to make grand pianos and classical guitars sound like electric versions of the same - not in a dramatic sense, but enough to make a Steinway begin to sound like a Technics digital piano.

In many respects, the Studio I Mk II has a lot in common with the well-respected British loudspeakers of the Spendor/Rogers/Harbeth school. A very traditional U.K. sound, it trades accuracy for a pleasant and sumptuous sound that is very easy to live with. Fine detail, articulation and dynamic range are all up with the best; not in the pin-you-to-the-wall resolution of the ATCs, but in a relaxing way.

Both rock and classical were presented well. The slight tonal anomalies described above were less noticeable in Rock programme, but as they were only apparent through comparison, they should not cause offence in use. The ProAc's blemishes are outweighed by their virtues.

CONCLUSION

The Studio I Mk II loudspeakers are more balanced toward the living room than the control room. Unlike many monitor-type loudspeakers, the ProAc's are easy to listen to for long periods without fatigue. Their benign character is relaxing without being lax. For playing music without any compulsion to be minutely critical of the mix, the Studio I Mk II's are hard to beat at the price.



TANNOY 609 £249.99

The 609 is the smallest loudspeaker from Tannoy to possess their renowned Dual Concentric drive unit. In other forms, it has been a feature of their huge studio monitors for years. The advantage of the dual is one of coherence: all sounds emanate from one drive unit, not from a variety spaced out over a baffle. This becomes increasingly important the closer a listener gets to a loudspeaker, making the 609 especially suitable for domestic 'monitoring'. The treble unit fires through the centre of the bass/mid-range cone.

The dual in the 609 is an entirely new design, altogether more honed for domestic civility. Earlier versions sounded bright and quite hard in their treble quality; a new waveguide has been developed to soften this characteristic. The bass cone is now manufactured by injection moulding, rather than vacuum forming. Tannoy claim this produces more controllable and consistent properties. So the new 8in dual-concentric drive unit in the 609 is an altogether more sophisticated design than earlier types. It has been designed with domestic cost constraints and requirements in mind. All the same, duals are expensive; the 609 is the least expensive loudspeaker in the Sixes range to have this special drive unit.

Aware of current hi-fi trends, Tannoy have developed a dedicated connection panel with built-in biwiring links. These are heavy duty - and cannot be lost. The terminals accept heavy cables and 4mm plugs. Internal wiring uses high quality Van den Hul cable, soldered to terminals (i.e. hard wired). Tannoy claim a minimalist crossover is used, the idea being that simple crossovers possess fewer problems and introduce less degradation.

Like all the loudspeakers in the new Sixes range, the cabinet is a peculiar six-sided affair. It suits the groove-and-fold method of manufacture, moulded plastic end caps sealing the top and bottom. This makes for a lumpy profile, reminiscent of an Edwardian cabinet, with its top and bottom trims. The Tannoys aren't especially pretty. Spikes can be screwed into the base directly but a better option is to stand mount. The speakers can be screwed to dedicated stands Tannoy can supply, the central column of

which will accept sand or lead shot for damping and mass loading. The stand bases also accept spikes.

SOUND QUALITY

Cheap'n'cheerful - but not meaning in any way to be derogatory - would be an accurate description of these loudspeakers in our test. They are the cheapest of the group and yet compete hard; successfully. They do show up their relative low cost sonically, but it is more than a little unfair to criticise a £250 loudspeaker for not sounding as good as a £1400 one.

The Tannoys are not the most subtle of loudspeakers tested, but have a sort of 'rough-diamond' charm to them nevertheless. Imagery was surprisingly good, as long as you were off axis from the dual concentric drive unit. This means that we needed to be about a few inches above our normal seated position. The sight of otherwise almost sane reviewers, with buttocks hovering above the sofa cushions is interesting, to say the least, for onlookers.

Having performed this ritual (the nearest Eric says he ever intends to be to a press-up), the Tannoys produce a soundstage in a room that was full of action and engagement. Imagery stretched both far and wide, the speakers being very busy, both in terms of stereo imaging and detail itself. On particularly eventful tracks the busy-ness could approach clutter, instead of displaying clearly defined strands. The soundstage wasn't perfect; it did seem to lack height and some depth.

Sonically, the 609 crams a quart (if not getting on for a gallon) into a pint pot; where the loudspeaker falls down, it does so by trying too hard, simply refusing to be defeated by anything, whether it be dynamic range or complexity. Belonging more to the rock side of the musical repertoire, the 609 can sound brash and unsubtle with some music, but not coarse. Its treble bears a lot in common with the expensive ATC loudspeaker, except without the almost overwhelming detail.

It does seem to have a pleasantly extended bass. Musically, the Tannoys are reasonably coherent, not overstating the performance of one instrument in favour of another. In fact, the biggest disappointment in the repertoire of the 609's was their portrayal of female vocal. Here, distinctive voices like Joan Armatrading sounded congested, especially if seated on-axis. This effect was ameliorated by sitting above the axis, as described above, but it is still noticeable.

In rhythm, the Tannoys excel. They cope with the rhythms of rock and classical music with equal aplomb, setting feet tapping with ease and handling dynamic changes and shifts with great success.

CONCLUSION

Fast, fun and frenetic, the Tannoy 609's acquit themselves well for the money. They have a melodic, tuneful character, with a good if not absolutely accurate overall tonal balance that makes it easy to forgive their few unsubtle indiscretions. As a monitor, they would suit the home studio on a budget. For home use, however, they should prove very popular with lovers of music of drive and intensity.

MEASURED PERFORMANCE

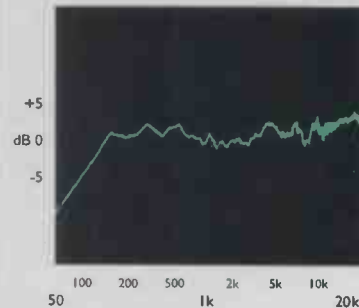
Tannoy quote a power handling figure of 200watts peak, but suggest that amplifiers of up to 120watts per channel are used (most of which will pass higher peak levels).

We noticed the imaging was best from slightly above the cabinet; Tannoy suggest likewise. Frequency response was slightly smoother from above too, unlike the vertically stacked multi-driver loudspeakers, which generally exhibit phase cancellation suckouts between their drive units from above. The Tannoy had a broader vertical listening window than the others, but was optimal from above axis both subjectively and in terms of measured frequency response. Tannoy's own stands were of the right height to take this into account.

Compared to some of the other 'monitors', albeit those which were more expensive, the 609 has a lumpy response. The main feature is a broad hump of around +3dB centred at 1.8kHz. To the ear, this adds brightness (shiny brightness rather than sharpness - if that's the best way of describing it!) It will push vocalists forward and lighten their timbre. A secondary peak at 500Hz added some 'thrum'. Subjectively, the 609 is a characterful loudspeaker, but not a grossly inaccurate one; the response trace indicates why.

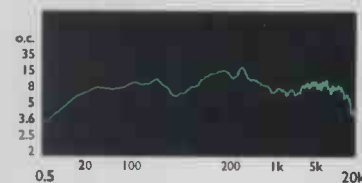
Over most of the audio band, the 609 is an easy load, having an impedance well above eight ohms. However, it slinks down to 5 ohms at 200Hz, 35Hz and below 5Hz, reaching 4.8ohms at DC. Since some high voltage swings occur at low frequencies, it will intermittently draw strong current. Amplifiers with a poorly regulated power supply might sound flat, as their output falls and they dynamically compress. However, low power amplifiers with well regulated supplies - and valve amplifiers - will benefit from the 609's unusually high sensitivity. They produce no less than 88.3dB sound pressure level for one watt of input. This means they are 5dB louder than the Epos ES1s, for example, for any given input. That is a significant amount and we did notice how easily the 609s got loud. **NK**

FREQUENCY RESPONSE



Peak at 2k adds shiny brightness

IMPEDANCE



Impedance drops to 5ohms minimum

MEASURED PERFORMANCE

The SCM20 hits a low point of 4 ohms in its impedance curve at 3kHz - its crossover point. At this frequency, energy levels in music are beginning to fall, so high continuous currents will not be drawn. Further down the audio band, the impedance stays at or above 8 ohms, so here too high currents will not be demanded. Only below 20Hz does impedance sink down below 8 ohms, reaching 6.3ohms at DC. With its high-ish nominal impedance, the SCM20 is a reasonably undemanding load.

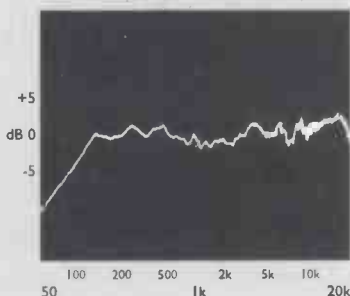
There is a large reactance swing from -65 degrees (capacitive) to +50 degrees (inductive) around bass unit resonance. However, above 200Hz the SCM20 was less reactive than most of the loudspeakers tested, suggesting it will be easier to drive and less likely to produce unwanted interactions with driving amplifiers.

Not unsurprisingly, the SCM20 has a steadily rising response above 2kHz, explaining its bright sound. The lift up was consistent over a wide vertical listening angle, best results being obtained on the bass/mid-range axis where the effect was least pronounced. Practice showed this was the best listening axis too. The drive units did not interact and phase cancel from in front, so giving a consistent response characteristic. Only from above did this start to occur, as is common, so the SCM20 is best listened to direct-on - not from above.

Although a small loudspeaker, it has not been balanced for mounting hard against a shelf or wall, but it can usefully be placed close to a rear wall for some bass enhancement, according to personal preferences.

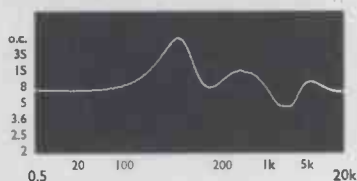
As ATC say, the SCM20 is insensitive, but at 84dB sound pressure level for one watt of input, it wasn't quite so bad as expected. **NK**

FREQUENCY RESPONSE



Rising treble, seen at right, gives a bright sound

IMPEDANCE



High overall impedance reduces current drawn

ATC SCM-20 £1388

The SCM20s have been designed to accept high power and develop very high volume levels with little distortion. ATC forthrightly state that they are insensitive and need a lot of power, one hundred watts being the minimum and two hundred watts recommended.

The company makes their own sturdy bass/mid-range unit, which is capable of operating with such continuous high inputs. A large 20lb ceramic magnet is mounted on a rigid die-cast chassis. The magnetic field it provides is well distributed such that the voice coil always stays within its influence, even with large excursions of the cone at high volumes. This keeps distortion very low, ATC claim. The cone material is a woven polyester fabric, which is doped to add suitable damping. It also creates a loudspeaker that is unbelievably heavy, given its size of 44cm high, 24cm wide and 31cm deep, weighing in at 2.5 metric tonnes per unit.

Above 2.8kHz the bass/mid-range driver crosses over to a VIFA fabric dome tweeter. ATC told us they wouldn't consider using a metal dome tweeter. The crossover uses high quality components, in the audiophile tradition. Air cored coils are used to avoid core saturation and magnetic overload at high power inputs. Linear crystal, oxygen free copper wire is used in these coils. The capacitors are high quality, metallised polypropylene types, glued to the circuit board to resist vibration at the very high volumes these loudspeakers can deliver.

ATC thought an ideal drive amplifier for the SCM20 was a Quad 606 because it has a good measured performance (even though plenty of other amplifiers measure as well) and is used with ATC's by at least one studio. The company also express reservations, in the owner's manual, about the use of valve amplifiers.

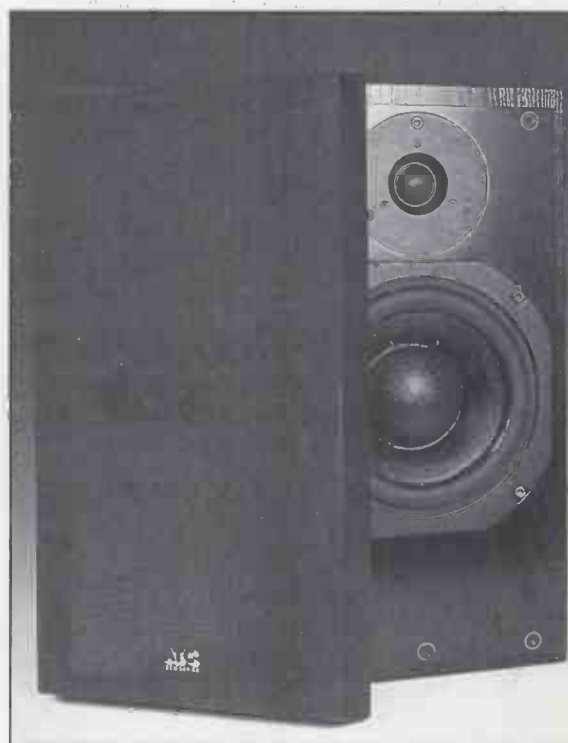
The SCM20s are small and must be stand mounted. They are also very heavy. The cabinets have 18mm thick panels veneered on both sides for rigidity. The front baffle is twice as thick. ATC insert dramatic warning notices in each carton warning owners not to lift them out, because they are so heavy. In fact, they are not so heavy as to be impossible to lift, but the SCM20s are very solidly built all the same.

SOUND QUALITY

I think that ATC could happily add the Musical Fidelity SA-470 to their list of recommended amplifiers, as the two match together well. The measured frequency response of the ATCs does them no justice; they appear to be slightly bass-light - or perhaps more accurately, bass-dry - and are tonally bright.

The corollary to this is that the ATC SCM 20 is one of the fastest and most detailed. box loudspeakers available. This may be too much for some people: its amount of insight into the recording strips the mix bare. Every edit and pan are spread before the user (as opposed to listener), making the listening process both demanding and intense.

While the bass does seem tailored, it is tight, dry and faster than almost any other loudspeaker. It is not as emphatically



pronounced as the higher frequencies, but from a timing angle it is spot-on; Pink Floyd's synthesised drum beats go beyond simply metronomic regularity, becoming hypnotic, even disturbing, showing up just what paranoia can do for a rock band.

The level of detail from the SCM20s was constantly fascinating, with listeners commenting that they had never heard the recording in such depth before. While some may suggest that this is due to our ears equating brightness with treble detail, this was not the case; we have heard bright loudspeakers in the past. None have had the authority - or the authoritarian nature - of the ATCs.

The insight noted on rock was also prominent on classical programme. Everything is delicate, but a little larger than life, rather as you would imagine an eight-foot tall ballet dancer. Imagery and tonality were both superb, creating guitar sounds that were accurate and lifelike. This was helped by a dynamic range little short of the real thing. No hi-fi system, however good, can approach the dynamic of a live instrument. The ATCs get nearer than most, when partnered with an amplifier of a suitable quality.

Apart from the unrelenting quality of the ATCs and their reluctance to offer up floor-rattling bass energy, there was little that the SCM 20s didn't do well. We all agreed that their character could be too intense for domestic listening, due to the treble. Their sheer detail made listening uncomfortable: they demanded - but rewarded - concentration in listening

CONCLUSION

For setting up a studio, the ATC SCM 20's would be first choice. The amount of useful detail for editing and mix-down would make them almost *de rigueur* in the studio environment. In a domestic system, however, the same merciless character and downright ruthlessness might be difficult to live with. A superb loudspeaker with the finest recordings - if only all recordings could live up to their standards.



We are proud to announce the launch of the first UK-made Audio Note amplifier, the OTO.

This little amplifier takes the concept of the integrated amplifier to its logical conclusion, as it is in fact a preamplifier and a power amplifier in one box, with completely separate power supplies for each section and valve regulation for the pre-amplifier. All stages of the OTO incorporate the very latest circuit technology available to us (Mr. Kondo from Audio Note Co., Japan, who

nects and from £ 6.99 to £ 350.00 per meter for the speaker cables. All Audio Note cables use the highest purity conductors in either copper or silver, and the attention to detail and quality of the manufacturing processes, such as all litz construction, is second to none and ensure that your investment remains valid for many years to come.

If your budget stretches a bit further perhaps you could be tempted by an Audio Note M7Tube pre-amplifier NEIRO power amplifier combination, which at £ 5,750.00 for the M7Tube and the £ 6,950.00 for the NEIRO pro-

AUDIONOTE REAL AUDIO PRODUCTS

designed the much vaunted ON-GA-KU, provided much useful knowhow in this respect) and as such represents the very best sounding amplifier available. The pre-amplifier is fully SRPP with no feedback and the power amplifier is 12 watts Class A with only 12db of feedback. The OTO costs £ 1,250.00 and is available with optional remote control for volume and on/off for an additional £ 350.00. The OTO represents ultimate longterm value to anybody wishing this level of performance.

To fully appreciate the sonic achievement that the OTO integrated amplifier represents you will need a pair of Audio Note loudspeakers. The AN-K, AN-J and forthcoming AN-E models are highly efficient, high resolution designs based on improved versions of known and accepted technology. All models are available in copper or silver wired versions and are unparalleled in their ability to portray instruments and performers breathing in free space. As the OTO amplifier the Audio Note speakers represent a longterm sonic investment that will continue to improve as the rest of your system improves. AN-K/B £ 499.00/pair, AN-K/SP £ 699.00 a pair, AN-J/B £ 799.00/pair, AN-J/SP £ 999.00/pair, AN-E/B £ 1,299.00 and AN-E/SP £ 1,599.00.

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nects and built by Audio Notes Mr. Kondo personally. Both are typical of the care, attention to detail and sonic excellence that embodies all Mr. Kondos work.

The M7Tube is a full facility pre-amplifier with phono stage and full line stage, which makes it an excellent partner with a number of power amplifiers, valve or transistor.

The NEIRO is a directly heated triode, stereo power amplifier with an output of 8 watts into 8 Ohms, running in a parallel single-ended configuration, with no feedback whatsoever applied to the signal, it uses a valve rectified! choke power supply and like the M7Tube is built in a non-magnetic copper chassis.

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Peter Qvortrup

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CONCLUSION

In ascending order of price, the first under scrutiny must be the Tannoy 609's. These are superb for those who like a powerful sound, full of dynamic range and impressiveness, but they are slightly lacking in the subtlety stakes. At their price, they make some of their immediate competition hide behind the sofa, scared to tackle such a big sound. Imagery, as expected from a dual concentric, is very good, as long as you sit slightly higher than normal.

For monitoring, the 609s do not fare too badly. The semi-professional, who wants a loudspeaker to mix-down their recordings as well as play music in the home, without it costing the earth, may find their drive and imagery beguiling. Both accuracy and portrayal of detail are not up to the standard required of a true monitor, however. Tannoy produce a range of studio monitors that meet this ideal, but they sound too intense for domestic use - and they are a trifle expensive.

The Epos ES11 does not really fit into true 'monitor' territory either. Both efficiency and power handling are too modest for the sort of high powered, critical listening that near-field monitoring needs. Nonetheless, they have all the strengths that a superb hi-fi loudspeaker can have. They are satin smooth, rich, warm, coherent and easy on the ears.

While in ultimate terms, the ES11s do have flaws, they are not especially noticeable; the loudspeaker has been engineered to sound as refined as possible. In the nine months since we tested the ES11, it has proved to be a popular loudspeaker with both reviewers and the buying public alike. Refinement obviously counts for a lot with the hi-fi fraternity.

DRIVING

Linn's Nexus would also not be high on a studio engineer's list of monitor loudspeakers. Its presentation is idiosyncratic; what it does well, it does better than almost any other loudspeaker in the test. It does not quite do all things equally well, however. Given a driving rock piece, the Linns excel. The bass line is well defined, with the drum beat and the rhythm taking control. With a more complex interplay of melodies, however, the Nexus starts to run into problems, trying to play a dominant beat when none exists.

As such, it falls into safe Linn territory; the Nexus delivers a punchy and immediately engaging sound much beloved by Linnies. It showed its strengths in this area clearly within our system, which was comparatively neutral. In a Linn system the Nexus sounds even faster. It is very distinctive and will attract Rock enthusiasts in particular.

ProAc's Studio I Mk II loudspeaker is one of the first models in the test to approach 'monitor' status in terms of sound quality. ProAc themselves have suggested that the loudspeaker is doing well in the near-field monitor market. The Studio I has a 'musical nature', rather than any supreme analytical qualities. It combines accuracy with a relaxed air that cossets listeners, rather than assaulting them.

In many respects, the ProAc's had much in common with the Epos loudspeakers. Both are smooth and coherent, dynamic and possessed of superb bass. The ProAc, like the Epos before it, does not have the 'stripped to the bone' detail of mix-down monitors, but instead has a quality that enables people to sit in front of the loudspeaker for hours on end. This makes the Studio I a superb choice for the music loving hi-fi enthusiast, but slightly less of a recommendation for the busy producer.

The B&W Matrix 805 is a true monitor design, developed as the smallest of their 800 range which culminates in the massive 801 loudspeakers, used by such studios as Abbey Road. Similarly, the 805 was commissioned as a near field monitor for Abbey Road, so here is a true monitor. Many people will have noticed "Mastered using B&W loudspeakers" in the small print at the back of many a CD booklet. The B&Ws live up to their heritage well. They have all the characteristics that befit a monitor loudspeaker, yet are still capable of being listened to in the domestic environment without tiring the listener rapidly.

For a loudspeaker of their size, the B&Ws go deep - and stay dynamic along with it. Imagery is excellent, although only within self-defined boundaries. Bass lines can be followed with ease, yet they do not dominate the overall pattern. The 805s allow the listener to delve into the mix and focus upon one area with ease, without distractingly breaking the music down into its constituent components. By getting close to - or even hitting - the goal of perfect accuracy (i.e. a ruler flat frequency response), coupled with high power handling and sound pressure levels, they meet the needs of professionals and demanding enthusiasts as well.

FOLLOWERS

Finally, we come to the ATC SCM 20. Again, a true monitor loudspeaker, with ardent followers in the recording world, from Castle Studios in Scotland to the San Francisco Symphony Orchestra. Oddly, that was not the intention of the designer, who wanted simply to hear more from his recordings at home. These caused the hottest debate of all loudspeakers in the group. Opinions were divided as to the ATC's worth. Noel aside, who found them unpleasant to listen to, the listening panel felt that they had insight and detail that is rare from a loudspeaker.

While they were perceivable as bass-light, bass information was tight and well controlled. The SCM 20 also seemed to delve deep, but not shout about it too much. Their highly analytical nature would deter many users, although for true monitoring they were, arguably, the finest of the bunch.

The ATC appears, to the hi-fi enthusiast at least, to be too bright and could be classed as lacking in coherence. This brightness, which reinforces treble information, combined with that so-called lack of coherence, are exactly the attributes required of a successful studio monitor; the brightness for hearing the edit points and the deliberate lack of tailored homogeneity to allow individual instruments to be followed without being overpowered by the tune. In some respects this is a by-product of the long-standing 'accuracy against musicality' argument - whose validity is so successfully

questioned by the B&W 805.

We found a lot of merit in all six pairs of loudspeakers in this report. Not one came in for serious criticism or total rejection by any of us, even though we have varying tastes in music, and differing expectations and requirements. However, when posed the question: which one would you choose, differences did emerge. Here are our individual choices - and why we made them.

ALAN SIRCOM

Of the loudspeakers in the test, for me the closest balance of vices and virtues came with the little B&W Matrix 805. It has an even tonal balance, together with a dynamic range, bass weight and speed that are exemplary for such a small box.

All of the other loudspeakers in our group of six have outstanding points. The ProAc's, which I have used over the past few months, are particular favourites of mine, only just being beaten by the sheer neutrality of the B&Ws. It is extremely difficult to pick an outright winner. At the one extreme you have loudspeakers such as the ProAc's and Epos' that play superb music, without the frank insight into the recording expected of a monitor, while at the other lies the ATC SCM 20, that strips the music apart, leaving the edits and mixes dissected like a laboratory experiment.

The B&Ws, however, offered the finest compromise. They had the ability to resolve extremely fine monitoring details from the recording, but rarely at the expense of the music itself. This equates to the amount of time I could listen to music; the B&Ws would make me hungry for more ●

NOEL KEYWOOD

Although in this group I have to rate the ATCs last, because of the discomfort they caused me, I can acknowledge that they are extremely revealing. As Alan and Eric observe, they expose a production, casting a spotlight on echoes, reverb, dubbing-in and other studio techniques. They also have great neutrality of tonal colour (but not tonal balance), due mainly to lack of colouration and overhang. But I draw the line at any loudspeaker that makes listening to music an effort rather than an enjoyment; such was their sin. The problem is that they are over-bright, hard in the treble and, at times, astringent. I could tolerate absolutely no more than 107dB SPL peak, my preference settling at a modest 103dB SPL - well below more friendly sounding loudspeakers.

For the Tannoy 609s I have a lot of regard. They were the least expensive, but a lot of fun. The dual concentric drive units do give a cohesive sound, one I appreciated. The 609s convey dynamic contrasts with little effort; they are big and lusty sounding, with plenty of well



The Heybrook Sextet



"I found the Sextet visually attractive; it is interestingly different, whilst at the same time remaining traditional and tasteful."

"The Sextets strode along with superb pace and control. They fully conveyed the intent and involvement of that bass line - and I loved them for it."

"They have the firmest bass I have heard for a long time"

"There are no 'ifs', 'ands' or 'buts' about this: the Heybrooks image spectacularly well and the information they project forward is of superb high quality"

"I was captivated by the Sextets, which preserved all the excitement in music and presented it with great forthrightness."

Noel Keywood,
Hi-Fi World, October 1991

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formed bass. My reservations lie in vague imagery (even with bum in the air), slight quackiness on voice and a small amount of box boom. I was happy to listen loud (110dB SPL on peaks) because they don't offend. For the price, they're great value.

The Linn Nexus offers plenty of action, accentuated by large but soft bass with boom and overhang, and accentuated treble. I heard some considerable box resonances also, that coloured both plucked bass and vocals. Stereo imagery was vague. All the same, the Nexus offers a big sound with all musical components essentially in place. It is well suited to driving Rock. Maximum volume for me was 106dB SPL on peaks.

About the ProAc Studio 1 MkII I was almost enthusiastic - but not quite. The final judgement has to be favourable, if with some qualifications. Basically, full-some in the bass and lower mid-band, without sounding boomy or overblown, this loudspeaker offers a smooth, uncoloured sound. I heard some treble confusion and felt more analysis and sharper imaging would not go amiss. Otherwise, the Studio 1 MkII comes across as generally smooth and civilised.

I was enthusiastic about the B&W 805 and Epos ESI I however. The 805 deserves only praise, it is so obviously correct, yet at the same time dynamic

and thoroughly enjoyable. It has no unpleasant traits at all. Great strengths are superb insight, excellent imaging, easy dynamics delivered without strain, good, deep bass and a generally powerful sound. Its character is one of warmth and fullness; it lacks the dry and accurate tonal neutrality of the ATC. Enjoying myself, I had volume cranked up to 111dB SPL on peaks at times, but mostly it hovered around 106dB. This is a thoroughly excellent loudspeaker; that it's a miniature is even more astonishing.

Looking for flaws, I put the Epos ESI I's on after the critical and mighty impressive 805s. It was revealing; I realised I like the ESI I's for their Quad-like smoothness and sense of total integration. They are supremely cohesive and image with ethereal purity. They are less insightful and revealing than the 805s, seeming a bit fluffy and veiled sounding in contrast. However, as others have remarked, the ESI I's always sound a bit ordinary initially, but after short exposure they draw you in. Many times I have gone back and thought "Why do I like these?" And every time I find myself, in the end, sitting back forgetting about the loudspeakers and loving the music. Like the Quads, they always sound gorgeous, even if they're not perfect. At the price, the Epos ESI I's are a little wonder ●

ERIC BRAITHWAITE

I use ESL 63s. So which of this month's monitors would I take home? No, not the sweet ProAcs, nor the mellifluous and elegant Epos ESI I's, but the fearsomely imposing ATC SCM20s.

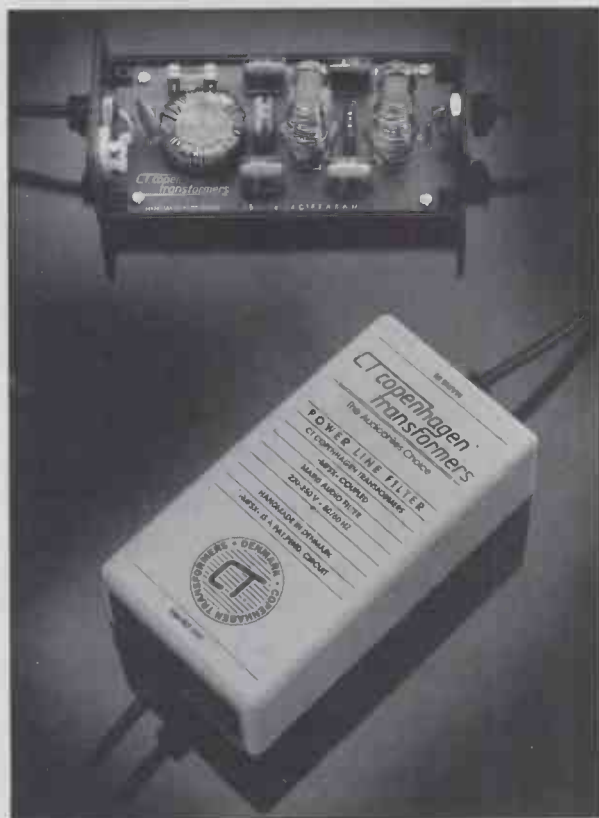
A bit of a leap, surely? Only, from a purely personal point of view, backwards in time. In the dim and distant past I might have been seen dangling from theatrical lighting gantries angling - and adding - speakers until the director felt that a sound effect was loud enough to blow his socks off. Ever since, I have had an atavistic desire to listen to a serious dynamic range, but LOUD. The trouble is, and it is the reason I have Quads, I also want detail, tonal realism and above all the ability to spot when a singer moves a few inches away from a microphone as well.

For the first time, I discovered that degree of ruthless attention to detail in a box speaker in the SCM20s, together with a corresponding ability to take me back to the days when a cannon shot had to sound realistic enough to terrorise Row N into thinking the theatre was collapsing under bombardment. Combining that ability with decent musical tonality is a bonus.

The unrelenting grip the ATCs exert on the concentration can be quite tiring if you do not have the taste for it. They also expose engineer's sillinesses and musicians' wrong notes.

The SCM20s would be my choice. For peace of mind and good relations with neighbours, plus the occasional indulgence over *diner a deux* with red wine and rosy lighting, with all the benefits incisiveness and clarity of sound can bestow, I'd install the B&W 805's, Epos ESI I's or the ProAc Studio 1's for the duration. Cannons can be bad for your health ●

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The Arcam Delta 80 tuner at £339.90 is a three-waveband analogue tuner, albeit with a digital fluorescent display. In true-Brit minimalist style - with the accent on minimalism - just six mechanical presets are provided for FM stations and a further six for Long or Medium Wave bands. These days, more than six stations should be available on each waveband to most listeners. However, there's a difference between what's available and what is desirable. Where desire is the lesser of availability, the Arcam could suit.

Once tuned via twelve small thumbwheels at the rear, the preset stations can be selected by using one of the six slim, vertically placed oblong switches on the front panel. Not for Arcam a proliferation of tiny buttons. These switches operate in conjunction with the Waveband selector, so Radio 4 on VHF would be called up by preset No 1, say, along with the FM switch; Radio 4 Long Wave by selecting the same preset and 'LW'.

User-convenience is applied in a neat tuning indicator. Perfectly logically, it follows a traffic light sequence: red when off-tune, orange when close, and green when the station is tuned in. This really is all anyone needs. A Rorschach-test array of bar-graphs and weird and wonderful symbols I sometimes think only serves to attract square-eyed television viewers who can't get the hang of listening without something busily visual in front of them to keep their eyes occupied.

Signal strength is indicated by a row of five LED's, two amber and three green. Effectively, when the green shows, signal strength should be up to scratch on both AM and FM, though the manual suggests that the two amber LED's alone should signify acceptable mono FM quality - provided the Mono button is pressed in, of course.

Opening up the box suggests that Arcam may well be taking AM seriously; they provide one of the most solid loop-aerials I've seen for some time, though a curious quirk necessitates another warning note in the manual. The AM aerial input at the back of the Delta 80 is not the usual pair of nasty cheap spring clips or tiny little knurled knobs; it's two phono sockets. These are next to the audio output, which of course is also a pair of phono sockets.

News Time

I hit on News-time in the first listening session, but no matter - the quality of news-readers' and announcers' voices is often a good initial guide to sound quality. It is here that artificial brightness and spittiness shows immediately. There was none. The controlled quick intakes of breath of one newsreader gave the impression his desk and microphone were in the same room. Clear and distinct in the background of a telephone report was the buzz of a crowd of people: one could understand immediately why the occasional question had to be repeated.

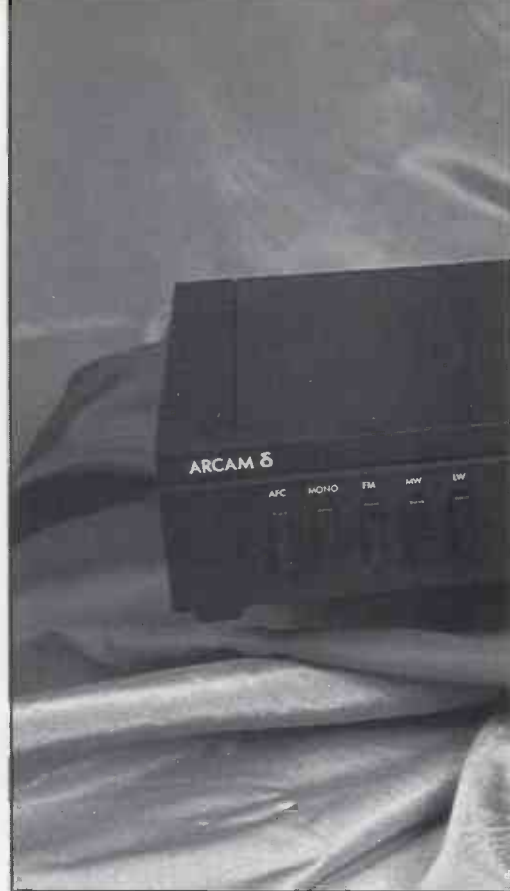
More startling even than this in its impressive accuracy was a report on Radio 2 from a car about to drive over the then virgin Dartford bridge on the Thames (now officially named the QE2 bridge). As the car

door slammed it felt as though you were being invited to jump into the back seat, and the impression was so realistic it felt as though the reporter was talking over his shoulder.

Music displayed clean-window clarity. A studio performance of Ries' Cello Sonata on R3 had an excellent, weighty piano, if a somewhat dry cello tone. Briefly tuning to Jazz FM, I had a momentary doubt also about a light-toned double bass in a Count Basie piece, but I suspected the recording. This was confirmed later when it was possible to 'hear into' a Big Band and I noted a clearly defined and placed drumkit and believable double bass, albeit a touch on the soft side.

Rock music, of course, proved tricky: a brief spell with compression on Kiss FM had me running for cover, but The Average White Band on R2 sounded just like my recording at home, allowing for the diminution of upper harmonics inevitable with the 15kHz roll-off of FM. A further spell with other rock stations produced some serious-sounding bass, sparkling rhythm, and performers out in the room with you. It allowed the speakers to be forgotten in the excitement.

The Delta 80's FM section has very obvious strengths. It will let through a



analogue 80

Arcam's analogue Delta 80 tuner stands apart from the digital crowd, Eric Braithwaite discovers.

detailed recording of any music, provided it's coming out of the transmitter with such a degree of realism and accurate tonal quality the studio walls practically disappear.

A good, uncompressed rock recording will come over with driving rhythm and timing unaffected by its passage through the ether - and with little in the way of artificial enhancement. There is enough, though, to allow listening to heavy compression with a wince rather than a scowl, though not enough to turn a gooey piece of sentimental slush I caught on Melody FM into anything I could describe as other than downright maudlin.

There is a snag, however. The Delta 80 is not one of the most sensitive tuners on the market: only the strongest transmissions come over clearly. I was surprised that some of the Local Radio stations in the South-East which my own Quad FM4 - and our reference Hitachi and Troughline collect cleanly in stereo - could only be caught with a considerable background hiss and had to be Mono'd. While this avoids becoming too distracted by 'shadows' and nearby interfering transmissions, a good roof aerial is *de rigueur* with this tuner - and even then more distant stations will stay stubbornly out of reach. No eavesdropping on France Musique with the Delta 80; it is for strong nearby transmitters.

The more substantial AM loop aerial I

found in the Arcam's box had me wondering if I might at last discover a tuner with a credible sound for Medium and Long Wave stations. At first, scanning the waves, I was disappointed: the two bands seemed a bit short of transmissions. I paused, however, for a piano recital on R3 MW, and was pleasantly surprised by a realistic tonal balance, all sweet mid-range because of the reduced bandwidth, but believable. This is certainly rare, I thought, these days, and trawled about further; pleasantly surprised to hear no 'birdies' or other intrusive whistles and warbles which so often afflict AM tuners.

Music was acceptable, with excellent overall tonal quality given the inevitable bandwidth restriction, but on news programmes voices were clear and distinct, with the surroundings clear as a bell. A fairly strong transmission is required though, to avoid hissing and buzzing on AM reception when using the loop aerial. I have heard better: silkily quiet reception from a now obsolete Yamaha TL-400, which had one of the best AM front ends ever for its price.

To take full advantage of the carry-over of the Delta's sweet, clear FM sound quality to AM, it might be worthwhile going to the effort of extending the lead or using a longer wire - which, of course will need one end soldered to the central pin of a phono plug. The Delta 80 is the first tuner so far I felt



worth the trouble. I would even be tempted to put up a proper AM aerial, with insulators, on the roof for it!

The Arcam Delta 80 is not one of the cheapest FM/AM tuners around, nor is it exactly flush with facilities and visual aids. The two-colour signal strength meter was useful and told no lies, and the three-colour tuning LED proved extremely simple to follow to settle on a distortion and interference-free transmission.

This tuner really is one of the best of British analogue in sound terms. It has an ability to combine realism with enticing sweetness, without subjugating power and drive when it is needed. Nor does it artificially enhance the presentation. It doesn't have the extra degree of ruthlessness and analytical quality of the Quad FM4 at a slightly higher price, but the listener then has to pick his broadcasts carefully.

Speaking to a reader the other day, who was bemoaning the fact that his Naim was so ruthless that it made listening to less-than-perfect studio quality transmissions painful, the Delta 80 is a tuner for him and people like him. It is also for anyone in the market for an honest and pleasant sound on all three wavebands. But it must have two very good aerials as a present. It deserves it - it also needs it! ●

Measured Performance

I had some difficulties trying to assess the true sensitivity of this tuner. The aerial input area was sensitive to external influence: putting a hand on the case apparently increased sensitivity, as did gripping the signal leads. It may have been due to signal injection by the body, which can act as an aerial, or due to some other peculiar phenomenon. It isn't an effect that is unusual, but it does suggest a screening or earthing problem. In use, even before measurement identified low sensitivity, it became obvious in use. Even under the best circumstances, the Delta 80 proved relatively insensitive; it is not suited to long distance work.

Arcam do, however, appreciate their subject and I imagine they are not too worried about this aspect of behaviour. The main task of a hi-fi tuner is to provide high quality sound reproduction. To do this, a strong signal is a prerequisite, no matter how sensitive the tuner, in order to drive the circuits into full quieting. Just about every tuner available needs around 1mV to achieve this, the Delta 80 included I found. This means that for hi-fi usage, it is little different to most other tuners. It is only as a radio intended for long distance work that the Delta 80 is less attractive.

Selectivity was good-ish. It measured 74dB in one direction (-400kHz) and 60dB in the other (+400kHz), giving an average figure of 67dB. This is satisfactory for a radio band where station spacings are good. That used to be the case in the UK, but since deregulation matters are getting increasingly chaotic - at least where we are in Central London. It seems every man and his dog wants to run a fast rappin' radio station around here. For such pirates, I wouldn't recommend a tuner like this one.

The AFC causes the tuner to jump from a weak station to a powerful one close by when the difference between them is around 75dB. This can be avoided by switching AFC out, but the tuner may need occasional fine tuning.

Low-ish selectivity brings with it the benefits of good channel separation and low distortion, especially at high volume levels (full deviation, in

FM radio parlance). The Delta 80 potentially has both. However, being an analogue tuner with AFC (automatic frequency control), distortion varies with tune accuracy, even with AFC engaged. Whilst I could get the tuner to register 0.1% or less, it tended to settle at around 0.4% of second harmonic distortion, seen in the analysis. This doesn't affect sound quality, since second harmonic lightens timbre, but only when it exists in large quantities.

Stereo channel separation was extremely good, even at high frequencies. This is a consequence of the wide IF bandwidth too. In truth, only a figure of -20dB or better seems necessary, at least in terms of perceived stage width. With tuners however, since the crosstalk signal is often distorted, low crosstalk means less distortion too.

Frequency response measured flat up to 14kHz; the analysis shows this. Filtering of the pilot tone at 19kHz was effective. There was some sub-carrier at 38kHz, but level was low enough at -53dB for it not to be a problem.

I was a bit disappointed by the mediocre noise figure of -70dB. There are occasional moments on Radio 3 when hiss at this level can be heard. Highly critical listeners expecting perfection are duly warned. Most wouldn't worry about this if they heard it (a faint hiss). There are

so few gaps in radio broadcasts (as a matter of policy) that it is not something that is easily detected in any case.

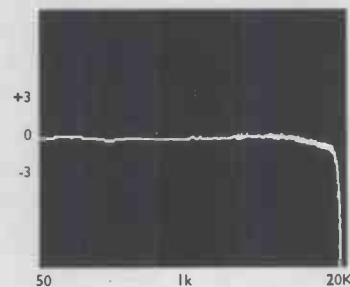
The signal strength meter usefully indicates right up to 1.6mV, the point at which optimum sound quality is being obtained. The second segment down lights at what is effectively the minimum acceptable signal for true hi-fi: 0.5mV. The Delta 80 does accurately show whether the aerial is supplying enough signal. This is a valuable feature.

Generally, the Delta 80 measures well, but it is meant for use with a good aerial that can supply a strong signal, since the accent is upon sound quality rather than station pulling ability.

Test Results

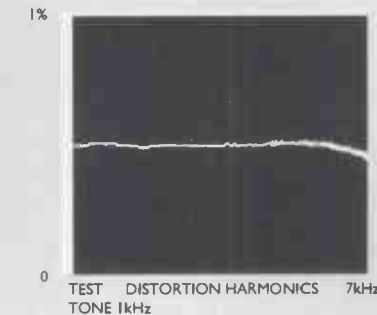
Frequency response (-1dB)	4Hz-14kHz
Stereo separation	-43dB
Distortion (50% mod.)	0.4%
Hiss (CCIR)	-70dB
Signal for minimum hiss	1.2mV
Sensitivity	
mono	8µV
stereo	60µV
Selectivity	
alternate channel	67dB
Signal strength meter	
6µV, 30µV, 50µV, 500µV, 1.6mV	

Frequency Response



Flat frequency response

Distortion



Some second harmonic distortion (0.4%)

cassette cut down

**A stripped down Cassette
Deck 1, the new Nakamichi
I.5 takes away the frills but
not the thrills, Eric
Braithwaite discovers.**

The good, someone said, is the enemy of the best. As far as cassette decks go, this must be a slogan now prominent on the walls of the Nakamichi factory. Unrivalled as makers in Japan for some twenty years, they are at last feeling the chill wind of expert competition from first, this year, Technics, now from Aiwa and JVC whose three-head decks are not just good; they are very, very good.

They are also much cheaper. Hence the new insertion of the £499.95 Nakamichi I.5 into the logical progression of Cassette Deck 1 (£699.95) and Cassette Deck 2 (£349.95). Looks as though there might just be room for a 2.5, doesn't it; or maybe next is a 1.75?

The sheer weight and extra depth of the I.5 suggest there is no car-like built-in obsolescence here. It is Nakamichi's engineering and unrivalled Quad-like servicing - which means there's hardly a Nak around that can't be repaired and brought up to spec. - that has persuaded people to part with the additional premium.

For the money there are independent Record and Replay heads of minuscule Swiss-watch dimensions that always gain admiring looks of the "How do they do it?" kind, a dual-capstan transport that takes up the tape slack at the start of play and dual-mono record and playback amplifiers.

Stylistically, the I.5 matches its predecessors, with a slightly orotund

upper half with curvy and chunky Power and Eject buttons to the left of the seriously heavy and solid removable door, and dual action rocker-switches for the transport functions at the far right past the green fluorescent display. The far corner is taken up by a moulding which matches the power switch at the opposite end, but doesn't function, though I found myself pushing it hopefully every now and then. Behind a lid under the display - not motorised, thank Heaven, I've had too many of those glue up on me - are the Master record level knob, Channel Balance knob, Dolby B and C buttons, variable bias and timer switches - and manual tape selector buttons. Not including automatic tape selection is going to produce some flak, but I don't mind: at least one button for each tape type is better than having to handle a separate EQ selector as well. Even I make mistakes with two to choose from sometimes.

A word of praise here for Nakamichi's revised control layout in the new series. There has nearly always been the odd ergonomic disaster on previous models: on the BX2, for instance, it tended to take a couple of weeks to learn not to turn the power off instead of opening the cassette door because the push-buttons were adjacent. On the BX300, it was easy to confuse the Dolby with the Tape Monitoring. The new breed is much more clear and logical in layout, and presents a clean uncluttered matt-black fascia to the world. If there is a quibble, it's that the new curvilinear style doesn't allow the big viewing window of the older Naks, but you do have a green light in the cassette compartment now.

Listening

The Nakamichi reputation proved evident from the first pre-recorded tape into the cassette compartment. The string sections of Vaughan Williams' Norfolk Rhapsody floated into the room with an atmospheric accompaniment of almost visible mist and a clearly defined studio space. Both female soloists in Pergolesi's Stabat Mater were clearly not just voices but a soprano and a contralto with an embodied presence, the organ continuo discreet and delicate behind them. The performance had such an obvious overall architecture, like a cathedral of sound, that it became increasingly difficult to believe one was listening to a much-maligned cassette. Ashkenazy's Chopin Impromptus had such a tangible piano it was almost impossible not to shut one's eyes and believe one was anywhere but a concert hall.

A full - very full! - orchestra as exemplified in 'Pictures at an Exhibition' delineated every dying echo of

every instrument in an empty recording hall; with a near-perfect representation of all the tonal qualities and textures of the orchestra. "Almost", because here it became evident that there was a replay response that was not absolutely flat: the lower notes of woodwind and strings appeared to have a slightly thicker texture than they should, while violins were a little brighter. On reflection, I recalled that the string sections in the Norfolk Rhapsody appeared slightly more forward than they should. While not affecting the overall apparent truthfulness of the balance this added a degree of increased perspective to the depth of the recording.

Perspective was hardly in short supply in Hugh Masekela's 'Politician' from *Waiting for the Rain*. Here the main vocalist was precisely placed in the band, the three-voice backing group's words clear and obviously miked away from the band. Each instrument was balanced in volume against the others exactly as the engineer must have intended. It was about as near a recording could be to the real thing as it is possible to get, with images of the players so rock-

‘The performance had such an obvious overall architecture, like a cathedral of sound, that it became increasingly difficult to believe one was listening to a much-maligned cassette

solid you could almost reach out and expect one to flinch. There is some low bass enhancement, but this seemed only to add to the rhythmic drive and forcefulness.

Recording

A whole range of orchestral, instrumental and vocal works of every genre were laid down on tape to follow. The mechanics again will not damage Nakamichi's reputation for build quality: the controls latched smoothly, the most audible sound from inside the cassette compartment was the whirr of the hubs. A neat touch is that if Record is held down,



or pressed again while recording, input mutes for as long as it is held. This is simple, elegant, and effective.

All the strengths on replay were evident in the sheer strength and dynamic range of recordings made of orchestral and instrumental works. Copying real textures and the surrounding ambience of the original, the 1.5 simply gave nothing away to the source at all, especially in terms of tonal credibility and stage depth and width. There is a question mark, however over the tapes to use; our usual TDK range (AR, SA and MA) proved hard to trim perfectly flat with the variable bias control. MA-XG particularly (and MA and SA to a less obvious degree) had a thickened, though rich bass quality, with a mid-range sound I can only describe as a soft weave; 'woolly' would be quite wrong, for it obscured none of the tonal and timbral qualities of voices or instruments.

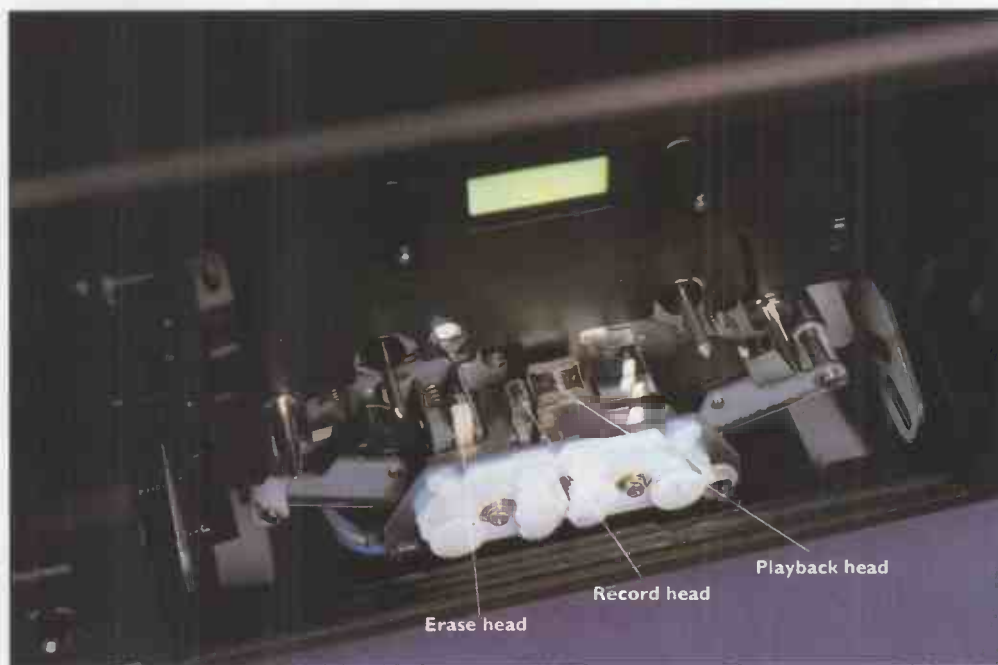
By far the best, as far as tape-tuning went, was That's MR-X Pro, which proved clean, subtle and delightful, subduing the softening tendency evident with TDK. To a certain extent, this is nit-picking, because this Nakamichi can reveal such a degree of depth, image and precision of timing on Ferric and Chrome as well as Metal, that the overall effect submerged any doubts. Stability on piano notes was undoubted, as was the almost holographic intensity of every performance.

The quality of the heads tells, as we nearly always end up saying. Record up to the end of the horizontal display, and the treble becomes harsh, and the previous inner clarity becomes muddled, but the music as a whole refuses to disintegrate. Recording is equally good both without Dolby and with Dolby B; while Dolby C reduces hiss to infinitesimal levels, it noticeably dulls the edges of notes, particularly on piano where the effect is as though there is more felt on the dampers. It's subtle, and it's a mark of the quality of the

heads that it is noticeable.

The Nakamichi 1.5 is hardly an inexpensive machine; it's not even as flat in terms of frequency response as the JVC TD-V541 we reviewed last month and which went away with our plaudits. The noticeable leap in the lower bass might preclude its use in already bass-heavy systems. But - and this makes the Nakamichi name what it is - it has no rivals in its ability to recreate a realistic and tangible performance. Except for one or two more expensive current - and one or two of the older - Nakamichis. ▶

The heart of an expensive Nakamichi - a complex head platform with its adjusters and discrete heads, as shown below.



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READING WHAT THE CRITICS SAY, YOU'D THINK THAT REVIEWING MUSICAL FIDELITY IS A LABOUR OF LOVE.

Our hi-fi is well known for its ability to arouse passionate emotions.

"By the time the cadenza had been reached, I was a mass of goose bumps," sighed one reviewer, describing how hearing Mozart's Sinfonia Concertante on the new A120 from Musical Fidelity integrated amplifier enhanced his perception of this favourite work.

His emotional experience took place during the Andante movement, which is the spiritual core of the music.

"It's a 27 year old recording and whilst it makes no great sonic demands on the system, it's easily destroyed by ham-fisted processing. In the case of the A120, the concentration and the magic were all there..." he reports with pleasure in High Fidelity magazine.

He's not the only one who finds Musical Fidelity highly involving.

"Personally, I've always been a fan of the A1", confesses another critic in High Fidelity. "Now Musical Fidelity has seen fit to introduce a MkII version... First impressions were of a slightly leaner, tidier bass, no loss of midrange warmth or clarity and that distinctively crisp yet slightly understated top."

Getting to know the new A200 integrated amp, High Fidelity's reviewer was delighted to find that "it allows intimate

contact with all the emotional power of the music... its overall control, fine pitch definition, dynamics, delicate handling of other low level information all placed it highly in my estimation."

And there is a writer for HI-FI News & Record Review who waxes positively lyrical about the new B1 Integrated amp, saying "The comparison between the old and the new B1 is easily told by reference to the chalk and cheese simile, with the old B1 taking on the role of chalk..."

In his view, however, "The more important comparison is to the Pioneer A-400, an amplifier which in the last year or so has helped in a thirty-somethingish reevaluation of what it is to be a budget amplifier in the early '90s... Now the list includes the Musical Fidelity B1.

"Right from the beginning I felt that the new whiter-washing B1 was doing things that the Pioneer was only hinting at... It was the B1 that at certain moments... induced an effect akin to drawing a finger slowly down the spine", he concludes with unblushing frankness.

In the same issue he was moved to describe the character of our new compact disc player thusly: "I found the CD1 silver-tongued and expressive: It offered good treble resolution and was fundamentally musical and involving."

While in CD Review, another critic was smitten by the charms of our P180 power amplifier, confiding "My impressions are of an amp that definitely has personality... a sort of transparent musical signature: namely a combination of strength, control and easy flowing momentum. The P180 has power and current aplenty and will capably handle any speakers thought 'difficult.'"

Then there is the writer for HI-FI World who had a brief encounter with the P180 married to its outboard Choke Regulated Power Supply (CRPS) and was excited to discover that the upgrade makes the amp "sound more controlled and refined... Improved the imagery and added a spaciousness to the sound, while improving upon the sense of tightness in performance."

He was frankly poetic about the remarkable sound quality of the P180 with CRPS, going into rhapsodies over its "Passion, Grace and Fire."

Perhaps reading these comments has aroused within you a strong desire to experience these pleasures for yourself.

Don't let unsatisfied longing torment you, instead pay a visit to your hi-fi dealer and listen to the latest products from Musical Fidelity. You'll soon begin to understand why *hearing is believing*.

MUSICAL FIDELITY

Measured Performance

Nakamichi retain their unique independent heads, which have traditionally been able to get higher recording levels onto tape than any other. In particular, they produce about three times less bass distortion than siamesed equivalents. I suspect, however, that these heads and the superb head platform Nakamichi use, seen in our close-up shot, cost them dear. The assembly is a wonderful piece of engineering, but the array of white nylon, sprocketed adjusters is a luxury of detailing that contributes to the high price of these decks. The sprockets offer precise adjustment of record and playback head position, something that is critical with cassette. This assembly also contains Nakamichi's pressure-pad lifter. It moves the sprung felt pad in a cassette, designed to keep the tape in contact with the head, upward. Moving it up out of the way is said to lower modulation noise. Our modulation noise test confirmed its effectiveness, returning an unusually low figure of -44dB. Reducing modulation noise improves clarity and lessens that slight paperiness that characterises the sound of cassette.

Maximum record levels are a measure of head ability, together with flatness of frequency response. Both have to be judged with the influences of bias level and record equalisation in mind - which complicates matters. The new I.5 will get astonishingly high signal levels onto metal tape when recording, but Nakamichi have used a high bias to achieve this. It improves mid-range overload at the expense of high frequency overload. Overload in the mid-band (MOL315) with TDK MA-XG occurred at no less than +9.2dB, which is higher than any other cassette deck. However, this is achieved at the expense of treble overload (SAT10k), which was a bit low at -0.8dB. These days, a 4dB-6dB maximum difference (known as the 'overdrop') between MOL315 and SAT10k is thought wise, to accommodate close-miked Rock recordings possessing plenty of treble energy; the I.5 has a 10dB overdrop, which is too high.

Up to +7

Unfortunately, the record level display of the Nakamichi only goes up to +7dB (marked as '10') above IEC0dB flux, so it doesn't reach high enough for MA-XG. This tape doesn't suit the machine however, displaying excessive bass lift. And it is here that the I.5 displays the same weaknesses as Cassette Deck I. It doesn't give a very flat frequency response with metals, but is worst with the best - TDK MA-XG. I found that TDK MA-X gave the flattest frequency response (seen in the analysis) coupled with a high overload threshold of +7.5dB in the mid-band and -1dB in the treble. Music could be peaked at +10, or maximum on the display, when recording with MA-X.

Even though this is satisfactory, Nakamichi really should move 0VU up from its current low level to IEC0dB flux. It makes no sense to leave the indicated peak record level at such an unrealistically low point, one which the recorder can blatantly better with all tape types. Nor should the display have insufficient upper extension to be unable to show maximum possible recording levels with all tapes.

I have consistently maintained that Nakamichi must do more to improve their cassette decks, instead of resting on their laurels, or they would be overtaken by their competitors. It is now beginning to happen. JVC's TD-V541 has the same head overload thresholds (MOLs and SATs) with metal tapes, but a flatter frequency response. In particular, the I.5 suffers the same bass hump at 20Hz as Cassette Deck I, plus overall bass lift in its frequency response. This could be easily cured by improved record equalisation, but

it hasn't been. It is possible Nakamichi choose to ignore this phenomenon deliberately; I have found that it enhances the sound from prerecorded tapes in particular by giving them more bass power. The impact on recordings I like less however.

The situation with ferrics and chromes is a bit rosier. Nakamichi's famous independent heads still get higher treble levels onto them than any other recorder, even though Dolby HX PRO is not used, so the I.5 stays comfortably ahead in this area. Since there are some fine tapes available in these categories, like improved TDK AR, at affordable prices, it is a valuable ability. Nakamichi have always shone in their almost magic ability to make ferric and chrome tapes sound more like metals. The I.5 displays all the important properties that contribute to this ability.

So Nakamichi's independent heads are still a marvel in overload performance terms, if not in frequency response flatness.

Replay frequency response is of vital importance. Not only does it determine the effectiveness with which prerecorded tapes are played, but it also determines whether compatible recordings are made. Nakamichi literally set the standard (adopted by the IEC) and their decks have always been ultra accurate in their replay characteristics, deliberate aberrations notwithstanding. The I.5 displayed the result expected, notably bass lift due to the 20Hz peak, an upper mid-range droop of -1dB around 5kHz and upper treble lift of +1.2dB at 20kHz. All Naks. replay prerecorded tapes well, including this one, due mainly to extended treble response, which helps Dolby B tracking.

Bottom End Wellie

The bass lift in practice adds extra bottom end wellie. It is a surprise to most people, including many reviewers (sad to say), just how good prerecorded tapes can actually sound these days, when played on a good machine. As I said earlier, the I.5 actually enhances sound quality from prerecorded tapes. All it lacks is the variable replay head azimuth of Cassette Deck I that will tune the head mechanically to the azimuth slant of a prerecorded tape. There is, inevitably, some slight variation in this property across commercial recordings. Mismatch, when it occurs, dulls upper treble a little. It is not something I worry about unduly, but I do have a friend who listens to tapes exclusively and he re-tunes head position with a screwdriver for every tape!

The dual-capstan transport uses a servo controlled motor to maintain constant speed, with belt drive to the capstans. It wasn't as 'tight' as a quartz-locked, direct drive type, but it worked well enough in my review sample. There was some slight drift, but negligible flutter and very little capstan wow. In all, this was a good performance.

Quiet replay amplifiers have reduced hiss levels overall, at least with quiet chrome tapes, to a very low level. In practice, hiss is produced by the tape, not by the deck. It is only with the best chromes that deck performance becomes apparent. Nakamichi's have always fared well here.

Cassette Deck I.5 possesses all the same components that have made Nakamichi respected as outstanding cassette deck engineers. It also displays the same peculiarities that have for years stood out in relief against this background of ability and achievement. I have reservations about non-flat recording frequency response, especially with metal tapes, the inability to exploit TDK MA-XG, and the large difference between mid-band and treble overload levels (overdrop).

Balancing this is a very high all-round standard of ability (most decks fail in one aspect or another, cassette being so complex and specialised), with both the reproduction of prerecorded tapes and

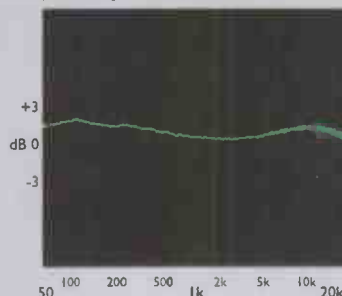
with the production of recordings. In effect the I.5 is now the least expensive Nakamichi to offer some of their finest innovations in the cassette field. This is a highly specialised and individual product, if not quite the 'perfect' one I would hope for. **NK**

Test Results

REPLAY (prerecorded tapes)
 Frequency response (-2dB) 40Hz-20kHz
 Speed accuracy +0.6%
 Hiss (70uS, Dolby out) -61.5dB

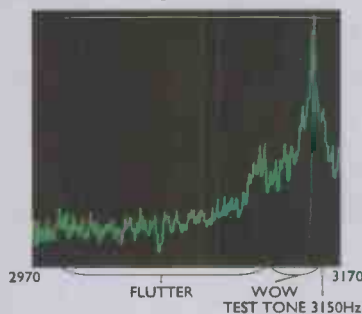
RECORDING (blank tapes)
 Frequency response (IEC Primary Refs.)
 ferric (IECI) 30Hz-20kHz
 chrome (IECII) 30Hz-20kHz
 metal (IECIV) 30Hz-20kHz
 Separation (1kHz) -53dB
 Distortion (315Hz) 0.18%
 Hiss (70uS, Dolby out) -57dB
 Speed variations (DIN total) 0.04%
 Flutter energy (3-3.13kHz) -33dB
MOL/SAT (IEC Refs) 315/10k
 IEC I (ferric) +3.8dB/-4.8dB
 IEC II (chrome) +3.8dB/-5.5dB
 IEC IV (metal) +6.2dB/-2.8dB

Frequency Response



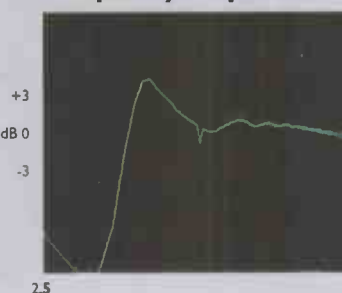
Bass lift with metal tape

Speed Stability



Low wow and drift, plus negligible flutter impart good speed stability

Low Frequency Response



A low frequency peak of +5.5dB at 20Hz, caused by the replay head, adds bass strength to the sound.

Wacky, controversial, radical valve amps. Just what you'd expect from Michaelson Audio.

We've been called a lot of things but boring is not one of them.

One critic says in *Audiophile* that our four-box 112 Watts per channel Chronos pre- and power valve amps look like Battersea Power Station.

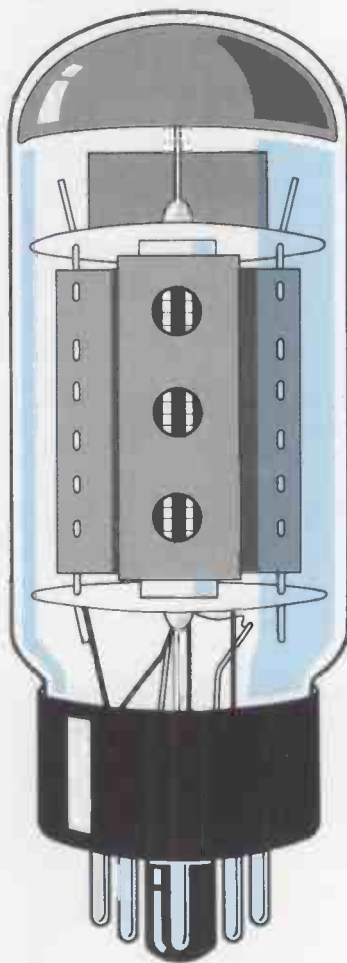
But after listening to them (perhaps with eyes closed), he called them awesome and says he was gobsmacked. "I had little idea quite how much sheer gut-thumping power such a beast can deliver. Believe me, it's frightening..."

Another reviewer bravely says Chronos are "quite gorgeous" adding that they look "a damn sight better than your standard parallel sided breadbox."

To judge from his review in *Hi-Fi News & Record Review*, he likes the sound, too. "Across the bandwidth it sounded forceful and in control..."

"But it's the mid-band (isn't it always?) that makes tubes the choice of the connoisseur, and here the Chronos positively sings."

Then critics from *Hi-Fi Choice* had their say. "From the opening bars of the music you can hear that Chronos is in the top league. There's that sense of ease and spaciousness which is so characteristic of high quality valve amplifiers... Chronos power amps can swing dynamics which will take your breath away."



MICHAELSON AUDIO

In their view, the Chronos sound-stage is "as close to 'being there' as the limitations of the listening room and the recordings are ever likely to allow."

At Michaelson Audio we recognise that not everyone has room for our massive monuments to valve supremacy.

So we also make *Odysseus*, an integrated valve amp. It looks "slightly less outrageous but the aesthetics are still a matter of taste", according to *Hi-Fi News & Record Review*. It's "a high-end monster in (almost) budget clothing..."

"But the real reason for buying an amp like *Odysseus* (unless you're merely wild about the styling) is its midband. Choose whatever tubey adjectives you like – clarity, authority, detail, warmth – the Michaelson has 'em in spades, with an added plus . . . the *Odysseus* offers wall-to-wall coverage, exploiting the precision focusing of small speakers... it performs like a true champion."

Perhaps by now you are asking yourself, just how weird do Chronos and *Odysseus* look? And why is there no picture of them in this advert?

The reason is this: we want you to visit your hi-fi dealer to hear and see them in person.

Call them stunning or bizarre, they'll probably leave you speechless.

At a press conference in Germany recently, BASF released a new range of tapes. Three new chromes are the key items in the range, designed to gain, BASF must hope, a better share of the expanding UK chrome tape market. Although this was once the domain of BASF, with their range of quiet chromes, inevitably the Japanese have slowly overtaken them. TDK now claim to be the biggest player with a 39% share, leaving BASF as number two holding 26%. It has been the rise and rise of TDK SA, with cut price SF below it that has contributed to this situation.

BASF now offer, in competition to budget TDK SF, new Chrome Extra II, priced at around £1.33 for a C90 we were told. Tape prices being highly variable, there may be some significant variation around this figure. Competition to TDK SA takes the form of new Chrome Super II, priced at around £1.75 for a C90. At the top of the range comes Maxima II, priced at £1.99. This is meant to be a premium grade chrome and as such is probably designed to compete with TDK SA-X - an ultra quiet tape.

The main benefit of 'chrome' tapes was low hiss. The situation became confused by the appearance of noisy metals operating at chrome bias: they were neither chrome nor quiet! However, such distractions apart, most so called chromes do offer 3dB-4dB lower hiss than ferrics. The new BASF chromes proved especially strong in this area.

Up to the Red

Low hiss is very important to those who record up to the red and no further. Whilst cassette deck manufacturers keep this point at an unrealistically low level (-3dB below Dolby reference; -5dB below IEC0dB reference) low hiss tapes have a valued role in the market. This is where the new chromes, like the old ones, score.

What alternative is there to low hiss, you might be wondering? Well, if tapes can be recorded to a higher level than 0VU, then hiss will be commensurately less audible when volume is adjusted downward to normal listening level on playback.

The trouble with this is that owners don't know by how much they can exceed the arbitrary 0VU limit marked on cassette decks with any particular tape. It helps to have a three-head deck, then loss of quality as distortion sets in becomes obvious. BASF chromes used to be poor in the amount by which they could be pushed up past 0VU; the new ones are a lot better.

The measure of maximum recording level is, in tape parlance, called Maximum Output Level. The



men in white coats talk about MOLs; so do we in our tests. MOLs relate to mid-band overload.

At high frequencies overload occurs earlier and faster. It is measured separately; the men in white coats call it the point of Saturation. Our measurement is the standard SAT10k test.

The useful recording range between hiss and overload is called the Dynamic Range of a tape. It is commonly used as the overall figure of goodness of a tape.

And finally I should mention that modulation noise is a special type of hiss that accompanies a signal. It detracts from clarity and adds a subtle 'papery' colouration. BASF chromes have always been especially good in this area, due to the consistency of surface smoothness of chromium dioxide pigment. In my experience, usage polishes the tapes to give even better performance.

BASF CHROME EXTRA II

Like all real chromes (as opposed to pseudo-chromes), Extra II is very quiet. A very low hiss figure of -60dB is its greatest strength. Modulation noise was satisfactorily low, at -41.5dB being better than some rivals, if not TDK SF any more.

BASF have raised the headroom to a respectable figure of +3.5dB, meaning that music peaks can now be pushed up to +5 or more on most cassette decks. It was unwise to go much above +3 or so before.

Utilising Chrome Extra II to its full extent results in a dynamic range of no less than 63.5dB being available. Users who record to 0VU and no

more will be happy enough to find hiss very low, although both TDK SF and Maxell SX-II are very similar.

BASF chrome tape used to be very insensitive, which upset Dolby tracking. This problem has been eliminated; Extra II now matches the IECII Primary Reference, making it little different from its rivals.

A characteristic of this new tape many will notice is the falling treble in its frequency response. Compared to all its rivals, Extra II will give a duller or warmer sound. On variable bias decks, slight bias reduction will be necessary to brighten things up. On fixed bias decks, it will be a case of try-it-and-see. Generally, Extra II is a good tape offering similar results to its competitors in all areas, but for a warmer sound.

BASF battle back

A company with a low profile in the UK is coming back with a new range of tape. Noel Keywood reports.

review



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TEST RESULTS	(test bias: +3dB)
Treble level (10kHz)	-1.5dB
Overload	
mid-band (MOL315Hz)	+3.5db
treble (SAT10k)	-6db
Hiss	-60db
Modulation noise	-41.5dB
Sensitivity	-0.5dB
Dynamic range	63.5dB

Frequency Response



Falling treble gives warm sound

BASF CHROME SUPER II & MAXIMA II

Although packaged differently, the tape inside these cassettes appears to be the same. BASF (UK) could not enlighten us on why this should be. Styling artifices apart, the shell of Maxima II looked very similar to that of Super II and tests showed no difference in running properties.

It may be that the tape in Maxima II is selected from the best central part of the large roll from which cassette tape is derived by a slitting process, but this would provide marginal benefits. Our high resolution tests merely confirmed identity.

Prices aren't identical though; Maxima is priced at £1.99, Super at £1.75.

This premium grade tape has always been, in earlier forms, a dual layer type. It remains so now, resulting in a rather distinctive frequency response characteristic, shown in our analysis. This is caused by the differing sensitivities of the two layers. The fine upper layer handles high frequencies, the thicker lower one records lows.

Used at the bias level normally set for chrome tape in a typical hi-fi cassette deck, the dramatic rise of treble output above 10kHz can be seen in the frequency response. Inevitably, it results in very sharp sounding treble, a problem that has traditionally dogged this tape.

BASF have in the past brushed the matter off, saying that in the field it usefully compensates for treble losses caused by head azimuth error, oxide accumulation and wear. But premium grade tapes are most likely to be used on quality machines less subject to this sort of thing than most. Their view rather contradicts the tape's intended role.

The best solution to this problem

is to increase bias with the fine tuning control now fitted to most hi-fi cassette decks. A perfectly flat response will rarely be obtained, but a reasonable approximation to flatness, shown in our additional response analysis, can be achieved. Like TDK AR-X and SA-X, both dual-layer tapes with similar problems, BASF's Super/Maxima II look best in this light. So my view is: tune the tape in; you'll get the following results.

Overload (MOL315) in the mid-band measured +5dB, a high figure for chrome. High bias reduces treble overload, but only by 1dB or so. A figure of -5.2dB was returned, which again is very good.

Both hiss and modulation noise were extremely low, being amongst the lowest I have ever measured. Together with good mid-band overload, the tape offers a dynamic range of 66.5dB, which is quite outstanding - especially at the price.

So BASF Super II is a high performance chrome that competes with the best in basic specification. However, to exploit its potential it must be tuned in by increasing bias, then high recording levels used (+7). Like other dual layer tapes such as TDK SA-X, it will never give quite the neutral sound of near rivals, like TDK SA for example. This interesting new chrome should be available at a good price and it is worth trying.

TEST RESULTS	(test bias: +4.5dB)
Treble level (10kHz)	0dB
Overload	
mid-band (MOL315Hz)	+5.2db
treble (SAT10k)	-5.2db
Hiss	-61.3db
Modulation noise	-46dB
Sensitivity	0dB
Dynamic range	66.5dB

Frequency Response



Steep high frequency lift gives sharp treble at normal bias (+3dB)



Raised bias (+4.5dB) subdues treble and improves dynamic range, but response cannot be tuned flat

FERRO EXTRA I

Available at around 90p, BASF Ferro Extra I is a budget ferric that needs to possess a balanced performance if it is to match a wide variety of recorders.

It has a slightly falling frequency response, which will give it a duller or warmer sound than rivals, such as TDK D for example.

A good overload figure of +2.8dB in the mid-band and reasonably low hiss of -54dB combine to give Extra I a dynamic range of 56.8dB. This is marginally lower than TDK D (57.5dB), but then so is the price.

Other performance figures were all respectable, making Ferro I a good budget ferric tape, well worth its low price. It is definitely worth trying.

TEST RESULTS	(test bias: +3dB)
Treble level (10kHz)	-0.5dB
Overload	
mid-band (MOL315Hz)	+2.8db
treble (SAT10k)	-3db
Hiss	-53.8db
Modulation noise	-40dB
Sensitivity	0dB
Dynamic range	56.6dB

Frequency Response



Slow treble fall makes FEI sound warmer than TDK D.

MEASUREMENT NOTES

Test recorder: Nakamichi ZX-9. Tests largely to IEC94 recommendations. Reference flux: IEC0dB (250nWb/m). Reference tapes: IEC Primary References, Types I & II. Analysis by Hewlett Packard 3561A FFT spectrum analyser. Test bias as stated under individual results. Frequency responses are relative to IEC Primary Reference Tapes, derived by computation at test bias (not by adjustment of record equalisation).

MOL315 - 3% distortion limit at test bias

SAT10k - maximum level at 10kHz

Hiss - IEC A weighted

Modulation noise - band noise from 1kHz-3kHz, test tone 3150Hz at 0dB

Audiolab have gone digital with their first ever Digital-to-Analogue Converter (DAC). The name is a number - one the company is firmly wedded to: it is called the 8000DAC and is priced at £695. Never mind; a fair amount of inventiveness has gone into dealing with the digital numbers.

Our review sample was delivered by Audiolab's Phil Swift, a physics graduate of Imperial College. He wanted to stress the company's claim that they had put a good deal of thought into their first ever digital product by bringing round not one DAC, but two. Appearing identical externally, we were asked to second-guess their own choice of Bitstream or multi-bit by choosing between them: one was multi-bit, the other Bitstream. Both had been developed in tandem with only the digital-to-analogue chip itself differing. We sat down, listened, and pointed at the one we thought was the converter they had decided to put

good old Henry "Model T" Ford black, it is also fairly anonymous. There is a slightly recessed, round-edged oblong indicator panel at the right on which sit a few coloured LEDs and two small round push-buttons. Alongside is the standard Audiolab on/off switch.

Some of the LEDs in fact simply light up to tell you something is going on that other DACs like the Deltec, with its single green power LED, keep quiet about. Sampling frequency, for example, is automatically selected internally, but one of three yellow LEDs will light to tell

the silence was so remarkably dark on the Audiolab it was like looking into a Black Hole

lab standard

Eric Braithwaite experiments with Audiolab's

first digital product, the 8000 digital-to-analogue convertor.

into production. We were right.

We were also wrong. Like others, apart from the designers at Cambridge Systems Technology, and along with quite a few in the business who have gone through the same test, when asked what conversion system our choice was using, we chorused "multi-bit!" Subconsciously, or through prejudice, or whatever, Alan and I associated the quality of the sound we heard with multi-bit devices rather than single-bit. In truth, Audiolab have gone for Philips' Bitstream single-bit system but have bestowed upon it the attributes of multi-bit, effectively combining the best of both worlds. I particularly kicked myself because three of the four players and the two converters I had been listening to throughout the previous week had been Bitstream based.

Suitably chastened - and enough not to want to regrid the low-bit versus multi-bit axe - I toddled off clutching Audiolab's pride and joy. I also looted the office of an array of transports and CD players and the Deltec Bigger Bit (£599) for comparison. With all that scattered around my home, it looked as though it was my birthday, a friend remarked. It had been - the week before. The trouble with these "prez-zies" is that they have to go back.

The 8000DAC is discreet in appearance, shallow in height at 76mm, but fairly deep at 318mm. Of standard rack-mount width (445mm) and finished in

you which - 32kHz for satellite transmissions, 44.1 for CD playback or 48kHz for DAT playback. This might seem like a frill, but inspection at the back reminds you that the Audiolab have been preparing for a digital future. There are four inputs, each of which can be switched in by one of the two press-buttons at the front. Two inputs are optical, being standard Toslink-type sockets; one is a standard co-axial phono; the other is a curiosity at the moment, but probably destined to become more common in the domestic world. It is a balanced Canon-type socket more normally seen on professional gear. This was also, irritatingly, the only input I couldn't try, as I was unable to lay my hands on a CD or DAT machine with a balanced output.

Phased

Each source can be permanently connected and switched from the front panel, in which case a red LED glows to indicate which is in use - Optical 1 or 2, Digital 1 or 2. When switched on the 8000DAC mutes while it checks everything is in order and a light is displayed so you don't panic at the sound of silence. The last light indicates something which is thought of as a mere gizmo in some circles - a small push-button allows you to invert phase.

Now, I am not going to pretend that inverting phase is necessarily anything other than subtle in its effect, nor claim

like Harry Pearson of the American magazine *The Absolute Sound* that I can hear when an instrument has been recorded out of phase, but it is a useful adjunct, and one I will come back to. Since phase is inverted in the digital domain, this is also much less of a clumsy approach than by doing it in the cabling.

Three transports, and a wide range of recordings were used for the listening tests, with volume carefully matched between the Audiolab and the Deltec convertor. Cabling was standard throughout, being one I discovered a couple of years ago and still find the most effective and transparent in my system even after several raids on my wallet by other makes. Speakers were ESL 63s and bi-wired KEF Q90s.

First reaction, as it had been when Phil faced us with the initial choice, was that the Audiolab was extremely sweet and delicate, with a precise finely-drawn soundstage and imagery just-so fore and aft. Holographic, almost, especially in the sense that a hologram, though 3-D, is fundamentally ethereal. Solo instruments, especially acoustic ones, hung delicately in the air, full of nuance and detail. Switching to the Deltec at first was a shock: everything seemed more vibrant and lively. If the Deltec is brashly revealing, the Audiolab is calmly revealing.

Settling down, however, I began to appreciate the virtues of the Audiolab all the more, as I discovered I was listening to more and more music. It turned out rapidly to be extremely transparent to digital sources. I discovered that the Pioneer PD-8700 transport, for example, was excellent.

Prince's *Diamonds and Pearls* CD was a good starting comparison. Very deep bass was produced by both converters, but the Deltec sounded more forceful, Prince standing a little further out in the room. There are a few dead stops and very short silent intervals on this disc; the silence was so remarkably dark on the Audiolab it was like looking into a Black Hole. I feared to fall in. There were times later where the Deltec appeared tighter (contracted) across the soundstage, but the Audiolab was obviously wider. Generally, while the Deltec gave vocalists and instrumentalists almost tangible body weight and a clear outline - against which the Audiolab at first seemed slightly vague - the whole performance appeared clearer.

A listen to the Technics-sponsored Venetian Coronation, recorded in a very reverberant Priory, made the "glare" of the Deltec mid-range quite noticeable. There was one brass instrument which that general glare of the Deltec had disguised, but which surfaced using the Audiolab. By and large, the Audiolab invested orchestral music with subtlety and uncoloured tone; rock music was lively and fast, with a good, solid resounding bass. The 8000DAC was dynamically very accurate, not only in making clear distinctions between loud and soft, but in subtle inflections and catches in the voices of both male and female vocalists. Our Rory Block track,

'When the Spirit Returns' was a delight of lifelike voice and playing, every difference in the drum sounds clear and clean, the instrumentation being in no doubt.

The facility of inverting phase proved promising. It makes a discernible, though subtle difference, making strings particularly a little clearer and sharper in tone. I found it frequently had a similar beneficial effect on vocals and acoustic recordings. How much of this is dependent on the recordings themselves, or the mastering, or even the transport, is something which is difficult to define, but experimentation is well worthwhile.

Best Bit

Audiolab claim to have put some considerable thought into the 8000DAC, right down to using surface-mount components (like Deltec), ensuring there is a single digital master clock to cut down jitter and being very careful about the layout of the components. That, Phil Swift said, was essential to produce the best out of Bitstream. I think they may have done just that: while the Deltec

Bigger Bit at first hearing has some mighty muscle and is very forceful - a characteristic of DAC7 technology - it does possess a slight glare that can diminish some instrumental tonalities and coarsen textures. Audiolab's DAC in contrast has a sweet power to make music. It is smooth - almost silky so - without being so benign to material that it becomes boring. The 8000DAC will certainly be a long-term pleasure ●



Measured Performance

Audiolab offer some interesting differences to the norm in their first ever DAC. Being stalwart individualists in their electronic engineering, like many UK companies, they offer something different to their rivals. Users won't be aware of the experimentation and variation in behaviour wrought by different digital filters placed before the main digital-to-analogue converter. Meridian use Philips own SAA-7220 filter before the Philips SAA-7350 Bitstream converter, Deltec use a Yamaha filter and Audiolab a chip from Nippon Precision Circuits (NPC-5813). This quality device helps achieve the low noise, negligible ripple and minimal spurious output properties of the 8000DAC, all of which contribute toward its fine sound quality.

Like Deltec (dare I say yet again!), Audiolab are concerned with timing stability and lack of jitter. They reclock the incoming data twice, first through a wideband phase locked loop circuit to allow capture of all signals (IEC Class 2 as well as Class 1). A second narrow band loop allows capture by a crystal controlled clock of high stability. In my experience reduction of jitter does give a temporally tighter and better defined sound. This was a property of the 8000DAC; the dark silences in particular are a byproduct of good timing coupled with low noise.

Being Bitstream from a Philips SAA-7350 chip with its analogue output stages operating in distortion cancelling differential mode, the 8000DAC produces very little distortion. There were some traces of second and third harmonic, just visible as

the smallest spikes at far left in our distortion analysis, but I would not expect these to have much subjective impact. It is the low distortion of Bitstream that gives it such a smooth sound. I was surprised only that Audiolab have not managed to reduce distortion on a low level dithered signal to the lowest possible figure of around 2%; it measured 11%.

Frequency response displays a slow treble roll off above 5kHz, visible in our response analysis. This is a characteristic beloved and now widely adopted by UK manufacturers. It usually results in a smooth coherence to the sound, wisely avoiding by a wide margin the sharp and raucous effects from CD that treble peaking produces.

Noise output was extremely low (the player does not mute during digital silence) and there was little in the way of unwanted spurious output - both good signs.

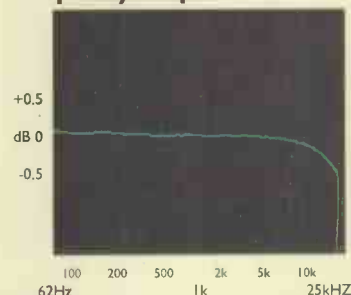
The Audiolab 8000DAC is intelligently

and carefully engineered, like all Audiolab products. I wasn't surprised to find that it has no measurable blemishes, producing a textbook performance. Aspects of measured performance equate well with perceived sound quality. **NK**

Test Results

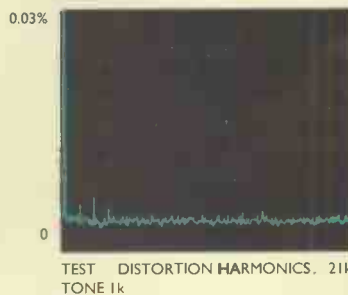
Frequency response	4Hz-21kHz	
Distortion		
-6dB	0.006	0.007
-30dB	0.01	0.01
-60dB	0.5	0.5
-90dB	30	30
-90dB dithered	0.5	0.5
Separation	left	right
1kHz	-113	-114
10kHz	-105	-102
Noise		
with emphasis	-103dB	-107dB
Dynamic range	107dB	
Output	2.1V	

Frequency Response

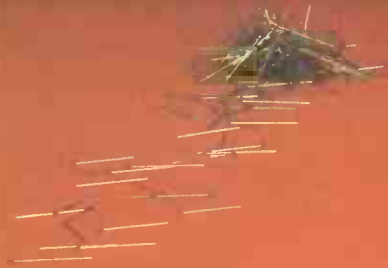


Treble roll off gives a smooth sound

Distortion



Negligible distortion of 0.01%



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playing speed and pre-select tracks in any order you want.

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SONY.

Why compromise?



art deco da vinci

Strikingly different, with their Art Deco styling, the Michaelson Audio da Vinci valve pre-amplifier and power-amplifier are reviewed by Alan Sircom.

The da Vinci amplifiers have a style that combines Art Deco with Modernism. It is highly reminiscent of the futuristic Tyrell building in the Ridley Scott film, 'Blade Runner'. True cult film fans will delight in the bold visual statement. The styling is anything but understated; the product yeams to be displayed prominently. Parking this pre-power valve combination (£1 200 each) on top of another hi-fi oil rig will not do it justice.

The da Vincis will stand out from the rest of a hi-fi system not only figuratively but physically - they do not conform to any standard size, so they generally stand proud of a hi-fi table or support. There is a small complaint, concerning the case design. Both products, but especially the heavy power amplifier, have a steel mesh cover whose edge is unfinished and rough. Since it corresponds with the place they are grasped when lifting, these edges can cut. We all noticed and were disturbed by this hidden nastiness.

The products themselves are simple enough to operate. The preamplifier is designed to be left on semi-permanently; a small perspex triangular switch sits centrally in the upper part of the front fascia. It glows

red at switch on, then turns yellow, and finally green when the preamplifier is ready for use. There is no on/off switch on the power amplifier, so it can only be powered down at the wall socket. In fact, I found that the preamplifier needed to warm up for a further half an hour or so, before sounding at its best.

Bullet Shaped

The pre-amplifier's front panel has three bullet shaped knobs that control, from left to right, balance, volume and channel selection. The latter switches between Compact Disc, Tuner, CDV (for the select few who own a Laser Disc player), two Tape inputs and an Aux input. These are all line inputs. A power supply socket at the rear was intended for the connection of a separate phono stage, but lack of demand for a similar add-on for the Odyssey means one may not now be made available.

A noticeable omission is a tape monitor switch; since many people would want to use this design with high quality tape machines, the option of monitoring off-tape from a three-head deck should not have been overlooked. A set of gold-plated phono sockets accept inputs on the rear of the preamplifier, with sturdier

phono sockets at either end for connection to the power amplifier.

The power amplifier is an even simpler affair. At the front is a single on/off knob, with three LEDs to show if the amplifier is powered up, and whether it is switched to stereo or mono mode by a push button on the rear panel. Apart from this, there are two phono sockets, two 4mm loudspeaker terminals, only one set of which are used when the amplifier is in mono mode. This method of operation is explained in our Measured Performance section. Finally, both pre and power amplifier have captive mains leads.

Given a good source, the da Vinci amplifiers have many of the positive attributes of both valve and transistorised components. They possess the smooth, refined mid-band that

valve enthusiasts admire, coupled with the kind of vice-like grip on the bass normally associated with solid state devices. The da Vincis also exhibit little of the noisiness that can appear in valve amplification. In our sample, though, there was a small amount of audible hum through the loudspeakers and the transformers produced a slight noise that was noticeable when the amplifiers were quiescent.

Distinctive Sound

Michaelson products have a very distinctive sound. These amplifiers have great drive and 'balls': a true Marshall guitar amplifier for the hi-fi enthusiast. This is not to say that the Michaelson amplifiers are unobtrusive; they can display a degree of fine detail only bettered by amplifiers

that disturbing ethereal quality that only comes with high class equipment

lugged in the very high end.

Instrumental voices have a degree of solidity that befits the sheer grip that these amplifiers have. At the time of listening, the da Vincis were partnered with a pair of Sonus Faber Minimas, which they grabbed hold of like a Pit Bull Terrier. Bass appeared to gain about half an octave, with drums and bass guitars spitting fire and brimstone. ▶

Measured Performance

The da Vinci was designed to offer quirky, free amplifier performance from valves at a reasonable price. It was designed to have a normal specification. Fifty watts was chosen as the best compromise between adequate power to drive ordinary loudspeakers to high volumes, without too much expense and weight being sunk into valves and output transformers proportioned like power stations. The power amplifier delivers 50 watts into eight ohms which, as valve amplifiers go, is a reasonable whack. Back in 1950 it would have been considered an enormous amount of power. The da Vinci will go loud as a result and, like all valve amplifiers, it overloads fairly smoothly and gracefully, seeming to go louder than this figure might suggest.

There is a button on the rear panel marked Mono. It simply parallels the channels, in order to turn a stereo amplifier into a single channel monoblock. In the normal sense, this doesn't result in more power being made available, unlike bridging. However, in that it does halve output impedance, it allows the da Vinci to deliver more current into low loads and this does, in effect, mean it delivers more power. This option matches the da Vinci into low loads properly, rather than making it push more into standard loads.

These days, loudspeakers are mostly of eight ohms impedance. There are a few of lower overall impedance however, the most notable being KEFs. It would be with them that the amplifier might benefit from being mono'd, but you then need two power amps for stereo of course.

All valve amplifiers, by the way, must be perfectly load matched for optimum power transfer; the da Vinci is no different in this respect. It does not have a four ohm tapping on its output transformers though.

The preamplifier has no disc input, but it has a power output for an external unit. I was fascinated to hear that an external valve phono amplifier using six valves had been developed, and that it was quiet enough to cope with moving coil cartridges. However, there was very little demand, so it has not been put into production. An external phono amplifier like the excellent Michell is the best alternative.

The CD input has adequate sensitivity and infinite overload. Although a bit noisier

in specification than some, hiss was too low to be audible in use. The bandwidth was wider than that of many solid state amplifiers and well tailored for CD (6Hz-32kHz), with plenty of bass extension but a useful roll-off just above 20kHz. There are no facilities to speak of and, like so many British preamplifiers from manufacturers who don't use tape and (worse) think it's inconsequential, there is no tape monitor button either. This is not a preamplifier for those who wish to fully exploit the abilities of a three-head cassette deck, but it's fine for less expensive two-head types.

Valve amplifiers produce more distortion than solid state types and there's much argument about whether it colours their sound. Providing the harmonics are low-order (that is second or third), they only alter timbre slightly when present in significant quantities (above 5% for second, but about 0.5% for third). Valve amplifiers fulfil this condition at ordinary listening levels. They get progressively more muddled and messy sounding if pushed to very high levels, but they do not suddenly go harsh when overloaded, as solid state amplifiers do.

Since psycho-acoustic correlations between various levels of different types of distortion and perceived sonic impact don't exist (they'd be enormously complex if they could be mapped), we use our ears on this magazine to tell us whether distortion is an audible problem or not, plus reference amplifiers with no distortion. The da Vinci sounded as clean and clear as we have come to expect any good amplifier to sound.

The only small wrinkle on our early-ish sample of the preamplifier was a small buzz on one channel. This was an obscure problem: the mains transformers (one per channel, no less) were buzzing mechanically. The vibration was being transmitted through the circuit board and being picked up by the valves, which like all valves are microphonic. We were told that this was due to a mistake in the potting of the transformers. They had been hard-potted by accident. In production they would be soft-potted, which would eliminate the mechanical buzz. It affected only the left channel and was slight, but even slight hums and buzzes can become excruciatingly annoying in a quiet room. Production units should be equally quiet on both channels.

Transformer problems apart, the da Vinci uses quality components and it should

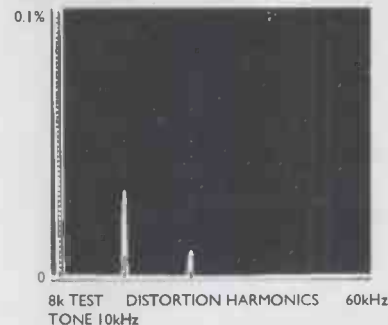
last a lifetime. The valves are all run in on a test rig for over one hundred hours. It weeds out those that are going to fail early (a proportion in any batch always do, resulting in bad apparent reliability if this time consuming quality control process isn't used). The volume and balance controls are large, long-track, high quality types - not the cheap miniatures used on Oriental amplifiers that wear out after two years. The circuit board is a glass fibre type and the front panels are stout castings.

The da Vinci is a well built and sensibly balanced modern valve amplifier. It can drive normal loudspeakers to high volumes and it has the benefit of using modern high quality components, including valves. The faint buzz on one channel apart, our sample measured and performed extremely well. **NK**

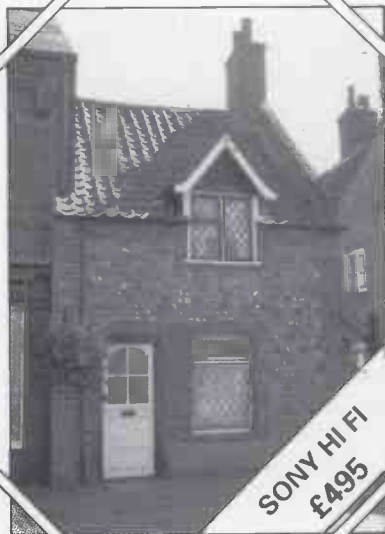
Test Results

Power	50watts
CD/tuner/aux.	
Frequency response	6Hz-32kHz
Separation	-57dB
Noise	-82dB
Distortion	0.04%
Sensitivity	380mV
dc offset	0mV
Disc	none

Distortion



Some second and third harmonic distortion at high frequencies. Level measured 0.3% (1 watt, 10kHz). This fell to 0.04% in the mid-band. It is a typical performance for a good (pentode) valve amplifier.



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Town House, 3 beds, 2 bathrooms, superb decoration, lounge, dining room, fitted kitchen, MERIDIAN Audio, exceptional quality £1,320.



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£985**

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KEF



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The da Vincis' imagery and soundstaging abilities were good, although I would have preferred to see a little further into the recording studio. I felt that the width and depth of the soundstage were restricted, although the images within that soundstage were well defined. Instruments that have the bulk of their character in the middle octaves seemed to fare best in this respect, hanging in space well, with that disturbing ethereal quality that only comes with high class equipment.

Looking at the da Vinci from a rhythmic standpoint, the amplifiers perform well; not with the supreme timing abilities of amplifiers like Linn and Naim, but as close as can be achieved from a valve amplifier. Their tonal characteristics are very sweet; perhaps bearing the signature of the clarinet player - Anthony Michaelson - who builds them. Female vocals, piano and other woodwind instruments were also tonally superb, as I have come to expect from his products.

Rock music is correctly portrayed by the combination, but some pieces of World music, orchestral and light jazz did not fare as well. They are still played with style and grace, but they do not suit the amplifier combination. I have to say that I prefer equipment

that has no such musical predilections.

As befits a valve amplifier, the da Vincis have a superb dynamic range and a fine sense of coherence. Playing recordings with a natural ambience, using acoustic instruments, gives a natural sense of the performance taking place. The only area that this is lacking is in the extreme treble response. Here, the amplifier begins to behave like a transistor device, sounding steely, shiny and almost brash at times.

Metallic Treble

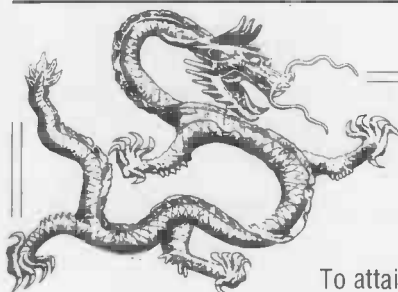
This metallic treble is added to by a transistorised character to the amplifier when it is pushed to its extremes. Normally, valve amplification begins to sound creamy and rich when it starts to clip. The da Vinci, on the other hand, clips with all the obviousness of a trannie amplifier when pushed to its limits. As the amplifier is a powerful 50 watter, this clipping only takes place with insensitive loudspeakers (like the Sonus Fabers) or at outrageous volume levels.

I suspect that, due to their distinctive styling, the two products will usually be used together, but they do work well apart. I used both pre- and power-amplifiers with John Shearne and Audio Innovations units.

the da Vincis were partnered with a pair of Sonus Faber Minimas, which they grabbed hold of like a Pit Bull Terrier. Bass appeared to gain about half an octave, with drums and bass guitars spitting fire and brimstone

Both parts of the da Vinci amplifier are equally strong and distinctive. Substituting either into another system shows up their quality.

The Michaelson da Vinci pre/power amplifier is likely to follow in the footsteps of the more expensive Chronos amplifiers. Although it is not perfect, for the top end hardness detracts a little, it does offer a smooth, warm mid-band, together with transistor-like drive qualities in the bass. These attributes will find many followers ●



Golden Dragon

Precision Audio Tubes

To attain a premium tube, sonic quality must be designed in from the start. As with any fine audio component, vacuum tube design is both an art and a science. With the closing of the legendary tube manufacturers it seemed that the magic combination would be forever lost.

Fortunately, a group of British audiophiles and engineers have worked diligently with the Shuguang and Beijing tube factories in China to create tubes of the highest sound quality and reliability. No aspect of design or performance has been neglected. Countless prototypes were auditioned in the creation of custom audio tubes that rival the finest ever made. The results of these efforts are now available as Golden Dragon precision audio tubes.

"Judging by the quality and sonic superiority of the Golden Dragon 12AX7 and EL34, this venture is the best thing to have happened to tubes since the heyday of the likes of M-O Valve and Mullard... the Golden Dragon goal of premium tubes rivaling the best ever made appears to have been realised." Dick Olsner, *Stereophile*. Vol14 No.11 November 1991

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* 6AQ8/ECC85	£6.50
12AT7A/E81CC/ECC81	£6.50
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845	£36.50	£75.00	£150.00

Golden Dragon Power Tubes	Pairs	Quads	Octets
EL34/6CA7	£18.50	£37.00	£74.00
*EL34S/6CA7S	£25.00	£50.00	£100.00

NOVEMBER 1991

Golden Dragon Power Tubes	Pairs	Quads	Octets
EL84/6BQ5	£8.50	£17.00	£34.00
E84L/7189A	£12.50	£25.00	£50.00
KT66	£25.00	£50.00	£100.00
KT88	£49.50	£99.00	£198.00
*KT88 SUPER	£59.00	£118.00	£236.00
6L6GC	£18.50	£37.00	£74.00
6550A	£39.50	£79.00	£158.00

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Meridian on stream

**Philips' new DAC 7
Bitstream system in
Meridian's 606 convertor,
assessed by Paul Miller.**

Every manufacturer reserves the right to continuously update or otherwise improve the specification of their components. But in the digital field and with products like the Meridian 606 in particular, this means attempting to respond to developments in technology faster than your competitors. So though the luxurious external appearance of this outboard converter may look unchanged, the insides now play host to Philips' top DAC7 Bitstream system. It will be a good few months, by my reckoning, before we're likely to witness any DAC7 player from Philips themselves although Deltec now offer three models.

For the princely sum of £1,221 you get a very distinguished looking box, comprising two independently screened cases that separate the data acquisition circuits from the digital processing, DAC and analogue components. Meanwhile, around the back you'll find two sets of both optical and coaxial digital inputs which are selected via a series of gold switches on the fascia.

Meridian are one of the few companies to use Philips' SAA7274 ADIC, by the way, which is configured along with three discrete crystal-based oscillators for each of the three possible incoming sample rates. This technique minimises jitter while also accommodating CD player sources that deviate from the strict Class I

rating. However, for the purposes of this test I used Meridian's partnering 602 CD transport whose digital output falls well within the Class I error margin of 50ppm.

My time with this combination was both enjoyable and interesting. Interesting because my impressions, and indeed expectations, of the 602/606 gradually changed throughout the time it sat at the head of my system. This is a combination with a very distinct and very definite way of going about things, all the while possessed of a composure that contrasts with much of the competition, regardless of price.

But let's back-track a few days. From cold this transport/DAC combination harbours a sparkle, a stridency and fizz that's gradually mollified as the components warm-up. After a time the extreme treble becomes quite shy, encouraging a sweet balance that seems guaranteed to temper the most aggressive of systems. Nevertheless though this 606 seems as laid back as the previous (SAA7350) version, its smoothness and sense of refinement are not so immediately obvious.

Listening to Christy Moore's 'Burning Times' my attention was drawn to the natural huskiness of his voice except, on this occasion, there was an added resonance or thickening that would momentarily stifle the atmosphere of this dependably rich recording. Otherwise the DAC had the measure of both percussion and guitar, each striking up a tangible presence to the extremes of the soundstage.

Contrast

In an effort to explore this contrast I slipped a recording of Telemann's 'Suite for Trumpet and Organ' into the 602 transport. Now any suggestion of stodginess was erased as the fullsome resonance of the organ seemed in perfect accord with the colder, rawer sound of brass. The very lowest frequencies achieved by the organ were gently recessed by the 606, modified in a way that matched its restraint in the trumpet's airy overtones. Yet there was no confusion, no muddling or merging of each instrument's distinct tonal colour.

All-in-all this is the sort of sound that eases from the speakers, gradually building into a grand and bold acoustic that, bearing in mind the tenor of this combination, is often quite surprising. It is a feature of the 602/606, a combination that lulls you into thinking all is 'safe', inoffensive or just plain unadventurous before creeping up and dumping a wealth of contrasting dynamics and scale right in your lap.

So the 602/606 is not quite as

predictable as you might think following a brief audition. Nevertheless comparing it to any other DAC7 converter (including the 203, Deltec Bigger Bit or PDM2) provides little clue to the origin of its sound. After all, the 606 has more in common with its immediate competition (the Stax DAC-Talent) than a technological cousin like the Deltec PDM2. So whether the 606 or PDM2 better represents Philips' DAC7 technology is a moot point.

Chalk and Cheese

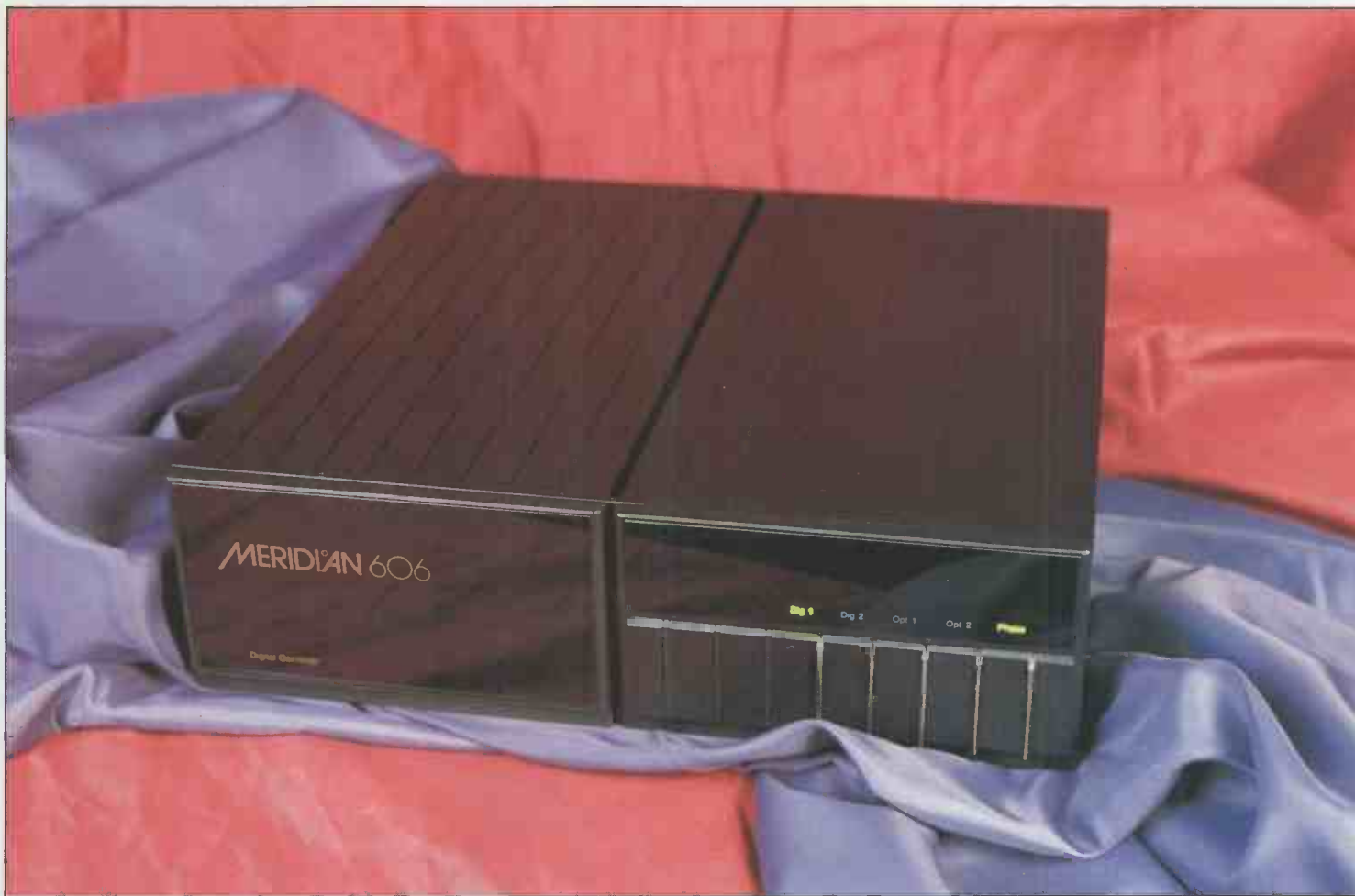
But what about other DAC7 converters and, in particular, Deltec's PDM2? Superficially the two are like chalk and cheese, the PDM2 striding across with awesome confidence, power and solidity while the 606 presses its music home with a far gentler insistence. Yet beneath the Deltec's bravado and the insinuation of the 606 lies a common ground, particularly in the way each DAC7 converter recreates such a glorious sense of space.

So the percussive brushwork and odd ripple of guitar from Dire Straits' 'Fade to Black' are seemingly more immediate and eager with the PDM2, even if the tangible presence of instruments and vocalist alike is

this DAC had the measure of both percussion and guitar, each striking up a tangible presence to the extremes of the soundstage

equally impressive with either converter. It does seem that while the style and presentation of their music is distinctly polarised, each unit still manages to communicate the ebb and flow, the passion and atmosphere of the recording with equal confidence.

So I began my time with the 602/606 feeling distinctly non-plussed, after all. The music wasn't just laid-back it was utterly prostrate. But when my schedule demanded I move on, I found myself reluctant to replace the 602/606. They are an insidious pair, working on your affections over time, urging you gently but persistently to accept this very easy-going and natural sound as the 'real thing'. It nearly, very nearly, had me convinced ●



Measured Performance:

What exactly is DAC7? This is Philips' new 'Bitconverter' officially entitled TDA1547 which incorporates an improved version of the switched capacitor network previously used in the SAA7350, 7323 or 7321 DACs. In this application the TDA1547 is fed a stream of sign-bits from the SAA7350 whose own switched capacitor stage is left dormant. So the SAA7350 is not used as a DAC but solely for the purposes of oversampling and noise-shaping. Further back down the line you'd find an even older DAC, the SAA7321, used in the 606 as a simple 4x oversampling filter!

The entire combination of SAA7321/SAA7350 and TDA1547 provides some 128x oversampling with 3rd-order noise-shaping accomplished in a single stage. Meridian feed each of these components from independently regulated supplies while the track layout for data and clock lines (between SAA7350 and TDA1547) has been optimised for a characteristic impedance of 50 ohms.

This little lot is followed by a passive LC filter and an active differential amplifier, once again linked to its own isolated supply. Four Precision Monolithics devices are included for this purpose, a new op-amp for Meridian and one that's likely to contribute to its distinctive tonal 'flavour'.

By the way, if you already own a 603 or 606 and are fired by the thought of DAC7 electronics then perhaps Meridian's £286 upgrade service will prove tempting.

Despite the fact that all digital outputs must adhere to a common (S/PDIF) format you should never underestimate the effects a different CD transport will have on both

subjective and objective performance. For instance, using Meridian's 602 transport the 606 DAC registered a 0dB THD of 0.004-0.005%. Hardly spectacular. But the same DAC with Wadia's WT3200 transport yielded a THD of 0.0006-0.0007% under the same conditions - state-of-the-art figures for any DAC technology.

By the time we get to -30dB, distortion has risen to 0.01-0.03% with both 602 and WT3200 CD transports, appearing as a simple 2nd harmonic on the plot. Note also the various spurious products at higher frequency. On the other hand there are plenty of other parameters less influenced by the choice of CD transport. The ripple on the frequency response, for example, is caused by the 4x FIR filter in the SAA7321 while sub-harmonics of the 44.1kHz sample frequency are behind the deterioration in this DAC's S/N ratio.

The 606 has a usefully low output impedance so long interconnects should not pose a problem. Do watch out for the boosted 2.3V output, by the way, because

this is some +1.3dB above the accepted 2V standard and more than sufficient to make an audible impression in A/B listening tests.

Test Results:

Frequency Response (-1dB)
0.55Hz-20.8kHz

Distortion @ 1kHz

	Left	Right
0dB	0.0051%	0.0041%
-10dB	0.0059%	0.0055%
-30dB	0.0114%	0.0126%
-60dB	0.250%	0.229%

dithered

-90dB	8.46%	8.18%
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Distortion @ 10kHz

0dB	0.0156%	0.0169%
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Stereo Separation

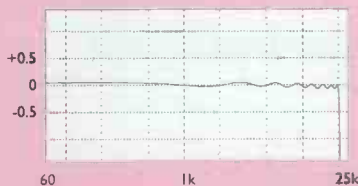
1kHz	122.8dB	120.6dB
20kHz	117.9dB	112.8dB

Noise (A-wtd)

w/o emphasis	100.4dB
w emphasis	105.0dB

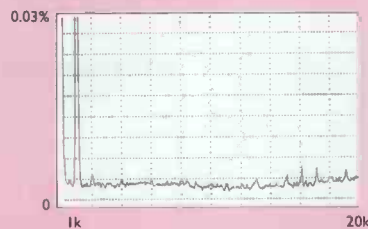
Peak Output 2.319V 2.346V

Frequency Response



A flat response with slight ripples from the digital filter

Distortion



Second harmonic distortion at 0.01% visible as a little blip at left



**widest dynamic range
+
minimum background noise
=
stunning reproduction**



ditto

Minimum background noise plus exceptional LF MOL combine to give SA-X a dynamic range not bettered by any Compact Cassette currently available. [TDK Standard Test Method; MOL₃₁₅ = +5.5dB; A-WtdBN = -61.0dB; DR = 66.5dB]. WARNING: It is a breach of copyright to make an unauthorised copy of material in which copyright subsists.





Gadgets are not guaranteed a warm reception by us. A suspicion about their 'seriousness' always lingers. It usually manages to temper any delight caused by the arrival of a new and fascinating widget.

And let's face it, cassette has attracted the strangest inventions over the years. Akai and Philips have both produced mechanisms that stacked cassettes, turned them over, pushed them up ramps and down slopes. Nakamichi still make their delightful but bizarre RX Series 'ballet dancer' decks. The cassette jumps out, spins around and whips back in again before you can believe your eyes.

draw is shaped to accept a cassette one way around only - tape inwards. An open/close button is provided, but often it will be more convenient just to press Play. The drawer slides in smartly and the tape is playing within 3 seconds. Inside the machine it is pushed downward by an arm onto a horizontal mechanism; the head and pinch rollers engage and play starts.

There's no clanking to be heard. The process generates a few muffled clicks - and that's all. The DRS-810 is a smooth operator by any standard, but especially so in the history of Heath Robinson cassette decks. I'm sure Denon wouldn't want this deck to enter that category; it

kept clean and simple looking by retaining simple symmetries and limiting the range of variation of type styles and colours in the lettering. A door hinges downward to reveal secondary controls. Whilst it is closed, users are presented only with transport functions, the record button, record level control and the source/monitor switch necessary on every three-head deck. They have the same short, firm action as those of any CD player. The deck responds just as quickly too, an area in which it is impressive.

One difference between cassette and CD (or DAT) is that it possesses no time code. Load a tape that is partially wound and you won't know where you are on it. Being hidden from view, it isn't possible to make any sort of rough check by looking at the tape on the reels. The inability to see a tape, to see how much tape exists on each reel, could be a drawback, so Denon fit a sophisticated time assessment system that calculates tape position from hub speed, and music search for prerecorded tapes. The position sensor must be told cassette size (C60, 75, 90, 100 only) before it can compute position. Because prerecorded tapes do not come in fixed lengths, a gap sniffer is provided; it senses the silence between tracks.

The tape time computer worked well enough, but it doesn't give any indication of position when fast reeling. To find out, you have to select Play and wait whilst the computer fiddles with its slide rule. For some, this may be tedious. For most it is probably of little consequence, I suspect.

Denon avoid unnecessary frills, but fit a host of useful facilities. The headphone socket has a volume control. It also adjusts line output level (600mV max). Dolby B and C noise reduction systems are fitted, plus Dolby HX PRO. The latter raises the treble overload threshold by backing off bias in the presence of strong self-biasing treble music programme.

quick draw denon

Denon's DRS-810 cassette recorder adopts Compact Disc player drawer loading. Noel Keywood discovers an open-and-shut case.

Enter Denon with the DRS-810. It is less ambitious, but it still had us all going 'oohh!' This new machine loads a cassette like a Compact Disc - on a drawer. I expected it to clank more furiously than the production line of a dustbin factory, whilst all the cogs and wheels took up position inside - and there might even be time to make a cup of tea, before the music started. Instead, the Denon had us all impressed by its unusual speed and silence. It is actually faster to start play than many CD players.

Denon don't show you which way around to place the tape, which was initially confusing. Having recently heard of a DAT recorder that destroyed itself when the tape went in the wrong way, I resorted to the instruction manual immediately, failing to notice that the

does seem almost too normal to do so. Yet, whilst the recorder looks and operates just like a normal CD player, it is in fact an analogue box-of-wheels, deftly designed and assembled to fit in with current fashion.

Priced at £299.95, the deck's sophistication doesn't come cheap. Those with shallow pockets may be interested by the DRS-510. But the '810 offers more than a quick draw. It possesses all the features demanded by serious tape users, namely three heads for off-tape monitoring, plus a dual capstan transport mechanism for excellent speed stability. It almost seemed to be too good to be true. It was. The Measured Performance tells why.

Denon style this deck in the tradition of their CD players. It is even built in the same manner. The exterior has been

There is a timer-start facility, a memory stop (stop at zero), automatic tape type selection and auto-monitor selection with manual over-ride. The latter prevents the recorder falling disturbingly silent, possibly dead, due to the monitor button being in the wrong position.

The record level display looks much like a track/time display of a CD player. It shows tape time, or an arbitrary count figure. Record level runs up to +10 and display resolution is good, if not exceptional, being limited by display length.

Variation bias has been fitted for tape tuning. It works with metal tapes, but with limited effect. I found there was enough adjustment to 'flatten' commercial tapes like TDK MA and That's MR-X PRO, to name just two. The deck has been factory-adjusted accurately to give a very flat frequency response with TDK MA metal tape at centre bias (see the analysis). Similar results could be obtained with all ferrics and chromes, even the most awkward like TDK AR-X, I found, making tape compatibility excellent.

Sound Quality

The DRS-810 surprised me by sounding better than expected. Denon invariably engineer smooth sounding products,

arguably at the expense of some verve. The DRS-810 struck me quite strongly as a very smooth and serene sounding recorder in general, with a fine sense of imaging and general feeling of coherence. Wondering why this should be, I can only surmise that the very flat frequency response of the head has much to do with it. In contrast to ones which measure better, the Denon should have been trounced. I didn't feel it was. I rather enjoyed listening to it, which even surprised me!

With TDK MA metal tape, the sound started to crack up as musical peaks were allowed to go over +3 on the display, just as measurement predicted. A messy, shaky sound set in; it was unpleasant. However, providing MA was recorded no higher than 0VU or so, the DRS-810 produced a fine recording.

Results were even better with BASF Chrome Super II, since it suits lower level recordings, being quieter than metal tape. The DRS-810 then only needed Dolby B engaged for hiss to disappear. This proved the ideal tape, allowing the Denon to produce its smoothest and most atmospheric recordings. I was very impressed.

With TDK AR-X, Dolby C had to be engaged to eliminate hiss. This softened out the sound, making it a bit warm and enclosed. A good sense of tonal balance

was maintained all the same.

Prerecorded tapes were reproduced extremely well. It was here that the DRS-810 really shone, I felt. Whilst it didn't have the Technicolour sound of some decks, from Grace Jones' difficult Inside Story (a bad recording only a good deck can resolve) through to the gentle and beautiful Chopin Nocturne, Opus 32 No2, the DRS-810 excelled in its smoothness, easy stability (it doesn't have tight timing) and total coherence. I seemed only to notice the sound stage and the performance upon it. It was a relaxing and beguiling performance. If a product conveys music so well, it is difficult to be critical, even when the test equipment says "Sonny, there's a problem." What problem could there be here? I was inclined to think, when relaxing in front of this recorder playing various prerecorded tapes.

Conclusion

Used with some discretion on tape choice, the DRS-810 repays with delightful sound quality, both with recordings and with prerecorded tapes. It is a bit expensive, but if it gives the sort of enjoyment when listening to tapes that I found, then it must be worth it. I feel obliged to observe all the same, that it is not the best choice for ardent recordists with high expectations ●

Measured Performance

Eric came back from Penta muttering "I'm sure they didn't want me to see the new DRS-810; they kept leading me away to other recorders. I wonder what it was?"

Did the importers know something they would prefer to remain unknown, or was Eric being overly suspicious? Either way, diversions being accidental or intended, a weakness was lurking within. Basically, although this is a highly specified deck (three head, dual-capstan, etc) it cannot get the sort of recording levels onto tape that have become the current norm. I suppose the drawer loading mechanisms are costly to make, leading to cost cutting elsewhere, in this case in head performance.

Whatever, the DRS-810 is not for serious recordists, which is disappointing. The head manages a feeble +1dB maximum recording level on metal and chrome tape. At £170, the Technics RS BX-606 I tested in our November 1991 issue got +6.5dB onto That's MR-X PRO; at £299.95 the DRS-810 manages +1dB with the same tape.

Denon have put peak record level (0VU) on the record level display at Dolby level. This means 2dB can be added to the above figures when assessing maxima. That's MR-X PRO can be recorded to +3 on the display, for example, which extends optimistically to +10.

In case you're wondering about the significance of low peak record level, it is that on replay, hiss will be commensurately more obvious. In other words, it will be +5.5dB more hissy than a Technics '606 - or other closer price rivals. For uncommitted users, at whom this machine is perhaps aimed, recording up to 0dB and no further will give satisfactory recording quality all the same. Low hiss tapes, such as TDK SA-X or BASF Chrome Super II are recommended. Metals are hissy and offer no benefits on this deck. Good ferrics, such as

TDK AR-X should also be considered. Dolby C pushes hiss down to -76dB which makes it inaudible. But this system often compromises sound quality by rounding off transients and giving a 'closed-in' sound.

The head otherwise has a very flat frequency response, as the analysis shows. Ferrics, chromes and metals could all be tuned flat to provide recordings having perfect tonal balance. This is important for a natural sound.

Replay frequency response was also flat. This ensures prerecorded tapes are played well, freeing them from the yoke of dullness and muffling that surrounds the medium. This shows that both head azimuth and record equalisation were well set.

The dual-capstan transport produced little flutter - their main strength. This improves clarity and lessens the 'papery' colouration peculiar to cassette. The transport exhibited a bit more speed wander than those having a direct-drive motor, however. All the same, there was little wow, which is important for stable and clear sustained notes.

The DRS-810 measured well in all areas, except for head overload, where it was

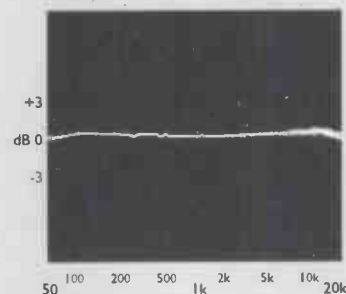
poor. The limitation is such that when recording, peaks should be allowed to exceed 0VU by little more than a few dB. If Dolby C is used, hiss will not be intrusive. This is the best way to exploit the DRS-810. It doesn't work well with metals. **NK**

Test Results

REPLAY (prerecorded tapes)
 Frequency response (-2dB) 30Hz-20kHz
 Speed accuracy +0.4%
 Hiss (70uS, Dolby out) -58dB

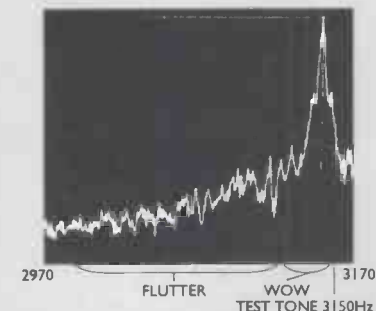
RECORDING (blank tapes)
 Frequency response (IEC Primary Refs.)
 ferric (IECI) 12Hz-20kHz
 chrome (IECII) 12Hz-20kHz
 metal (IECIV) 12Hz-20kHz
 Separation (1kHz) -52dB
 Distortion (315Hz) 0.8%
 Hiss (70uS, Dolby out) -56dB
 Speed variations (DIN total) 0.05%
 Flutter energy (3-3.13kHz) -33dB
MOL/SAT (IEC Refs)
 IEC I (ferric) +3dB/-4dB
 IECII (chrome) +1dB/-4dB
 IECIV (metal) +1dB/0dB

Frequency Response



Flat frequency response with all tapes

Speed Stability



Little flutter and wow; slight drift.



tweak. While it may look slightly ungainly and probably degrades the sound of the Kans a little, it is still a far better fix than an expensive repair bill or an injured child.

Although they do not have the awesome sense of dynamics and scale that the Isobariks possess, it was a shrewd move putting a pair of Kans into the system while the 'bariks were being upgraded. They have a remarkably musical rhythmic quality that few small loudspeakers can match. Sam is now thinking about setting up a small system in his kitchen where both he and his charming wife Morag spend a great deal of time, and which is currently served by an ageing ITT ghetto blaster.

In his garage, which has never seen a car but has seen an entire paddock-full of rocking horses, lives his second system. This receives more use than

reader's system

A second system, and a Rocking Horse workshop in Northern Ireland, visited by Alan Sircom.

While at the Belfast Hi-Fi show, I was approached to photograph a reader's system, with a difference. As the offer allowed me the opportunity of taking in some Northern Ireland scenery, and a free lunch, how could I refuse?

Sam's system differs from most that we have looked at up to now in that it is not his main one. It is set up in his garage, where he works during the day making rocking horses; in the roof are a selection of beautifully finished wooden toys, many of which are road-tested by his two children, Christopher and Louise.

In the living room of his converted school house in Dromore usually sits a passive Linn Isobarik system. This consists of Linn LP12 turntable with Lingo power supply, Linn Ittok arm and Troika cartridge, on a Target wall shelf, Linn LK-1 pre-amplifier and LK-280 power-amplifier and older Linn



Isobarik loudspeakers. These were over at Linn's factory in Glasgow at the time of writing, so he had a pair of Linn Kans as a temporary replacement.

The Kans, along with the rest of the system, were supplied by Mike McLean of Lyric Hi-Fi in Belfast. To avoid watching the Linn Kans taking a tumble through the boisterous activities of children and rocking horses Sam has child-proofed them by binding them to their stands with lengths of thick masking tape from his workshop. As one who has also had to share Linn Kans with children in the past, I can appreciate this handy

most hi-fi equipment, short of that used by reviewers and demonstration stock in a hi-fi shop. It also lives in an environment of dust, temperature changes and wood shavings, the like of which is second only to sea water and hydrochloric acid for causing damage. It is a tribute to the manufacturers that it still operates at all.

The system as it stands today consists of a Rega Planar 3, with the well-loved RB-300 arm and a Linn K9 cartridge. This shares a home made wall shelf with a Quad 303 power amplifier. On the shelf above sit a Quad 33 control unit and FM3 FM tuner. Either side of the two shelves,

at about eight feet above the floor, are two Sound Organisation stands with a pair of early Linn Sara loudspeakers, connected to the 303 by Linn K20 cable.

Sam will be the first to admit that this system does not represent current standards. In many ways, a wonderful hi-fi system is the last thing one needs when working, as your concentration slips away fast. He does get a great deal of enjoyment from it, often using the FM3 tuner to provide long interludes between records. His hands moved across the controls of the Quad amplifier with a speed born out of practice; he obviously uses this equipment as often as his carpentry tools.

Over the coming months, Sam hopes to upgrade the system by building a Linn LP12, with the aid of Mike from Lyric. As he built up his



The Linn Sara loudspeaker out of harm's way on a wall bracket.



engine on after-burn. Within seconds the entire workshop, the size of a double garage, was uncomfortably warm. "It gives out over 100,000 BTU," said Sam, "and uses about five gallons of fuel in an hour. Mind you, if we used this for an hour, we'd all be toast." Apart from scaring the odd reviewer and warming the room, the heater is used for helping the rocking horses to dry out in the winter months.

It would be unfair to be too critical of a system that would, in normal circumstances, be more likely to consist of a transistor radio. By those standards, Sam's workshop system is superb, having a rich, clear and full sound. When compared to a domestic system it fails to reach the top standard, but I would still compare it more than favourably with any midi system.

It was used, as it would be normally, for several hours as background music. Meanwhile Sam could concentrate on making rocking horses. What did surprise me was, that the system combined together well. It is not the last word in music reproduction - Sam's main system is far closer to that - but it still created sounds that were pleasing and easy to listen to.

Sam is not too fussed by the hi-fi business. He knows what he likes in his music and his systems are opti-

mised to get it. In both the main system and the workshop there are many areas in which improvements could be made. The Linn Ittok arm could be upgraded to an Ekos, the LK-1 preamplifier could benefit from a Dirak power supply or even be changed to the new Linn Kaim preamplifier and the LK280 could have a Spark power supply.

In the workshop, as suggested by Sam himself, the Rega could be swapped for a Linn LP12, and both the amplifier and tuner could be changed, although this is less necessary. On the whole, however, Sam is happy enough. His varied tastes in music, combined with a reasonably large record collection, mean that it will be a long time before another upgrade is needed.

At no time did we spend time talking about Compact Disc, or the lack of vinyl in the shops. Sam is not bothered with the situation here, either. As with all of us, he may one day have to buy a CD player, but that day is still a long way off. It is easy to be quite jealous of Sam and his idyllic lifestyle; he appears happy and content with his lot. Full of bonhomie and with a laugh in his voice he concluded by saying, "What more do you need to keep the workers happy apart from good music and a full glass of good brandy?" I'll drink to that ●

Sam's workshop system: a hard working and reliable Quad 33/303 preamplifier and power amplifier fed by a Quad FM3 tuner and Rega Planar 3 turntable.

existing system, with the exception of the cartridge and the loudspeaker cable, from second-hand parts, Sam is obviously looking towards doing the same with his Linn. The system in the workshop does not have the same sonic strengths as the main one in the house, but there is still no reason why it cannot be improved.

"Dust is still the major problem, here. Heating too, but if it gets too cold, I just use this." He pointed to a missile-shaped device. Sam explained that it was an industrial heater, rather like a petrol-driven hairdryer, on a much larger scale. He turned it on and it roared and spat flame like a jet

Simplicity itself is the external hallmark of the £300 CD-07. Not only does it share the sloping slab front of AR's partnering amplifiers and tuner range, but also two look-alike control knobs - a small round push-button on the left for power-on, and a larger one to the right, very similar to AR's amplifier volume control except that it doesn't rotate. Here is the primary blessing - or fault, depending how you look at

AR for not offering more, or congratulate them for resisting the temptation to turn the display into a computer game. The prompt to insert a disc is a simple flashing dotted line, for example, and 'Error' appears when you make a programming mistake the microprocessor - a simple-minded affair in comparison to what is on offer from Philips - cannot cope with.

There were no complaints in the

music from massachusetts

Acoustic Research's CD-07 Compact Disc player makes pleasant music for Eric Braithwaite.

it. The right hand control possesses the mere two functions which can be utilised from the player itself, Load and Play. Everything else is accessed from the remote provided, which in an access of enthusiasm shares control with the tuner, tape recorder and amplifier and even a VCR if compatible.

This is fine, and useful if you have an all-AR system, but if you have the kind of setttee that eats remotes for breakfast and in the darkness of the night regurgitates them onto another planet light years away, beware! You will be condemned to listening to the latest Kylie Minogue from beginning to end.

However, the functions relegated to the remote handset cover most eventualities, except that a maximum programmable memory of twenty tracks is coming to seem a bit short on change these days. Nor can you have fun sliding the drawer in and out from your armchair - this is one player where you have to exercise two legs and a finger to open and close the drawer. Otherwise, Track Search, Track Skip, Pause and Repeat are all available. Conveniently the drawer accepts full-size or three-inch discs without an adaptor, and there is an indicator on the display to tell you which is inside so you don't have to find a ruler, or unjustifiably curse the record company for short measure.

The rest of the display, view it as on the small side or discreet, whichever you prefer, shows Track Numbers and Elapsed Time, Track Programming information and Error and Repeat flags. Nothing complex or difficult to come to grips with in this, and I didn't know whether to berate

operational department, though functions were accessed somewhat on the leisurely side of sprightly, and the drawer does seem a bit on the flimsy and wobbly side.

Curiously, the listening session presented me with a conundrum, having been listening to the Philips CD850 MkII beforehand. If I hadn't been told, I don't believe I would have said right out this was a Bitstream player; the initial impression was of a good, smooth sixteen-bit model, missing out on some of the fine detail that tends to make good Bitstream stick out these days. I was taken aback looking at Noel's measurements, to see that it even measured like a sixteen-bit model.

Switching from the analogue to the co-axial digital output and using Furukawa cable still didn't appear to bring out any more Bitstream except in that the bass appeared to be more controlled, recorded ambience was a little clearer and tonal qualities generally a bit less fuzzy and a bit purer.

To give an idea, the first session began with Prince's new album through the fixed analogue output, and the immediate reaction was that though there was an impression of a tight piece of detailed music, we had here a competent player, but not one with obvious verve or excitement. The first track of Diamonds and Pearls is much more involving rhythmically than the AR seemed to allow for, and while none of the individual elements of the mix were missing, the performance seemed perfunctory, the rumbling thunder rumbled rather than growled, and the vocal mixes lacked real spotlight focus.

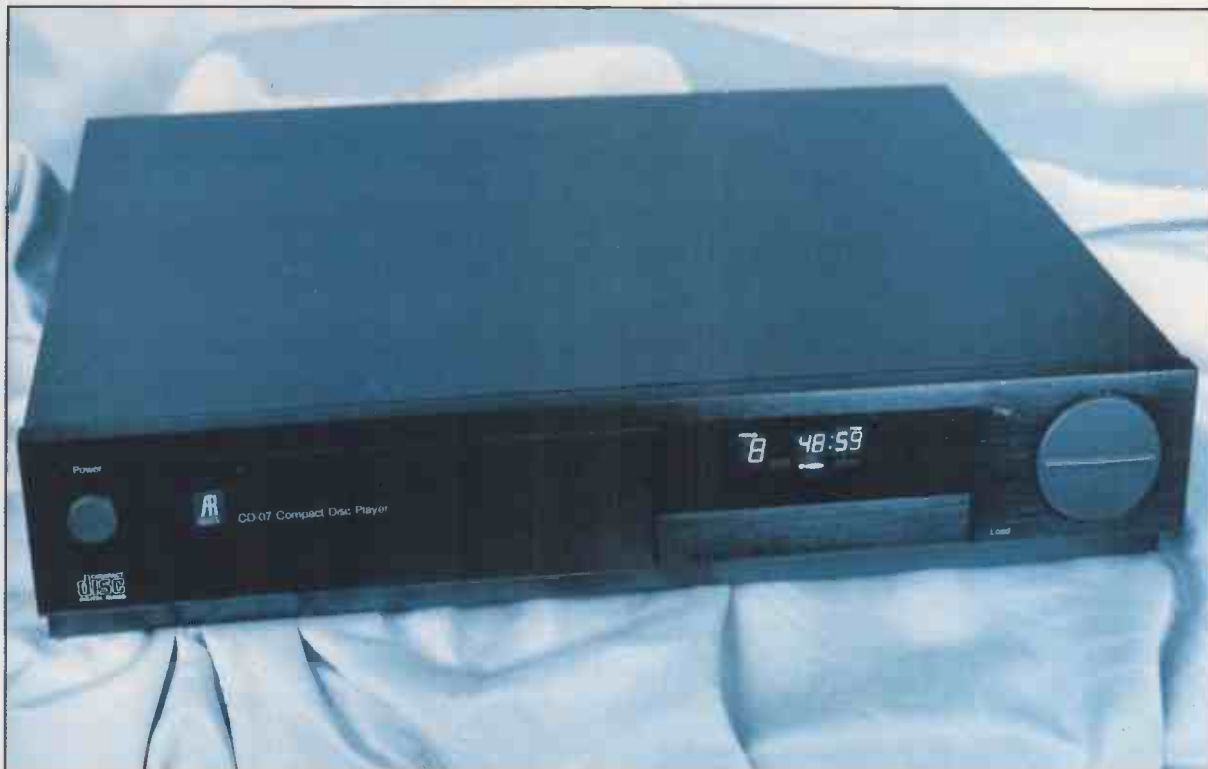
Switching to the co-axial digital output and the Deltec Little Bit had Prince sounding a bit more on the ball, with much more controlled and drier bass, the thunder more thunderous, but vocals and the upper mid-range now with a noticeable sheen. There seems to be an area where the mid-range has less focus than the frequency extremes.

This is not a fatal flaw, but Prokofiev's Scherzo for four bassoons - it really is a cheerful piece; bassoons can be fun, honest - fell somewhat flat. Tonally, my notes say, there was more of a tinge of brass sound than belongs to a bassoon. Tonally, the representation was simply not quite truthful and it was clear that the busy clacking of keys was more prominent. Digital output improved both tonal quality, taking away a good proportion of the brassy gleam, but failed to improve definition more than marginally. A 'soft focus' effect stubbornly remained in the central area between the speakers, which made it hard to believe in two of the instrumentalists' reality.

My now notorious test-piece, Omette Coleman's 'Song X' appeared rather limp by comparison particularly with the Philips CD618. There was, however, rather more energy than was evident with the Pioneer PD-8700, though the sax still failed to bite as fiercely as it could, the drums were a little flabby, and the plucked bass, while all there down to the bottom, seemed to lack purpose in the performance. This was music which in a sense became a slightly out-of-focus movie instead of a live re-creation. As a transport, the AR-07 cleaned the whole sound up, and though overall brighter, the connected strands still had loose ends.

Orchestral

Orchestral music next. The Decca recording of Tchaikovsky's Capriccio appeared superficially to possess a very full, broad orchestral sound, and was quite appealing. However, this was artifice, and not what the Decca engineers thought they had laid down in St Eustache in Montreal. There is more ambience, and I found myself peering into a somewhat vague soundstage wondering why I couldn't distinguish First and Second violins clearly, while still sitting back and enjoying the general picture. That was the trouble; the picture the CD-07 offers is a generalised, not a highly specific one. The digital output was the difference between a sepia portrait and a black-and-white one, though more contrast would have been helpful. Far too many of the orchestral sections gave the impression of playing at equal volume, with the finesse and subtlety over-ridden. There was the distinct impression of



rather more of the orchestra taking part when the digital output was brought into play, though while there was increased differentiation between First and Second violins, it was still something which had to be searched for.

Walton's Facade, which has tripped up many a player - and some far from cheap ones, too - in showing up less than perfect timing, turned out to be more even-handed in tone and texture. It's a smaller band, of course; Jeremy Iron's voice came over rather better than Peggy Ashcroft's whose split-second timing appeared to blur.

Perhaps this is a better player for Pavarotti in the Park than Sutherland on the Strand. An inkling of flabbiness diminished using the digital output, yet once more.

Looking back over my notes, it occurs to me I have been damning with praise so faint it is a pale water-colour wash. In some ways this is unkind: AR's new CD-07 is not a bad player. It does not diminish musical enjoyment, for much of that remains intact over a wider spread of genres than many players manage these days. There is, however, compared to the best of the few in price ranges a

hundred pounds or so either side, more to be had in musical vigour or detail and depth, or both.

The best description of the AR-07 is of an even-handed presentation. There is nothing seriously lacking in any department, just an intimation that better is possible. While some in the same price-range will survive partnership with equipment well on the wild side of the bank balance, the AR-07 is one best slotted in to a system within its own financial range. There it will sit happily, civilised and pleasant, with a manner well-suited to its understated exterior ●

Measured Performance

This player uses Philips chips and transport. I imagine it employs Bitstream technology, albeit in not-so-impressive a form. The distortion analysis clearly shows an array of distortion spikes, which isn't the best performance I have seen from this technology. There was some imbalance between the channels, the left channel in particular getting progressively worse in its distortion at low levels. The CD-07 measured more like an old sixteen-bit player in this respect. It is difficult to be certain about possible impact upon sound quality. Some masking of fine detail and loss of real finesse can be just apparent, all other things being equal. I noticed standard NES534 output op. amps, and suspect that the board is a standard Philips production unit.

Frequency response was much like that of the Philips CD-850 MkII, tested in this issue. Basically flat, it provides an even sounding tonal balance, free from dullness or emphasised and divorced sounding treble. The ripples are not really consequential, being due to the Philips SAA-7220 digital filter used.

Unlike the '850 MkII, the AR CD-07 produces little RF noise or unwanted rub-

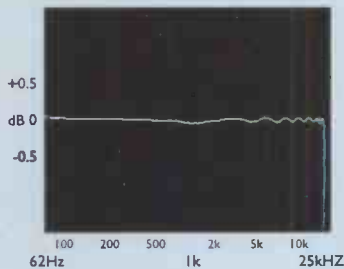
bish above 20kHz. It measured well in this area. Channel separation wasn't impressive by CD standards, but it was satisfactory. It may well be that reduced but consistent channel separation across the audio band might sound better than a varying characteristic. Only listening tests can determine this.

The AR CD-07 possesses a competent measured performance by current CD standards, but it wasn't distinguished. There were no major blemishes. **NK**

Test Results

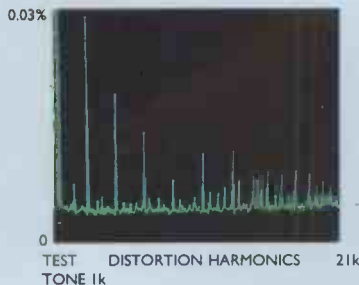
Frequency response	4Hz-20.8kHz	
Distortion		
-6dB	0.005	0.005
-30dB	0.04	0.03
-60dB	1.1	0.76
-90	39	32
-90dB dithered	28	11
Separation	left	right
1kHz	-87	-87
10kHz	-98	-98
Noise	-98dB	
with emphasis	-101dB	
Dynamic range	102dB	
Output	1.97V	

Frequency Response



Flat response with filter ripples

Distortion



Distortion harmonics across the audio band

If they are to shine, high quality monitor loudspeakers need a lot of attention in their installation. It is a shock to hear just what a difference an amplifier can make; often it is the source of despair. Similarly, placement, stands and cables all help to hone the sound by improving tonal balance, lessening overhangs and 'booms', improving clarity and, in particular, adding the sense of insight and precision that characterises top systems.

Choosing a monitor can be a difficult enough process; choosing partnering equipment and setting it all up can be even more perplexing. Here's a guide to the problems you need to consider, together with our own guidance and answers based upon experience.

high quality. The amplifier though is the item that directly interfaces with the loudspeaker and it has to drive it in a sympathetic fashion.

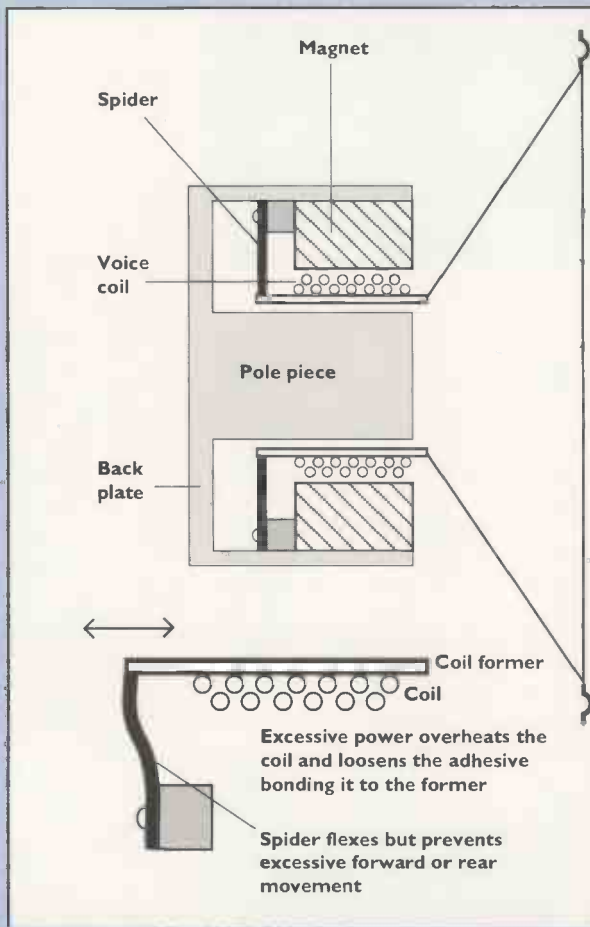
All six monitors we tested were very revealing. Put a bland, lifeless or coarse sounding amplifier in front of them and that, you will think, is how the loudspeaker sounds. Finding an amplifier that is dynamic, revealing, yet complementary both to the loudspeaker and your own tastes is an especially difficult task. Here's an illustration of the problems involved.

A freelance agent for one of the loudspeaker manufacturers featured in this report told us he was having difficulty making his client's loudspeakers sound any good. When I listened to his system it sounded rather bland and flat. We both

full range of strengths. The final choice is personal, but it can be influenced by outside factors.

For example, if a loudspeaker has a particular character, you may like the amplifier to either neutralise or enhance it. The ATC SCM20 we tested has rising treble and a bright sound balance. It is helped by being partially neutralised. ATC recommend a Quad 606 power amplifier be used with it. The 606 is tonally well balanced. It is neither bright, nor hard sounding, complementing the SCM20 quite well. We would recommend a warm sounding partner for the SCM20.

An example of enhancement is my own choice of Deltac DSP/DPA50S preamplifier and power amplifier for Quad ESL-63s.



LOUDSPEAKER POWER HANDLING

The maximum power a monitor loudspeaker can take and deliver is determined by the strength of its drive units and the power they are apportioned by the crossover network.

Tweeters invariably suffer from heat damage or burn out.

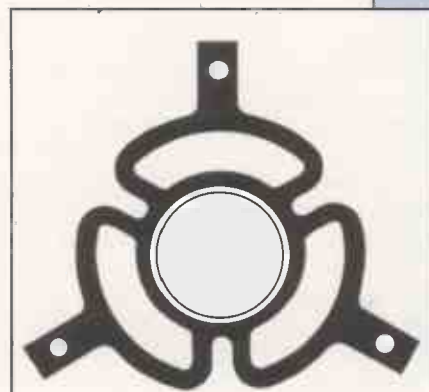
Bass/mid-range units may reach their mechanical limits and damage themselves, or they may burn out - or both at the same time!

A flexible web known as a 'spider' limits mechanical movement of the voice coil and cone. It stops the coil jumping out of the gap between magnet and pole piece when going forward. It can also stop it hitting the back plate with a 'crack'.

Continuous running at high levels commonly overheats the coil and destroys the adhesive bonding it to the former. The loosened wires then rattle and scrape. Sometimes the coil can burn out altogether.

Determining this point with accuracy is impossible; Rock music puts in more power than Classical for example. Manufacturers can do much to strengthen drive units and improve their heat resistance. Power handling and robustness are therefore dependant upon heat dissipation techniques and arcane matters such as glue technology.

Generally speaking, because of this, large manufacturers who make their own drive units (e.g. Tannoy, B&W, KEF, etc.) are most sensitive to the problem of robustness and power handling. The common advice is to use a powerful amplifier, but don't overload or over-run it.



The 'spider' is a flexible web bonded to the rear of the voice coil and screwed to the chassis. It helps centre the coil in the gap and limits maximum coil/cone excursion.

Voice coils can reach 200 degrees Centigrade when driven hard. Even though high temperature glues are used to secure the windings to the former, they can and do fail at such levels

THE AMPLIFIER

The last link in the audio chain - the loudspeaker - can and will improve the overall sound of a system as it stands. Replace an ordinary box with a high quality monitor and you may well hear more information, less coarseness and distortion and a more natural tonal balance, for example. In some cases, you could find the system sounds worse, if the new speaker reveals faults or highlights emphases that were previously disguised.

Linn always point out that the loudspeaker is only as good as the system that precedes it. If you want to fully exploit the abilities of an expensive monitor, the system itself needs to be more than just 'good' - it needs to be an appropriate match. Or in other words, it must be compatible.

So what sort of system should precede a high quality monitor? The source components obviously need to be of sufficiently

suspected the amplifier, which was an expensive Japanese item of a sort we studiously avoid on this magazine. What were we using, he wanted to know, and what would we recommend he use?

Firstly, don't expect a mass produced, integrated amplifier to be able to deliver the sort of sound that fully complements high quality monitors. These loudspeakers demand dedicated preamplifiers and power amplifiers, especially if they are to be played loud and clean.

Our friend needed 'obvious' neutrality, or his clients would likely complain. We recommended Audiolab. Their amplifiers combine neutrality with a good blend of other abilities. Many listeners might prefer something a bit more characterful. Naim amplifiers are fast, punchy and forceful for example. They would offer a more vivid performance. Monitors need a very well designed amplifier if they are to reveal their

These amplifiers are highly detailed, analytical and precise, much like the Quads. The two go together well as a result - and they are a power match.

So be aware of the need not just for a good amplifier, but an appropriate one in sound quality terms. It must match the speaker such that together they meet your own tastes and requirements.

POWER HANDLING and REQUIREMENTS

On this complex matter there seems to be only complete misunderstanding. Luckily, it doesn't matter too much, because no sensible answers are available in any case!

Most people seem to equate the nominal power handling figure of a loudspeaker with

how loud it will go. In fact, how loud a speaker goes depends mainly upon its mechanical strength rather than the amount of power going into it.

How loud a speaker goes with a certain amount of power fed in to it (always one watt) is called its sensitivity. But this does not tell you the maximum loudness a loudspeaker will reach, only how well it converts amplifier power into sound.

How can you tell? Er...well, you can't! Magazines and reviewers cannot tell, because it requires long and carefully instrumented destruction tests which are quite beyond their capabilities (including ours). The better equipped manufacturers can run the necessary tests, but they don't bother any more because the results are either too complex or not meaningful.

Most loudspeakers reach a mechanical limit first, when the cones hit the end stops with a loud 'crack'. But long running at high levels, just before the cone starts going 'crack', commonly loosens voice coil windings due to overheating. Temperatures can rise to 250 degrees Centigrade. This means it is pointless to run a loudspeaker up to its mechanical limit and measure sound output; coil temperature has to be measured as well. Then you have to choose the type of music, etc, etc. There are various official power handling tests - all of them complex and mostly little used.

How loud a loudspeaker will go and how much power it takes to get it there are almost impossibly difficult questions to answer with accuracy, believe it or not. Manufacturers seem to have given up trying these days.

Here are some useful generalisations. The more drive units a loudspeaker has, the louder it will go, simply because power is divided up into smaller amounts per drive unit. Don't expect budget miniatures, with a small 6in bass/mid-range unit and tweeter, to go very loud for long periods.

Our mini-monitors all went loud without difficulty and most of them are robust enough to deliver reasonably high volumes over a long period. ATC claim their SCM20 is ultra-robust and will take continuous high power inputs and deliver high volumes, for studio monitoring purposes. B&W also claim their 805 is intended for studio monitoring, being developed for Abbey Road Studios. It should also take a lot of power; ours certainly could go very loud. The Epos ES1s do seem fragile; we've had a problem with two pairs so far - and we haven't been hard on them.

Expensive mini-monitors should go loud. However, unless specially built, they're not the ideal choice of loudspeaker to do so. Bear this in mind.

STANDS AND PLACEMENT

Loudspeakers image best when kept away from walls and floors. The manufacturers of all six of our mini-monitors had designed them for stand mounting. This includes B&W, even though they say the 805 can be shelf mounted; we found it wasn't an ideal location. Only the ATC SCM20 could be put close to a rear wall without sounding bass heavy.

So expect to have to use stands, with the front of the loudspeaker anything from 0.6m to 1m in front of the rear wall. With the

loudspeakers spaced around 1.5m apart, a stereo soundstage should be heard to exist between the speakers, individual instruments and performers being positioned fairly clearly upon it. With a good recording, the sound stage should have a sense of depth to it too.

We place quite a lot of emphasis on the stereo staging abilities of a system, including the loudspeakers. A really lifelike stage construction elevates the performance from the box, making it appear to hang freely and naturally in the room. When this is achieved, the speaker 'disappears', as it were, the speaker seeming to exist in its own right. This is what you should expect and aim for.

Small loudspeakers often image well. Mini-monitors can and should image very well. Many in our group test did so. The Epos ES1s can sound quite ethereal in this area, for example.

Stand height is chosen to put the loudspeaker on the listening axis of the ear or, in some cases, off it. Most loudspeakers should be listened to on-axis, with the ear no higher than the tweeter. Move higher and the sound will start to change, usually for the worse, as the two drive units start to selectively cancel out at certain frequencies.

But be warned! Some loudspeakers sound better slightly off-axis. This includes the Tannoy 609s and Kef Uni-Q loudspeakers. Make certain they are either above or below ear height, or make them face straight down the room. Choose stand height accordingly.

Heavy loudspeakers like the ATC SCM20s demand extra strong stands. Any loudspeaker that produces heavy bass and goes loud will generate strong axial reaction forces. The cabinet must be restrained from vibrating, or bass quality and impact will be softened and muddled. For this reason, stands are spiked into floors and loudspeakers should be either spiked or Blue-Tacked onto the top of the stand. The idea is to locate the cabinet firmly to resist vibration or rocking movement.

CABLES

Good quality cabling can make a system. Saving money by connecting a high-quality amplifier and loudspeaker, costing hundreds or even thousands of pounds, with cable that costs 36p per metric tonne is not sensible. Unfortunately, cabling is an area steeped in hype and mysticism.

As stated by Ray Kimber in the last issue, few manufacturers actually make their own cables, preferring to buy in bulk from surplus stores and electronics catalogues. Some of these non-hi-fi cables do work extremely well in audio, while others do not. Cabling is also an area of system dependence, where

some well engineered cables will not work successfully in a system.

There are few hard and fast rules, here, I'm afraid, but there are some useful pointers. First, it's always a good idea to ask either your dealer or the manufacturer for their recommendations; they will have often designed a product to work with certain components, which may or may not be mentioned in their literature. With some companies (i.e. Linn, Deltec and Naim), they have gone one stage further by making their own cable, thereby ensuring that systems have a good starting point.

Secondly, try to obtain cables on loan, if at all possible. Obviously, you have to be on speaking terms with a dealer to do this, or have a friend with a variety of different

choosing and using a monitor loudspeaker

A high quality loudspeaker should be installed with care and with thought to matching with the both the room and the system.

cables handy. Cabling can be unbelievably expensive and it has a negligible second-hand value. Try to live with the cables over a period of days, as they have a habit of 'bedding down'. Curiously, you may well find that it is when the cables go and you have to revert back to ordinary leads that you feel most unsettled or unhappy about results and aware of the benefit of good cabling.

If there is no chance of borrowing a set of cables and your dealer and/or manufacturer cannot suggest any options, then there are still some good safe bets to be had, depending on price. Linn K20, Audioquest, Furukawa, Kimber Kable, Audioplan Musiclink and Deltec are all well respected among the industry.

Finally, I have always found using both interconnect and loudspeaker cables from the same manufacturer seems to integrate together well in terms of perceived sound quality ●



Top of their new Q-series range, the £549 floorstanding Q90 from KEF uses their two-driver-in-one Uni-Q unit, but offers it at a far lower cost than their Reference Series loudspeakers. Different and simpler operating principles are used, but similar cabinet work and drive units. As a result, you get a lot of KEF for the money.

Available in a well-finished black, wood-grain vinyl only, to keep costs low, the Q90 is slightly larger than the 103/4s, with which they bear a superficial similarity. At 900mm high, 246mm wide and 329mm deep, with a protruding upper baffle and magnetic grille catch, this loudspeaker stands high.

‘A high level of both detailing and imagery at both low and (very) high volumes was the order of the day with this loudspeaker

The Q90 is reflex ported and is essentially a three-way design. It has a polymer dome tweeter, with 25mm fluid-cooled coil, set in the heart of the 200mm mid-range drive unit, with its own 38mm coil. The treble unit fires out through the centre of the bass/mid-range cone. Below this Uni-Q unit, there is a further 200mm drive unit with a 38mm coil.

KEF build loudspeakers to last. The Q90 seems to have been built with longevity as a strong point in their favour. Everything has been made to survive the rigours of long term use. Even the vinyl wood finish, which extends around the back of the loudspeaker to give it real wood cred, is the sort that will withstand years of having pot plants rested on the top.

I'll be honest, my listening room is far from perfect. On the plus side it has some non-parallel walls, but it is also quite small, has a bouncy wooden floor, with few soft furnishings and the walls are plastered (or so it seems to me when I return from the pub). In other words, for any large floorstanding loudspeaker, the room is difficult. Whenever a deep bass note comes along, it takes the best part of a week to shoo it out of my room.

I have learned to live with it and can 'listen past' the room effects to gain an accurate picture of what a loudspeaker is doing. Hi-Fi World has its own listening rooms as well of course, which means I can cross check my findings. So far, only a few loudspeakers have been able to work without setting the room in motion. To date these have been the Audio Note AN-J's, ProAc Studio 1 Mk II's, Neat Petites and the active Pentacolumns, whose circuitry effectively enables the listener to dial out the room anomalies.

Enter KEF's latest floorstanding Q90, which I found to be far less room dependent than most loudspeakers. This is very difficult to understand, as I am used to having large-ish loudspeakers creating ripples of movement around my listening room at anything approaching high volumes. This means that the KEF's have all the bass extension and bass weight of large free standing loudspeakers, with the ease of room alignment of smaller against-the-wall (boundary) designs.

KEF decouple the magnet from the loudspeaker assembly. This acts to reduce the box far less likely to resonate in time with the music. The resultant lack of box movement allowed the KEFs to be played at high levels without serious box boom - a potential problem with any design possessing long side panels. This effectively destroys one of the favourite ploys of the hi-fi tyre kicker; the knuckle rapping test. This is where you rap your knuckles against the side of the box to see if the cabinet is solid enough to operate well; if you hear a solid, dead thud, nod your head knowingly, as if in approval of a good design. The KEFs sound quite hollow by comparison, which would normally make the loudspeaker box resonate in sympathy with the music.

Decoupled

Because the magnet is decoupled from the chassis of the driver, it is less likely to excite the rest of the loudspeaker into resonance. This can be tested by playing music with a deep bass line and then putting your hand against the side of the Q90, at about the same height as the bass driver. There is little movement, especially when compared to almost any other box loudspeaker on the market. As with the ideas behind the original Uni-Q, KEF have patented this system, so it will be some time before others catch up.

In discussion with KEF earlier this year, they suggested that their research into loudspeaker design and the perfect room was purely theoretical. Some of the ideas that are being developed will filter down to KEF

loudspeakers, but for the most part they are dealing with notional perfection, that exists in the computer and the anechoic chamber. It does seem that KEF are struggling to find the loudspeaker that works regardless of the room it is placed in, given a few parameters about positioning.

The Q90s, along with the smaller, floorstanding Q80's are designed to work in free-space, while the cheapest in the range, the bookshelf Q60s, are optimised for boundary use. As the cabinet resonates less than most I would expect the Q60s to be less stand dependent than other small models. Certainly the Q90s seemed to work without too much fiddling about with their positioning.

The Q90s have most of the traditional KEF traits: high efficiency (89dB is quoted; we measured 87dB), high sound pressure levels (112dB is mentioned this time) and plastic drive units. Unlike the 103/4s and the rest of the Reference range, the Q series are quoted as an eight ohm load, which we question (see measured performance).

Imagery

I used the KEFs with a variety of different amplifiers, but equipment like the John Shearne Phase One and the Finestra preamplifier and new Lectum power amplifier (tested next month) suited it best. A plethora of cables were used, but the Audio Plan Music Link cables worked best of all, especially when used in bi-wire mode.

A high level of both detailing and imagery at both low and (very) high volumes was the order of the day with this loudspeaker. In this respect, the Q90s are superior to most of their current competitors. I also found they sound good with cheaper sources, amplification and cabling, meaning they are in every area a forgiving loudspeaker. Their level of detail and resolution, combined with uncanny dynamic range, makes for an exciting sound. I have heard few loudspeakers that can approach them in almost every aspect, without serious injections of cash.

They have one of the most tuneful bass lines that I have encountered from a free-space, floor-standing loudspeaker. Loudspeakers of this type have a tendency to waffle along without much definition, cabinet panel resonances helping to obscure clarity of tempo. This KEF, on the other hand, has a reasonably tight, rhythmic bass that sets the feet moving. Anyone familiar with KEFs and their reputation for a somewhat murky bass, might be surprised or believe I am exaggerating. I am not; the design process followed with the Q90 is changed from before, giving a different and, in my view, better bass

quality. As a result I found it difficult to stop playing the Q90s - even quite loud at about two in the morning.

The Q90s have a wonderful sense of rhythm and pace, although they are not as rhythmically tight as some Linn or Naim loudspeakers. Timing was spot on; it is purely the tonal quality of the bass that comes into question. I thought bass drums had a slightly overblown quality, instead of their usual tautness. However, I didn't feel this was either problematical or intrusive.

Their imagery was very close to the ideal from a box loudspeaker, travelling far and wide, hardly tied at all to the two black boxes. Images were solidly placed within the soundstage and had height, depth, width and weight. At times, I felt that this was almost too real, but the KEFs never became artificial, only straying a little way into the realms of 'hi-fi'. KEF, like B&W, put some effort into making certain their loudspeakers image effectively and in this case their efforts were easily appreciated.

Voices were portrayed with a good sense of articulation, some slight 'cuppiness', but they never sounded muted or sibilant. Fine detail was clearly displayed; quiet instruments were not sacrificed when the music became loud. The detail can get a little confused at the extreme top of the frequency range, where it became bright and a little hard. It also gets a bit lost at very high volumes; although at these levels one can never determine whether it is the loudspeakers



uniQue to KEF

**The new KEF Q90 with
'Uni-Q' dual driver
quickens Alan Sircon's
pulse.**

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THE CARY VALVE CD PLAYER

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or your own ears that cause the confusion.

As with their Reference Series loudspeakers, the Q90s have a wide dynamic range. Recordings such as 'I Scare Myself' by Thomas Dolby, had impact and drive from the drum and guitar, yet did not miss out on the subtle whisperings that normally get swamped in the mix. These KEFs also proved adept at differentiating changes in tone as well as dynamics. Instruments with a similar tonal signature are well demarcated, accurately separated.

They have some attributes that are lodged firmly in the high end, with a cost that is still acceptable

Some may find these KEF loudspeakers a little incoherent, while others would admire their ability to separate complex information.

In all, I find that there is a lot to recommend about the KEF Q90 loudspeakers. They have some attributes that are lodged firmly in the high end, with a cost that is still acceptable. They are easy to drive, go as loud as your ears can take without audible stress, have a wicked sense of rhythm and superb imagery. The very fact that they work so well in my room and the Hi-Fi World listening room suggests they will work well in a wide variety of situations. The Q90 offers a lot of technology and a lot of loudspeaker for the money. I liked them; Eric liked them and so did Noel. Such unanimity is a tribute to KEF ●

COMPETITION

And finally, as is now common when we unanimously like a product, we contacted the manufacturer and asked to give a pair away as a competition prize. KEF agreed straight away. So, in the next issue, we will be running a competition to win a pair of Q90s.

Measured Performance

The frequency response analysis shows some general unevenness in the characteristic of the Q90. There is a broad peak of a few dB centred at 1kHz. This in particular helps strengthen the amount of presence and projection vocalists.

Our analysis also shows that there is less bass roll-off at very low frequencies than with stand mounted loudspeakers. This is one region where a floor standing loudspeaker displays advantages. The Q90s rely to a small degree on floor enhancement of bass, something that was taken into account in our measurements by averaging over a number of vertical positions. The Q90s do have deep bass, measurement reveals. This was amply borne out in listening tests, as I'll describe later.

Although low bass output is maintained well, there is a slow fall away to be seen in upper bass. Checking the Q90 for response variation in relation to vertical listening position, I noticed that it gave a more balanced looking characteristic from the axis of the bass unit down to the port. This suggested that a weightier sound could be heard in the supine position, which was duly tried and led to both debate and experimentation (even more later).

Measurement showed that the Q90 varied its response slightly at differing heights, but it did less so at the upper end of the audio band than earlier Uni-Q based loudspeakers. There were no phase suckouts over a usefully wide vertical position range, but KEF ascertain that the Uni-Q driver is best listened to off-axis.

Like other KEF loudspeakers, the Q90 is a 'tailored' load. It hasn't been fully 'conjugated' as KEF put it, but it has been tidied up a little. It displays less impedance variation than most loudspeakers and it certainly has fewer extreme swings of voltage/current phase, especially around bass unit and port resonance. There is a swing to +45 degrees (i.e. inductive) at 1kHz, but even this is less than is common.

It would be easy to call the Q90 'an easy load' as a result. However, one has to take a careful view of the Q90 as a load in the broadest terms. Over the lower regions of the audio band, where large music peaks and voltage swings occur, impedance is unusually low, bumping along around 5ohms, as the analysis shows.

This is good for two reasons - it makes the speaker more sensitive and it utilises amplifier power effectively. High impedance loudspeakers don't exploit the power potential of modern amplifiers. Measurement produced a sound pressure level figure of 97dB for one watt input, at one metre distance - around +2dB louder than most speakers for any given amplifier power.

However, the drawback is that the Q90 will demand higher peak currents than many loudspeakers. If dynamic compression is to be avoided, a good amplifier capable of delivering heavy transient currents must be used. The Q90 is likely to make differences in bass performance between amplifiers more obvious than many loudspeakers. Although we found it more forgiving than usual of amplifier sound quality, small, lower powered amps may lack the muscle to drive it. The choice of partnering amplifier needs to be made with this in mind - and preferably with the benefit of demonstration.

Having said that, the Q90 will go louder

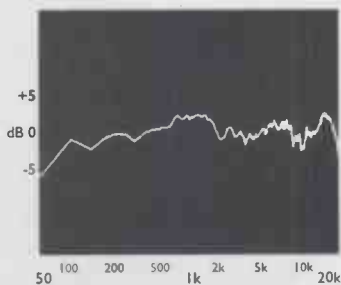
with any given amplifier than most other loudspeakers, before distortion sets in. This is quite important for a lot of people, I suspect. I carried out maximum tolerable and usable volume tests, which confirmed our suspicions. Because these speakers are very clean yet dynamic sounding, they plead to be played loud. It is very easy to do this; I found myself listening to 106dB peaks and could easily tolerate bursts at 112dB. That's about 6dB louder than most other speakers. When Eric took them home, his neighbours complained almost immediately. The presence of firm, deep bass, with clean fundamentals helps push up measured volume level - and also induces the neighbours to complain. Having said that, the Q90s struck me as offering a rare combination of excellent sound quality with the possibility of running at thunderous volume levels if desired.

Now to the sound quality itself. At a normal listening position, the Q90s sound light across the mid-range; they have good, deep bass, but it is slightly reticent. Many listeners would like this. However, sitting on the floor demonstrates a more even tonal balance is available that not only strengthens lower frequencies, giving more body to vocalists for example, but it also improves bass impact and intelligibility. Slight box thrum becomes evident too.

The alternative to sitting on the floor or standing on your head is to turn the Q90s upside down. They give a better balance this way around; it's measurable and audible. Alternatively, the speakers benefit from being put onto low stands, around 12in high. This creates an imposing stereo stage and both strengthens and speeds bass. All-in-all, jiggling around with the Q90s gives some useful alternative options, which may or may not be preferred. They're such an easy and amenable loudspeaker to listen to in all positions (of the loudspeaker, that is) that it doesn't detract from their appeal, I feel.

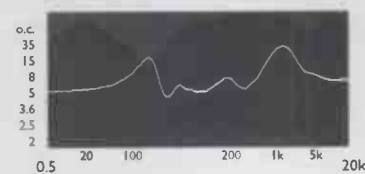
Three of us used the Q90s at home and we all agreed that they were thoroughly excellent, especially at the price. NK

Frequency Response

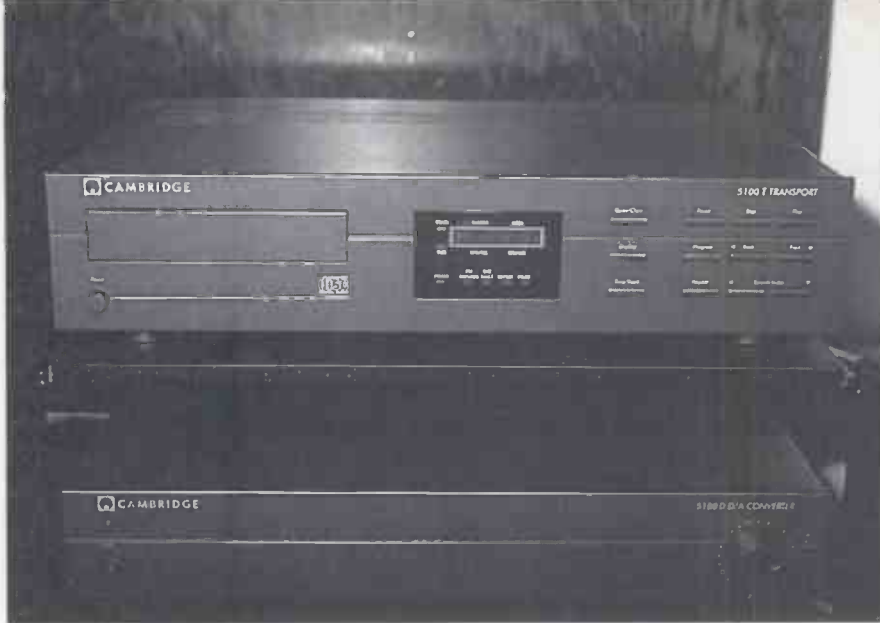


A wide peak at 1kHz pushes vocals forwards

Impedance



Below 200Hz impedance measures 5ohms



from CD, so this was received with some interest. Cary Audio's valve modification to Rotel's successful RCD 855 CD player was also on show, in one of Reference Imports' rooms. This looked interesting, so I persuaded John Jeffries to let me take it home for a quick listen (See next month's issue).

One of the more interesting products on show was the first sighting of Micromega's £299 Microdac Bitstream digital-to-analogue convertor. This was shown in their room, shared by Audioplan. The combination of the Logic/Microdac or Solo CD player, John Shearne Phase One amplifier, Audioplan's little Kontrapunkt loudspeakers and their cables produced one of the most refined sounds that I have encountered from the silver disc in a show and attracted many interested people. Their choice in music, ranging from Oscar Petersen to Peter Sellars singing George Gershwin, gave the showgoers an enjoyable idea of what the system is capable of.

Across the corridor, Alphason were also putting on a varied musical repertoire, from Rush to the Stingray Theme. Their latest Symphony turntable, launched at

Belfast Hi-Fi Show

STORMONT HOTEL, BELFAST, NORTHERN IRELAND. OCTOBER 1991

Top:
Cambridge showing their latest S100 transport and digital-to-analogue convertor.

"They've got Hi-Fi World in Stranraer!" Having been on the road for nearly ten hours, the brief break before the crossing to Lame was well appreciated. I'd been warned about the Irish Sea crossing, with its reputation for upsetting even the hardiest of sea legs, but we were fortunate to have picked a journey so smooth that there was hardly a ripple across my coffee cup.

Having crossed the waters without a hitch, we arrived at the Stormont Hotel in Belfast, in preparation for Zeus Audio's Hi-Fi show. Among those who exhibit at different shows throughout the land, Zeus' show has the most ardent following. Many of the exhibitors have been heard to say that this is by far the friendliest show in the country and the cut-throat air that sometimes suffuses the large shows is almost completely absent. Rival companies help each other to set up their stands, paying no attention to the prejudices that sometimes abound.

This year's show, amid some of the leanest times the industry has seen, was no exception. The show itself, while quieter than expected, was still a resounding success for Zeus Audio, with a surprising number of products being displayed for the first time to the general public.

On the digital front, four new products were on display. Cambridge were showing their new Compact Disc transport and digital to analogue convertor combination, although they were playing it in a low-key operation. This had only been seen at Penta before. Cambridge have always had a reputation for making a good sound

Penta, looking superbly built and sounding very solid, together with their amplifier and loudspeaker range named from Greek mythology, appealed to many ears. In the same room, but only with a passive display, were Heco, with their range of loudspeakers. In addition, Heco's in-car display was one of the few systems that did not cost as much as the car itself.

Among other new products were the latest from the Audio Innovations stable. The company has a large following among Zeus customers and they decided to show the working prototypes of their First Audio preamplifier and Third Audio 30W mono valve power amplifiers. These last caused quite a stir: two large chassis, each sporting a pair of 211 triodes, as used in the £30,000 Audio Note Ongaku, are not easily hidden. Their sound was not easily hidden, either, as it was resolving more detail from the £40 cartridge used than I believed possible.

Audio Note, now unconnected to the Audio Innovations team, were also showing some new products. Peter Qvortrop is now manufacturing several Audio Note products in this country: the 10 cartridge, the AN-J loudspeakers and a few new toys. The £1500 OTO valve integrated amplifier and, somewhat later, a range of tonearms and the exotic parallel single-ended 7W triode £6950 Neiro power amplifier (£8950 for the silver version) are on stream. If that wasn't enough, he was also playing a silver wired moving coil transformer and phono stage that cost as much as an expensive Ford Escort. Both Audio Note and Audio Innovations were reassuringly anti-digital - to see Qvortrop with a Compact Disc player would be akin to Dracula becoming a vegetarian. Audio Innovations were using their 'Reference' CD combination, however. This consisted of a Teac P-2 and Meridian 203; it sounded very pleasant through their system.

The best sounds seemed to come from the smaller manufacturers, although it did seem that the larger rooms had greater difficulties. Celestion had their complete range of loudspeakers and mostly demonstrated their large ribbons. They loaned a pair of their 100's, which were tested by us last month, to Marantz next door who were demonstrating their Music Link system successfully, although they did have a tendency to turn the music up a fair bit, to ward off the sound of Mission next door. The fight was mostly friendly, although Mission dealt a low blow by putting on a Status Quo disc.

Both Jamo and Aiwa had the largest displays, with Jamo's being the slickest of all. While Jamo's products rarely invade the hi-fi territory, their inventiveness in creating a loudspeaker within a wall light must be

Peter Lindlay's restored Leak TL/20 amplifier.





complimented. They have also branched into electronics with a CD-cum-receiver. Aiwa's display showed their full range of midi systems, videos, televisions and separates, along with a range of imported European loudspeakers. Aiwa's latest cassette decks were on show, sporting Dolby S and their new logo.

Other Japanese hi-fi companies at the show were Rotel and Yamaha. The first were running two systems, a budget and a mid-price system, through Infinity Reference loudspeakers. Yamaha, on the other hand, were more interested in the Audio Visual aspect of hi-fi, showing what their surround sound processor can do with a good video.

Tucked away in a far corner of the hotel, with building work all around them, four small rooms were trying to produce interesting sounds. Graham Nalty, of Sonic Link, was displaying his range of amplifiers and cables. The DM20 amplifiers have recently been upgraded to give more power and his cables are doing well. Next to him was Wharfedale, with their range of Lynx amplification and Cambridge products, as mentioned earlier. Across the corridor was Meridian. After the launch of their latest products at Penta and their recent acquisition by Polk Audio in the US, they had an understated stand, showing their most popular products.

Next to Meridian, for me, one of the biggest surprises of the show, was Tube Technology. I have always had a respect for this product range, albeit rather from afar. After a more careful listening session to the products, I can see why there is a waiting list for them. All who looked at the build and sound quality of these valve amplifiers were distinctly impressed.

Tube Technology particularly impressed Peter Lindley, whose beautifully restored Leak and Quad amplifiers attracted much interest and I believe that every pair on show was sold. We did have a chance to hear his restored Quad power amplifiers in operation - and this is the subject of Sircom's Circuits this month.

Zeus' own Kronos imports were attracting much attention. Added to the Pierre Lume turntables, Triangle loudspeakers and Copenhagen Transformers already seen at the Penta show, Kronos were showing their latest imports: Pro-ject turntables and YBA amplification. The latter, an up-market transistorised French product, has acquired much acclaim in the past from both reviewers and the public at large for both their build quality and their superb measured



hi-fi shows

hi-fi shows

hi-fi shows

hi-fi shows

hi-fi shows



Top left: Pierre Lume J-1 turntable imported by Kronos.

Left: Audio Innovations prototype 30w Third Audio 211 triode amplifier

performance.

Pro-ject turntables are completely new to this country. Manufactured in what used to be known as an Iron Curtain country, they are purist budget decks set to take on the Rega Planar 2 and 3 in their homeland. On the basis of sound quality alone, they could well be successful.

Many of the rooms were using cabling by Furukawa, something Quantum Audio, importers of Furukawa, were more than happy about. John Carrick of Quantum was less happy about Scotland's defeat in the Rugby World Cup, but at least he took his defeat well, buying drinks for the people running the stand next to his. As we happened to be that stand, a vote of thanks was suggested for the Quantum team.

It was little events like that, along with the friendliness of the people on both sides of the show, Veda bread and an excellent sweet course called 'Floating Islands', that sum up the atmosphere of the show. It was the first time that Hi-Fi World has supported the Belfast Hi-Fi show and our stall was inundated with people who had not lost sight of what hi-fi is all about - having a good time.

Left: Micromega's new £299 Microdac, together with the Leader player and John Shearne amplifier.



Vienna: City of Strudel, pastries extraordinaire, Wiener Schnitzel and romantic old-empire settings, the remnants of the old Habsburg Empire which once dominated Central Europe. And hi-fi.

Hi-fi? Yes. This is the third year running for the Vienna Hi-Fi Show, organised by the Vienna Hi-Fidelity Club, which is beginning to draw international attention. Last year's was held in an hotel where the rooms had walls and ceilings of concrete, a sonic nightmare, with only a smattering of European exhibitors, though with an attendance of over 8000.

I approached this year's show with mixed emotions, therefore. The start of my journey at Gatwick didn't allay my reservations to any great extent. I arrived late due to heavy fog only to be told by some arrogant clerk that I could not make the 9 o'clock flight. I was all for going home and forgetting the entire matter when a man mysteriously appeared by my elbow offering to put me on the 10.15 Lauda Air flight to Vienna. Lauda Air took charge - new planes, prompt, efficient and courteous ground service and food equal to Club or First Class - even in Steerage where we journalist and PR types are usually relegated (unless someone else is picking up the tab).

This year, the organisers were right on the money, choosing an hotel - the luxurious Vienna Plaza - in the centre of the city,



Vienna Hi-Fi Show

VIENNA, OCTOBER 1991

Top: Only the Dutch could get away with it... or perhaps they read British tabloids. Driade of Amsterdam combine form with technology in their literature

Top right: Beautiful wood veneers were an attraction of Ecouton loudspeakers

Right: The brass and plexiglass turntable from Vienna Audio Mechanic



with easy access for would-be customers, retailers and manufacturers alike. The Plaza's rooms, though larger than the standard Penta dimensions, were smaller than those of previous years. They were better suited to demonstration use however, with plenty of soft furnishings.

The exhibitors at the show represented the EC in miniature, with U.K. firms covering the entire alphabet from Alphason to Wharfedale. Audiolab showed their new 8000DAC (reviewed this month), Heybrook demonstrated their Sextet, which is selling fast and furiously in the U.K., and which this magazine reviewed first; Deltec had the DAC7-equipped Bigger Bit (reviewed in our November issue). Other show highlights were the new Castle Chester in veneer that would grace an antique sideboard (which is waiting on the sidelines for review in Hi-Fi World), and the Studio 20 speakers from Monitor Audio also with a stunning finish, but of Piano Black. Roksan took their new space-station-look metal finished amplifiers, which drew so much admiring attention at the earlier Penta Show.

Time was when the European audio market was dominated by British manufacturers and designs, with a few products - albeit highly priced - from America. No longer. U.K. manufacturers, while not exactly outnumbered, were at least on a par with European exhibitors in Vienna, as they had been at the Berlin Funkausstellung earlier this year.

Stars of the show from our European partners were the new CD-R (recordable Compact Disc) from Micro-Mega, due to grace our shores at approximately £2500-£3000, and their new budget £299 Compact Disc digital-to-analogue convertor (DAC).



There was a striking new turntable, the Stagliani, constructed of brass and plexiglass from Vienna Audio Mechanic, which retails for approximately £5000 with tone-arm. A translucent platter supported on Oracle-type suspension pillars is cord driven from an outboard motor, all brass and bright blue. An outrigger supported what appeared to be an amazingly long arm. Vienna Audio Mechanic's Rondo bears the same general shape as the Michell Gyrodec, with a brass subchassis which could model for Solaris, but everything visible through clear acrylic.

There was another beautifully-constructed turntable from Kuzma, who are apparently surviving the current Yugoslavian turmoil.

Dynaudio had the Confidence 5, a unique three-way double bass unit design which will retail at £5000 when it is introduced here in the Spring. There was a dynamite-looking electrostatic from Audio Exclusiv - the Model P3S with matching pre and power amplifiers.

A folded-horn loudspeaker was shown by Ecouton Audio-labor; Gryphon of Denmark had their ever-impressive and also beautifully made DM100 power amplifier. Amsterdam's Audio Company sent the Scylla 80S Mosfet pre-amplifier with nothing but three toggle switches, a selector knob and a volume control on the slim black fascia, but a trimly laid-out circuit board inside with a massive shielded toroidal transformer.

The same company's floor standing Driade speakers are similarly shaped to Tannoy's Six series but using two conventional drive units and a reflex port. The Driade catalogue could be X-rated. Only the Dutch could get away with a female nude almost clad in something filmy on the front and what might have been the back view of a Maplethorpe muscle man lifting a Driade over his head on the back.

Austria is firmly rooted in analogue technology and valves. Some might even say it's in a Time Warp, as the Austrian consumer has yet to discover digital, so there was a profusion of

Above: The packing crates don't make an attractive setting for a £30,000 Ongaku valve amplifier - sitting on the floor between them.



valve products from the likes of Jadis, Ensemble, DRG and Log, who won the title of "Best Exhibitor" at the show. There were more valve based products - including all the U.K and American designs - than one might find at the normal British show.

In the accessories area there was the usual profusion of components to be found in the U.K., but I spotted a fantastic new design of support cones from Austria with adjustable 6mm spikes and optional screw-in ones to decouple the turntable or loudspeaker. These desirable little numbers will be featuring in Hi-Fi World soon.

There were other "firsts" which U.K hi-fi show organisers might note. The Vienna Show kicked off with a luncheon of untold delights for all the exhibitors and the press - a most professional launch. The Vienna Hi-Fi Club also provided a dealer/retailer evening on Saturday night after the show was closed to the public. Since we in the U.K. usually schedule "trade" days for a working day, forcing the retailer to choose between running his business or attending a show, this seemed a very practical idea. It was a great hit, and the scheduling permitted the exhibitors to devote the whole of their time during the opening hours to the consumers themselves.

Another clever idea was the distribution of the new Sony ES CD Collection Volume 2 to all the exhibitors so that each prospective customer could hear the same CD in each room and make comparisons of the sound quality from one to another. The disc was the result of collaboration between CBS/Sony and Dr Ludwig Flich, who writes a respected weekly column on audio in Vienna's most celebrated daily paper: Der Standard. He selected a magnificent repertoire ranging from classical to jazz, with specific emphasis on the quality of each recording, as well as the merits of the performance. Music-lovers out there should try to lay hands on this disc if possible.

The show was a success, this time, for both organisers and the Austrian music-loving public. Our erstwhile neighbours on the continent have discovered hi-fi in a big way. They are premiering new products which may not outperform their British counterparts - yet - but certainly have a quality of finish and look about them which will give U.K. manufacturers a good run for their money. Let's just hope they don't discover matching sound quality too soon ●

Above: A Klipschorn loudspeaker harks back to the days of valves and mono.



Left: The Cary 'valve' CD player (reviewed in our next issue) together with Cary triode power amplifiers (on the floor).

Bradford Dean

A low-slung smooth matt black case, a glossy black fascia, two push buttons and four sizeable round knobs make up the most visible aspect of the £350 Lecson Quattra integrated amplifier. So what makes it different to any other integrated amplifier on the market?

Two sets of speaker terminals round the back are the first clue. They are not there so someone can wire up an extra pair of speakers for the kitchen, they are labelled "Bass" and "Treble". Then,

speaker needs a pair of stereo amplifiers - or four matched mono ones.

The Lecson is a halfway house. Four individual power amplifiers are fitted, but each handles the entire audio range. The crossover in the loudspeaker will draw high frequency current from one of the pair and low frequency current from the other. It's a neat enough arrangement, if technologically less comprehensive than out-and-out biamping.

This is both intriguing and innovative;

bi-amping on a budget

The Lecson Quattra is an unusual integrated amplifier, designed with four separate power stages for biampification.

Eric Braithwaite doubles the leads to his speakers.

when you open up the instruction leaflet (or the amplifier itself), you discover that this integrated contains four individual power amplifier stages. This is, as far as I know, the first - perhaps the only - amplifier designed for bi-amping a pair of speakers without the user having to purchase two separate power amplifiers.

In case anyone is lost, bi-wiring and bi-amping are two different things. If there are four terminals on the back of a pair of loudspeakers, and they are intended for bi-wiring, then the crossover which normally sends the treble portion of the output to the tweeter and the bass/mid-range portion to the woofer is separated. Two pairs of loudspeaker cables are run from a single pair of loudspeaker outputs, one pair to each set of terminals. Although each cable carries a full range signal, only high frequency currents flow in the line feeding the tweeter and low frequency currents in the line to the woofer. Bi-wiring has a number of adherents, but whether distinct sonic benefits are perceptible appears to depend very much on both the speaker and the amplifier. Certainly, I am sometimes given to wonder if a perceptible improvement when a speaker is biwired is not due as much to avoiding some of the often flimsy linkage which otherwise is required to connect the two pairs of terminals together externally to use a single pair of leads.

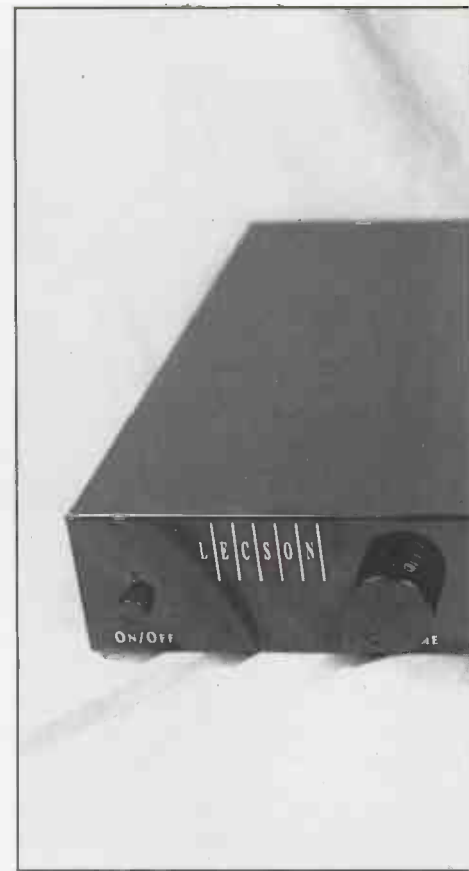
Bi-amping is an altogether more ambitious process where each drive unit has its own amplifier, fed from an electronic crossover. The loudspeaker is crossover-less. This can turn out pretty expensive, since to do it properly each

in fact, said Paul Bullin, Managing Director of AAS Ltd., the manufacturers, "We bought the Lecson name - we had no connection with the original company - partly because it sounded right, and because it had had a reputation for innovative design." AAS had been in operation as subcontractors producing printed circuit boards for other companies using highly automated equipment since it was opened by John Major in 1989.

Three men have a finger in the newly baked Lecson pie: Paul Bullin (who had once worked for another hi-fi name, Lentek) who worked on the industrial design; Carl Perks, who developed the electronics, and Russell Kauffman. "He's the listener - the concept man - who has to approve the final sound quality," said Paul. The Quattra took nine months to develop.

Why an integrated bi-amp to start with? "I set out the brief," said Paul. "We wanted to combine the kind of detailed and clear top-end you hear in American high-end amplifiers with the sort of quality in the mid-range and the bottom-end grunt heard from power amplifiers like the Naims. We wanted to make high-end sound available from a single affordable box."

Admittedly, the amount of power available from a design of this size is not exactly of earthquake proportions at a specified output of 16W for each of the four channels. It is obviously not going to shake the foundations of the house the way a P.A. set-up on the pavement outside my own home had the entire building resonating during Notting Hill Carnival. A little gentle power is just what I need, I thought, when I read the

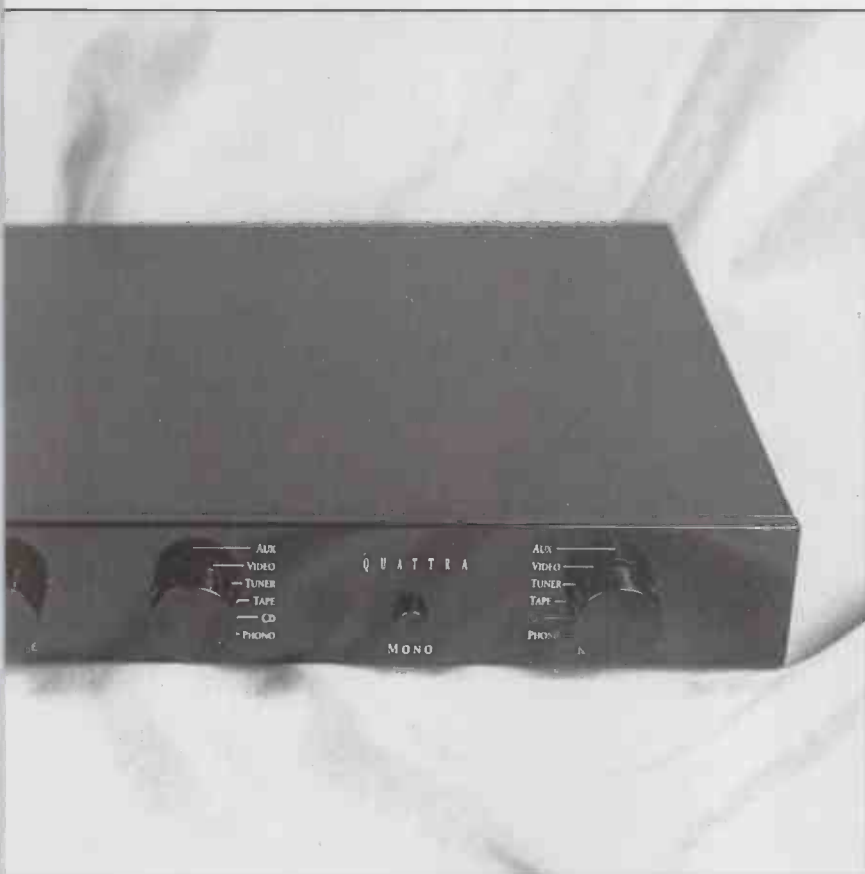


power output. "That's inherent in the design; the op. amps we used to meet the price point can't offer any more, but we think they've got plenty of grunt. But with an independent amplifier driving each unit in the speaker, that shouldn't matter, and there should be gains in clarity and detail," added Paul. For those without biwirable speakers, connecting one pair of speaker cables automatically bridges the output. "While that offers more power, the amplifier does seem to sound less dynamic, because it was intended for bi-amping."

In terms of facilities, the Quattra is audiophilically (I've always wanted to insinuate a new adverb into the Oxford English Dictionary) simple. Inputs are Auxiliary, Tuner, Tape, Video and CD; Disc is preset for moving magnet cartridges, but DIP switches are visible through a small square hole in the underplate to allow for a moving coil cartridge. Somehow, designers still - after years of amplifier design - come up with a minute twist to the conventional; the legends on the sockets are printed both ways up so they can be read from above.

There are no tone controls, only Balance and Volume; the other two of the four knobs allow selection of any source for recording irrespective of the input being used. Unusually, these days, there is also a Mono button. The designers recommend avoiding loudspeakers which offer a difficult load and using ones which are very efficient: "the kind of speakers on the market that would normally be used with an amplifier in this price bracket," said Paul.

Loudspeakers of high efficiency are a must if reasonable domestic listening



levels are to be obtained without the Lecson running out of steam, especially as the MC input demands the volume being turned up more than the others. The MM disc stage was in fact commendably lucid and delicate, with only a degree of fluffiness in the bass reaches and a slightly more diffused treble than the CD input, which was sweet, detailed, and very clean.

Used to bi-amp speakers, this is a lucid and dynamic amplifier; each instrumental strand of a recording has its own spotlight, but the different strands of Omette Coleman's *Song X* were pulled very tightly together to give an impression of a very detailed soundstage. Orchestral recordings showed a similar degree of fine detail, with some depth, though instruments further back in the centre were rather soft in focus. The Quattra has a dry, emphatic mid-range, which never veers to coarseness, just sounds very sweet and engaging while giving chamber works or solo instrumental pieces a clean sharp image. Where things are more complex in instrumentation, however, the relative lack of power tends to show by compressing dynamics a little, so the full dramatic power of Barenboim pushing Chopin's *Nocturnes* to the limit of Romanticism was lucid but not stunningly dramatic. The impression is of a delicate, neatly spun filigree.

The Quattra could be clean and crisp on any music; it can bop and disco dance with the best, but without the serious forward presence or forceful bass that might really be in demand for heavy rock. Conversely, this is a very open-sounding amplifier, with the ability

to focus attention on vocals or bass lines where it is necessary, and to ignore the edges of the speakers. It is what my French friends delight in calling 'analytical' - the opposite of the warm or mid-range enhanced amplifiers that make up a considerable part of the English market. It is unmistakably both sweet and engaging, if a little light-weight when it comes to the really heavy labour.

Used as a simple integrated amplifier - running one pair of speaker leads from one set of terminals bridges the output - increases the amount of power available, but reduces the clear-sightedness of the bi-amped style. Without losing its best qualities, some of the openness which is the Quattra's hallmark is dissipated, and there is a more shut-in feel.

The Quattra might not be everyone's perfect amplifier - it will be too delicate for some - but it is one that can take its place on a rung of the ladder close to the Arcam Deltas of the world. Above all it is an intriguing development which may well represent an entirely new direction in integrated bi-amping on a budget which deserves a round of applause in itself. Viewed simply as a £350 amplifier it is an interesting addition to the breed ●

Measured Performance

Each of the four power amplifiers in this unit produced 18 watts into a normal eight ohm load, with a useful increase to 27 watts into four ohms. When bridged the Quattra produced 40 watts per channel (8 ohms).

These are very low output levels and demand the use of sensitive, biwireable loudspeakers for reasonable volume level, of which there are few. We have been looking for a good, sensitive loudspeaker for valve amplifiers and have yet to find one that is perfect. Epos ES1s, which are not especially sensitive, do however suit quality amplifiers, providing high volumes are not expected - and they are biwireable.

Distortion levels were very low, even at high frequencies. The analysis shows the distortion residual of 0.01% at 10kHz, with just a trace of second and third harmonics being evident as blips at the very bottom of the picture. The disc input was as clean as CD in this respect.

Channel separation was poor on the CD input, at -54dB. Otherwise, it measured well, with a wide bandwidth and good sensitivity.

The moving magnet disc input was sensitive and quiet. It was also accurately equalised and input conditions were well engineered. Moving coil proved less successful. It was sensitive, but hiss was high (in terms of equivalent input noise). In use with a Linn Asaka (low output), this hiss was evident, if not overpowering. There was a trace of hum too. I wasn't impressed by the MC input in listening tests.

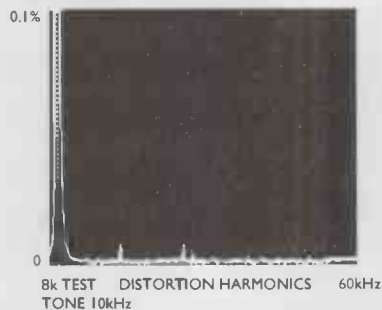
Finally, Eric mentions that volume had to be advanced a lot. This was due mainly to the 'law' of the potentiometer, which wasn't appropriate. Lecson should change this, since all the volume change occurred in

a small sector at around 4 o'clock on the volume control, near to maximum. **NK**

Test Results

Power	18watts
CD/tuner/aux.	
Frequency response	4Hz-70kHz
Separation	-54dB
Noise	-86dB
Distortion	0.005%
Sensitivity	180mV
dc offset	0/0mV
Disc (MM)	
Frequency response	14Hz-90kHz
Separation	-49dB
Noise	-77dB
Distortion	0.005%
Sensitivity	1.7mV
Overload	45mV
Disc (MC)	
Frequency response	14Hz-74kHz
Separation	-45dB
Noise	-58dB
Distortion	0.006%
Sensitivity	0.15mV
Overload	4.5mV

Distortion



Very little distortion at high frequencies.

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(0565) 650605

Ortofon are one of the last remaining cartridge manufacturers not based in Japan.

Their Denmark-based operation covers the entire spectrum of cartridges, from budget models often supplied with Dual turntables, right up to the highly expensive MC-5000 moving coil models. Among the range live a group of moving magnet cartridges at a price that competes well with magnetics made by people like Goldring and Roksan of the UK.

The two cartridges tested here, the 520 and 540, share the same body. The basic 520 costs £49.95; the 540 £99.95. The replaceable stylii take different forms. The 520 is elliptical, the 540 is a Fritz Gyger II profile. The different stylii also differ both in claimed frequency response and the tracking force required. The 520's range is claimed to be from 20Hz-23kHz, with a tracking force of between 1.25 -1.75g. The 540's Gyger stylus has an improved range from 20Hz-27kHz and a lower tracking force of between 1-1.5g. The Gyger stylus on the 540 is also said to possess improved tracking ability and channel separation.

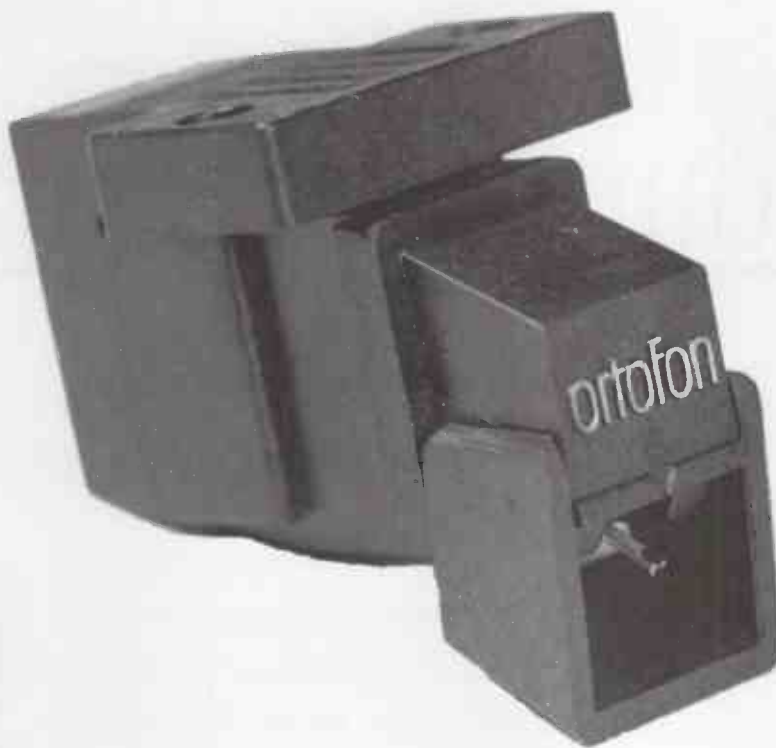
Both interchangeable stylus assemblies have a flip-up stylus guard, with the model number on the guard itself. This, although useful to help protect the cartridge from the outside world, is best removed as it does little to help the sound. This is quite a delicate operation and if there is any doubt about your abilities, don't do it. Since the body is shared, the simpler 520 stylus can be upgraded to a 530 for £59.95 or a 540 for £79.95 as and when funds allow.

The cartridge's finish of black with gold lettering is far more understated than some of Ortofon's moving coils. Since both models weigh only five grammes, they are weight-compatible with all conventional tonearms. It may seem a little OTT to assess these cartridges in an arm such as my own SME Series V, but it does show up just how much the cartridges can resolve.

Lack of Nasties

Having run both stylii in, I found the cartridges had a pleasing lack of nasties about them. Budget models often hold some unpleasant surprises; these didn't. Starting with the 520, its strongest point is a complete lack of coloration. Many models at this price add a bit of brightness or warmth to the overall sound to try to cover up their failings. To date, the only cartridges that I have encountered that do not are the Goldring 1000 series. Now, I can add the Ortofon 500's to the list.

However, by comparison with the Goldrings, the 520 seems to be holding something back. It errs on the



side of caution; it does not distort the frequency response, but nor does it play absolutely everything on the disc. The cartridge is detailed, images well and is very neutral, but it leaves me cold. Some of this is due to its flat sounding performance which came across as a lack of dynamic range from the cartridge. When the music got powerful and bold, it was as if the 520 was scared to show itself, for fear of doing something wrong. It was also a little incoherent, although not enough to cause a problem. This came across as a muddling of instruments in a physical rather than tonal sense.

On the positive side, however, the 520 has plenty of bounce to its performance, without becoming inaccurate. Imagery was ultimately lacking in depth, but well focussed and clear, given the reservation about its slight incoherence. Although the 520 lacked life, the character of the music proved difficult to criticise at the price.

The 540 stylus improved upon the 520 considerably. This added some much-needed life and sparkle to the sound the Ortofon body produced. It was still not enough, however, but it made things a little less flat sounding. The 540 stylus also improved upon the cheaper model's dynamic range and coherence.

One area in which I could see this cartridge shine would be in a turntable such as a Linn Axis with a Linn Akito or Basik plus arm. Normally, these are supplied with Linn's own K5 or K9 cartridges, and I believe that both the 520 and 540 would be viable alternatives. The more mellow

danish black

Two black-bodied Moving Magnet cartridges from Danish stalwarts Ortofon.

Alan Sircom says 'Cheese'.

nature of the Ortofon would subdue the slight brightness of the Axis.

The Ortofon 500s are at the lower end of the spectrum, designed to be used with cheaper turntables of the Dual/Excelda/Rega 2 end of the market. They should balance well, producing a neutral sound from the cheaper turntables, especially any which have a somewhat peaky performance. What was especially attractive about both cartridges was that they let the character of the music shine through. Although they don't perform with the same grace as the best I know of, namely Goldring's 1012, the Ortofon 520 and 540 manage to be pleasantly neutral. They certainly keep up with the rest of the competition ●

Your place, or ours?

It is well known that a first class hi-fi system, playing the same recorded material will sound different in one room than it will in another.

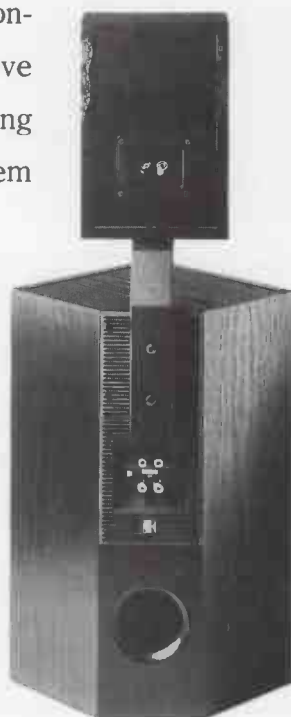
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valves imported from China. I do not like to see people being fleeced.

I suppose there never will be any improvement until tests are conducted on a proper scientific basis. I also realise you must not upset your advertisers. Take the test of the Creek tuner, for example. The test results are very poor (2uv sensitivity, only 25dB separation, 64dB selectivity) yet you only say you were 'not entirely happy' with it. A more accurate description would be that it is a very poor tuner.

There also seems to be a lack of understanding of digital electronics. The signal emerging from a CD 'head' is digital - simply ones and noughts. As long as the two states are identifiable, spurious reflections are unimportant. So is 'jitter' on the disc. The 1's and 0's are put into a register and clocked out again by crystal controlled clock pulses. Wow and flutter are impossible. These simple facts make painting CDs green, using 'ring stabilizers' etc. totally pointless.

In conclusion, when are we ever going to get a magazine that does not print pages of claptrap and re-invent electronic principles? I would add that I bought the magazine for the CD, which made it jolly good value.

**D.S. Jones (Luddite),
Ruislip**

A few mediocre performance figures from the Creek tuner do not necessarily make it "very poor". Other aspects of behaviour were good. We weigh good against bad, taking into account real life behaviour against a reference. Our estimations are critical, certainly more critical and forthright in their exposition than suits many manufacturers. We reject 'pressures' upon us, but at the same time struggle to be accurate and fair. Rubbishing products because a few mediocre performance figures would be neither of those things.

You'll get the magazine you want when you produce it. You would then discover what sort of constraints exist against publishing the simple but extreme views you expound.

Two manufacturers offer you further enlightenment. **NK**

● Tim de Paravicini of E.A.R.

Yes, valves generally have a heater, a kathode (my preferred spelling) one or more grids and a plate (anode). The AVO valve tester only tests goodness of emission as a steady state test,

but there is more to it than a few measurements.

The characteristics of, say, the 6L6 given by RCA are 'typical', not 'absolute' and what the Quad II specs are are a minimum guaranteed spec. but matching and careful selection of valves could and did yield measurements better than spec.

You have forgotten that inter-electrode capacitances vary enormously from maker to maker and yield very different results in some designs. The heater/kathode capacitance is quite high and, depending upon circuit design can have a very marked effect in dynamic use, but not static measurement.

Valves have distortion, simply because like any active device they have approximately a square law function of output current versus input voltage, with different curvatures on the graphs acting to distinguish individual types. We try to utilise the straightest part of the curve, for least distortion, at low level listening.

Some analogies might be useful. It is not a fraud if a person wishes to spend £40,000 on, say, a Jaguar to go from A to B, when a Skoda will do the same job for £5,000. It is the buyer's choice. Few people would seek to accuse Jaguar or a Jaguar dealer of perpetrating a fraud in selling Jaguars.

The car industry tweaks how a car handles and rides, but the final assessment has to be - and is - subjective. The whole experience cannot be conveyed by measurement, even though a large number of contributory factors can be and are measured. Even assuming we could measure everything necessary, we couldn't in practice make the highly complex objective-to-subjective correlation needed to turn the data retrieved into terms of human experience of an unquestionable and unequivocal description.

The same problem exists with hi-fi: even if we knew what to measure, we still couldn't convert all the data into a form that would convey its likely subjective impact.

**Tim de Paravicini, Director,
Esoteric Audio Research.**

● Peter Watson.
P.M. Components

Mr Jones raises some interesting points. I would though like the opportunity to reply to the question of our Chinese activities:

1. With the demise of Western valve production it was important that somebody acted to secure the future of tube production for valve amplifiers.

2. P.M.Components have done just that. In collaboration with Liverpool University we have worked with Chinese factories in both Changsha and Beijing to develop specialist tubes for audio applications. The project is three years old and many designs have been auditioned. The result is a wide range of tubes, including Pentodes, Kinkless Tetrodes, Triodes and Double Triodes.

3. Development which is both expensive and time consuming is the backbone of the Golden Dragon project and it is this continuous activity that assures high quality tube availability into the next century.

**Peter Watson
Director, PM Components**

TICKLED PINK

I thought it was about time I wrote to you to thank you for my wonderful prize in the Pink Triangle competition. I have managed to get over the shock of winning (I nearly died when Philippa telephoned with the news - I thought it was someone selling double glazing) and have now recovered from my exhausting but very enjoyable trip to London.

I am absolutely knocked out by the sheer clarity and precision of the combination of Audio Technica OC-5 cartridge, SME Series V arm and Pink Triangle Anniversary turntable. The OC-5 was a little harsh to begin with, but has settled down nicely now and in fact complements my existing system well. I have always been somewhat sceptical when reviewers have mentioned running-in cartridges and speakers, but I am now aware they are correct - five Brownie points all round. Using my QED 240SA amplifier, I am amazed at the beautiful sounds coming out of my home-built Peerless kit loudspeakers. I never thought they were capable of producing some of the sounds I am now hearing from them.

In the past, with my old turntable I have always had difficulty identifying particular instruments, especially differentiating between bass drum and guitar notes. I thought the speakers were muddying up the notes, but I now realise it was the turntable combination that was colouring the sound. The

articulacy of the PT combination is truly astounding. I noticed that I had been buying the same types of LP which suited the turntable - female vocal, new country and general melodic stuff. Since hearing the PT, I have gone through my record collection thoroughly and I am enjoying listening to all types of music again - classical, early blues, jazz and heavy rock. Everything has a sparkle and punch to it. My system has come back to life.

**Brian Horswill,
Haverfordwest,
Pembrokeshire**

EXCESSIVELY ELECTRONICAL

Can I offer one item of - I hope - constructive criticism? Your back-to-basics articles are excellent, but would be even more helpful if, before publishing, you gave them to someone to read who has not the slightest technical bent or knowledge. I can appreciate it is hard to believe, but for some of us even two syllable 'electronical' words are one syllable too many.

Other than that, I find your production excellent, though I do not enjoy the comparisons. To me, it leaves the impression that neither product is tested in great depth, it's much more a case of reaction to one aspect of product A, now let's see what is product B's performance in that area. To me, such comparisons only have real meaning if one of the items tested is State-of-the-Art in all senses. If the difference between a £200 and a £20,000 amplifier is so enormous (as it ought to be) then, surely, whatever differences exist between two £200 models are meaningless? They are both awful and we shouldn't be listening to either! Ah well, keep up the good work.

**E. Enever,
Hassocks, W. Sussex**

It's not hard to believe that the technical stuff is indecipherable. We do try to minimise it in the main body of articles, but the Measured Performance section couldn't be written without tech. talk.

The strength of group tests is that they keep performance in perspective. On its own a respectable £200 amplifier can easily be enjoyed and given the thumbs up. Then in a comparison you hear, say, a new model that is wonderful. Suddenly, the previously 'respectable' amplifier is not such good value. Group tests are very critical in this respect. **NK**



a second bite at one-bit

Philips have improved the CD-850 Compact Disc player with a new Bitstream chip.

Eric Braithwaite finds it to his taste.

Philips, unlike many other Compact Disc player manufacturers, are not exactly known for bringing out a 'Mark II' version of anything, but they've broken new ground in doing so with the new £400 CD850. What this large black chunky box hides inside is the more recent SAA-7350 Bitstream chip, and two variable output sockets round the back tell the enquirer that volume level can now be remotely controlled.

The expanse of black fascia is something of a shock, given that other players - apart from Pioneer's bulbous-drawerred range - are displaying a tendency to slim down, but it is very neatly laid out. The array of buttons at first looks forbidding, but the main control function keys are grouped together over on the right; the On/Off switch, with a long thin green indicator above it, is at the left under the tray, along with the headphone socket and its related volume control and a small square

push-button to switch to the digital output. This displays a tiny red indicator, which, curiously, flickers on switch-on, in the groove which runs the length of the fascia above. Tidied away along the same groove under the relatively enormous display panel are the numerical-cum-alphabetical keys for both track selection and entering Philips' Favourite Track Selection (FTS) combinations along with titling. What at first sight appear to be Index Search keys in fact move the cursor along so you can keep a number of CD titles in memory.

The display itself is not only one of the largest and most visible I've seen, it is also one of the most loquacious. Sometimes unnecessarily so, perhaps: if the double whiskies have taken their toll so you can't see the drawer is open, I shouldn't think you'd be able to focus on the message "TRAY OPEN" either. However, although some flash by with some speed - by the time you have read "READING" the player has actually done it and

moved on - things like "INSERT DISC" or "12CM DISC" are fairly reassuring and easy to read from the comfort of the armchair. The display, by the way, is dimmable, and this highly literate display informs you of the degrees of brightness from 1 to 8. It does the more usual things, too - there is a horizontal calendar for track numbers, Total, Elapsed and Remaining Time, even messages to help with editing tracks to fit a C60 or C90 cassette.

There is no doubt the CD-850 is packed with convenient features which you can either play with - as I did for an entire weekend - or ignore. The sound is also packed tight with detail and sweet tone. Every recording that went into the player had a good sense of presence, with clear ambience around the performers. Piano came across very well with a full tone and an excellent definition of Barenboim's subtleties and extravagances in Chopin. The thunderous climaxes turned a Grand piano into a

very grand piano, though there was perhaps a little too much gentle sunlight peeping through the stormclouds.

Grieg's Folk Dances for four hands, a superb piano recording on Etcetera, were definitely dances, with a litting rhythm, though dynamically a little restrained. While the four hands were certainly busy, the additional degree of excitement as they come

a sudden burst of raw energy from a drummer or guitarist, or an orchestral tutti would suddenly burgeon from the speakers, grab for your attention, and sit you up

close to getting in each other's way seemed lacking.

Orchestral music had a pleasantly diffused light over it, which while curtailing the full reverberation evident in recordings made in Montreal's St. Eustache church, and drying out the tone of woodwind somewhat, never muddled either textures or tempi. Solo classical guitar was delightfully subtle, with the musician seeming more live in the living room than usual, without added artificial excitement and without artifice.

Live recordings benefitted even more. Cathy Berberian's 'Stripsody', that amazing vocal comic-strip compilation of Krazy Kat and variants on Peanuts, seemed more alive than ever. Every nuance of Linda Hurst's performance, every giggle, even the Tarzan thump on her chest at the beginning was on the Almeida stage before the listener. I was still grinning stupidly at all the fun minutes after the track ended.

Where the Philips seemed on less certain ground was in music with heavy dynamics. Prince's Diamonds and Pearls, for instance, while very detailed, seemed not quite to push the listener to the edge of the seat. At first hearing, one might be in danger of calling the 850 MkII bland, but this is not entirely true. Some of the restraint and politeness which could be a little over-relaxing in

orchestral music spilled over to Rock and Jazz, yet a sudden burst of raw energy from a drummer or guitarist, or an orchestral tutti would suddenly burgeon from the speakers, grab for your attention, and sit you up.

Use of the co-axial digital output cleaned up what could be a softened bass - especially noticeable on the Prince tracks - put Prince himself more out in front of the speakers and added a useful amount of guts and drive. The mix itself was still something of a spread of paste in a sandwich, rather than brightly spotlit mixing and pan-potting, but the whole was a good deal sexier.

On orchestral music, too, the digital output handed out a little extra brashness to overcome the inherent element of bashfulness evident before. If there was a moment of doubt, it might be that the lower mid and bass became thinner, less full-bodied under the general sweetness.

The optical output was a much less happy experience; used as a transport, the 850 tightened up usefully, but while now there was the same tidier focus, especially helpful on Rock music, there was also a much sharper and less pleasant edge to the sound, at first attractive, but palling fast.

The Philips CD-850 MkII might not be state-of-the-art, but it is a smooth all-round performer, and with FTS and all the rest of it even the dedicated would-be computer programmer and gadgeteer should want for nothing. It is sweet and very evenly balanced. It might not, thinking in culinary terms - I was doing a lot of cooking the weekend I had it at home - be a spicy Vindaloo, more delicate cordon-bleu. But, to keep the analogy cooking to the end of the paragraph, it avoids the lean-cuisine blandness that afflicts an increasing number of current designs ●

Measured Performance

That Philips should produce a MkII of anything is a milestone. It means the MkI sold exceptionally well. The '850 was a great success for them, I have been told; the first batch sold out soon after reaching this country. Word got around that it sounded very good, offering the best of Bitstream at a reasonable price. When you have a success like this, producing a MkII version capitalises upon it.

All the same, I was sufficiently baffled by the CD-850 MkII to 'phone Philips in order to see what had changed. According to our files, the MkII has much the same measured performance as the MkI. We were told the MkII has the SAA-7350 chipset and it has remote control of volume.

I was most surprised to see the presence of some distortion in the output. Since I tested the MkI, CD technology has moved ahead. Once upon a time, every player produced greater or lesser amounts of distortion at ordinary music levels. Now, low-bit and Bitstream machines designed around Philips chips produce no distortion at all. It seems odd that when Philips use their own chips, they should be unable to banish distortion. However, levels were low and the harmonics are of a type that does not sound especially nasty or intrusive, as our analysis shows.

The other remaining blemish is one of excessive RF noise. This player produces more noise and hash above 20kHz than any other I have measured, including the MkI. Quite what impact this has depends upon the system. Some will attenuate it, some pass it without trouble and some will convert it into an audible distortion signal through intermodulation. These days, players have increasingly less RF output, in order to avoid this possibility.

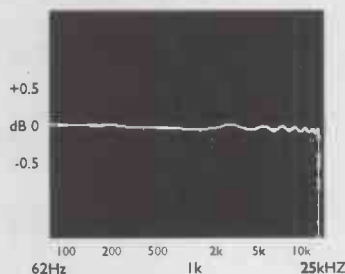
Frequency response was flat enough, with traces of filter ripple above 3kHz visible in our plot. This should give the player an even sounding tonal balance, something that was an attribute of the MkI.

CD technology has progressed quite considerably since Philips released the CD-850 MkI. Unmodified in its basic electronic circuitry, the new MkII looks dated in terms of its measured performance. **NK**

Test Results

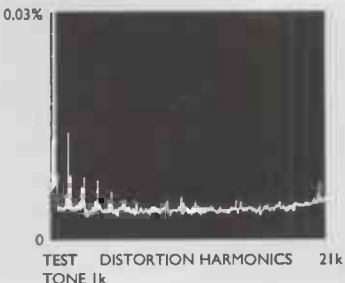
Frequency response	4Hz-20.8kHz	
Distortion		
-6dB	0.006	0.007
-30dB	0.02	0.02
-60dB	0.57	0.5
-90	33	31
-90dB dithered	4	4
Separation	left	right
1kHz	-115	-115
10kHz	-93	-93
Noise (IEC A)		
with emphasis		-103dB
		-106dB
Dynamic range	107dB	
Output	1.93V	

Frequency Response

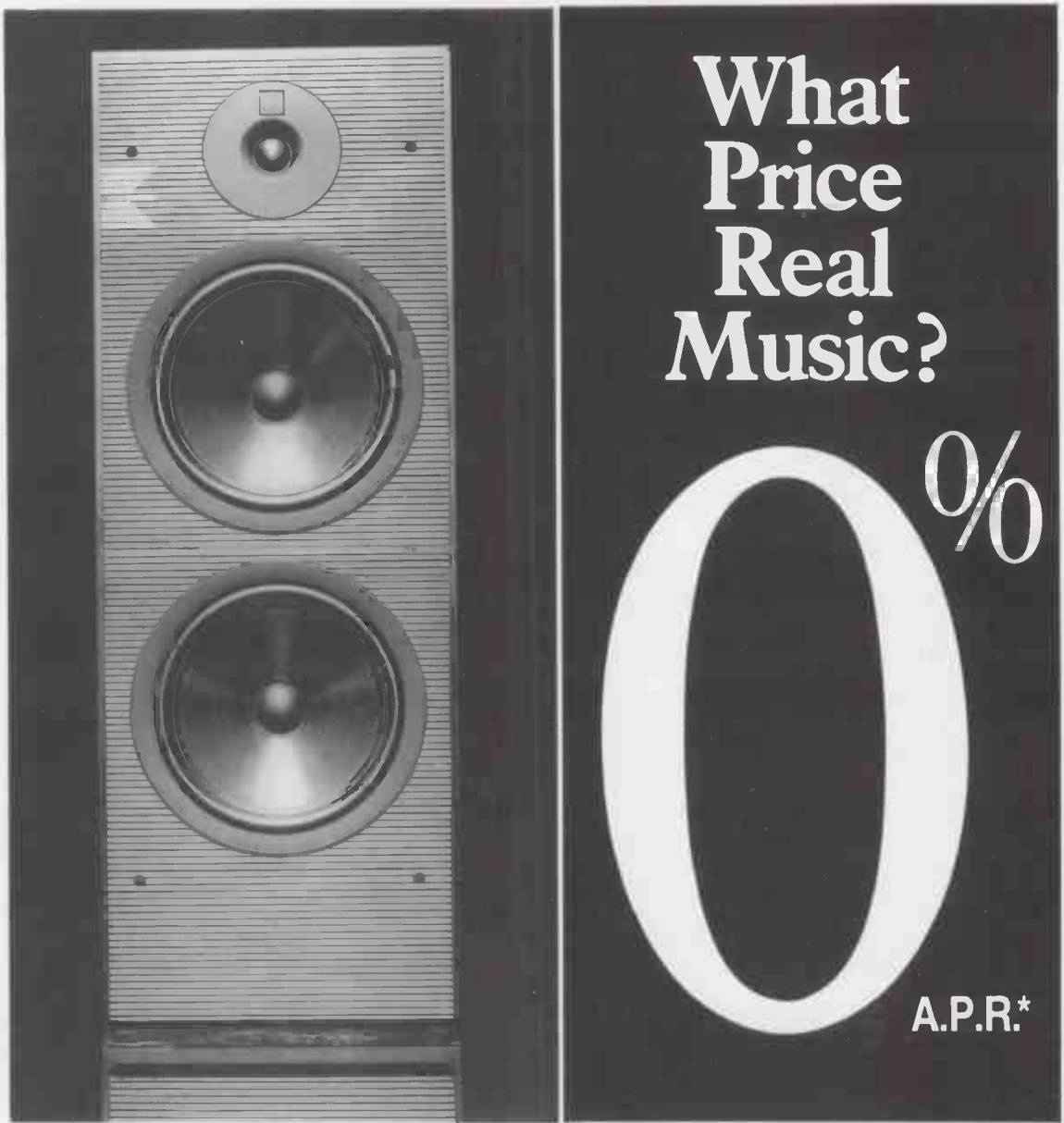


Flat response with digital filter ripple

Distortion



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FRANCINSTIEN

In spite of its name, there is, in fact, nothing too frightening about this little monster. Children, and, as they used to say in the cinema programmes, people of a nervous disposition may safely stay in the room with it. It is a small, brown ribbed metal case of approximately bat-coffin proportions with two pairs of phono sockets at the back costing £79. That's all; apart from some very clever electronics inside. Francinstien is designed (by Perfect Pitch Music and our own columnist Richard Brice) to enhance your Compact Disc system: in a subtle way to put back some of the analogue that digital took out.

The design is based on a principle thought up many years ago by "The Father of Stereo" Alan Blumlein, some delving into the literature on Psychoacoustics, and some research the designer did to explain why some LPs apparently sounded "better" than the master tape.

The aim is to improve the apparent separation of instruments and clean up the window onto the soundstage, bringing the recording into clearer focus. The insides in fact do some fairly startling things on measurement, but the effect was intended to be - and is - very subtle. It won't blow anyone's mind immediately, but prolonged use definitely improves acquaintance.

So much so, in fact, that the professional version - internally the same as ours, but rack-mount size instead of kitchen-matchbox dimensions - is being used in two studios. Tim Handley at Virgin Classics used it in the recording chain when laying down the recording of Chausson's Poeme. It went through a classic blind test: two DATs were made - one Francinstiened and one not - and both artist and executives independently preferred the Francinstiened recording.

A Philips engineer, who had it for assessment during a recording at St John's Smith Square, said he felt it integrated the reverberant with the direct sound more faithfully.

The studio above Ronnie Scott's famous Jazz Club is also using it along with purist recording techniques - and Professional Francinstien was in use for the Sunday live broadcast from the Club on Jazz FM the weekend I had the domestic version at home.

Fundamentally, the design basics go back to Blumlein's "Shuffler", which split the audio signal into L+R, L-R, filtered the difference signal and added it back together. While this improved the clarity of stereo imagery, the original introduced audible coloration because of all the adding and subtracting that was going on. Francinstien has similar behavioural characteristics, but with added cunning to avoid the coloration. The effect is similar to the effect of crosstalk on analogue recordings, though there it is uncontrolled. Control it, so the high frequency intensity is matched with the essential low frequency information, and the effect should be to clarify, at least,



tweaky corner

Two digital goodies this month: Francinstien and Furukawa cable, both designed to enhance the sound from Compact Disc.



the ambience. The designer's research showed that analogue crosstalk particularly improved the perception of reverberation - hence the LPs which apparently, against all reason, sounded better than the master tape.

Francinstien sits between the Compact Disc player (or other digital source) and the input of the amplifier. Two pairs of phono sockets - one in, one out - sit at the back for connection from the analogue output sockets of the player. The designer claims that it is an especially suitable enhancement for recordings made in multi-track studios, which include a fair number of rock, jazz and folk recordings. People with a large classical collection need not be left out: it is said also to be suitable for recordings using coincident or near coincident

microphone techniques. If you are uncertain, this is sometimes referred to as simply a "stereo pair" or "crossed pair". One of the current proponents among engineers is Tony Faulkner, so a Francinstiener can look for his name in the credits on the CD insert.

The effect, as Perfect Pitch Music suggested, was certainly subtle. First time around, I wasn't told anything about it, simply asked "Well, what does it do?" My initial reply was very cautious, while I checked it wasn't April 1st: "It certainly does something; but I'm not sure what." I noticed apparently clearer vocals, just - on ESL 63s - a little closer to the listener by an inch or two, with a slightly sharper projection of acoustic instruments.

Prolonged listening firmed up my





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response: Francinstien doesn't alter the balance of a recording in any way; it is an effect more akin to putting on a pair of new socks instead of a pair of freshly laundered ones. The whole presentation, especially of acoustic recordings or of vocals and multi-tracked instruments does appear to take on more definition. One becomes, without it being forced, more aware of the music.

It is a gentle, elegant effect - and a very even one. Nothing stands out unnecessarily or exaggeratedly. Nor is anything added, except for increased relaxation. My only doubt is that I tend to feel unhappy about altering what God intended; mind you, the hand of man seems sometimes all too much in evidence in digital recording! If you find digital sources grating, try added Francinstien for £79; the stick on stitches for the forehead and the coach bolt for the neck you'll have to buy separately. **EB**



FURUKAWA FD-11 CABLE

One of the areas that is most accessible to the budding tweeker is cabling a system. At first sight, however, the sheer variety of cables available can appear daunting.

As good quality cables are not inexpensive, a mistake can be very costly. What I will endeavour to try, over the next few months, is a range of cables that offer a distinct improvement over the standard ones supplied with a system. Where possible, I will try to suggest where a cable will, or will not, match a system perfectly.

The Furukawa Electric Company of Japan, along with a select few such as Hitachi and Kimber Kable, actually manufacture their own. Furukawa have, since 1975, been researching cable technology for audio use; having been in the cable game for over a century, they are now a multi-billion pound organisation.

Furukawa are unusual in their differentiation of balanced and unbalanced signals. According to the Japanese research team, the signal between turntable and amplifier, or preamplifier to power amplifier is a balanced input, where the two conductors are of similar construction. This means that they have virtually identical resistance and capacitance in either direction.

Unbalanced, or coaxial cables have an inner and outer conductor, which are not equivalent in terms of construction or electrical performance. These, it is said, have been found to work best with digital sources, between CD or DAT and amplifier.

The other area that Furukawa have pushed forward is that of cable construction itself. Having rejected the standard Tough Pitch Copper used in cheap audio leads and Oxygen Free Copper used in a number of more up-

market interconnects, Furukawa used the Pure Copper by Ohno Continuous Casting process, known as PCOCC to its friends. This method of extruding copper, where the extrusion mould itself is heated, gives the copper up to 99.99999% purity. In addition, Furukawa have also researched into the qualities of different insulating materials for different processes.

Furukawa's PCOCC coaxial interconnect cable is known as FD-11. It uses PCOCC cabling, together with two layers of different polyethylene insulation, wrapped in a flexible vinyl sheath. Presumably the letters 'FD' stand for 'Furukawa Digital'. The other cables in the range are prefixed 'FA' for analogue interconnects, 'FO' for Toslink optical connectors and 'FV' for video signal cable, which is also used for connecting a Compact Disc transport to a Digital to Analogue Converter. For a one metre pair of FD-11 cables, connected with Furukawa's own FR-10 24K gold plated PCOCC RCA phono plugs which hermetically seal the cable, Quantum Audio, importers of Furukawa cable, charge £85.

The cable does not have any suggested direction for use, although I found that it works best with the writing following from source to amplifier. It also seems to benefit from 'bedding in'; where the cable performs better after one or two days' use. This is less noticeable than with cables like Deltac or MusicLink, but to a certain extent it is true for all cables. Just don't ask me to explain this rationally, especially if you want physics as well!

Between Compact Disc and amplifier, the cable has a great ability to disappear. It has good transparency, stereo focus, detail and dynamics. In fact, it is a very good all round cable. This is the beauty of it: there are many cables that perform better, from a subjective standpoint, but they are, almost without exception, very system dependent. A cable that will work perfectly in one

system, will fail to impress in another.

Not so the FD-11. It has a quality that shines through regardless of system used. For a user of any system with a CD player using standard interconnects, the Furukawa can be wholeheartedly recommended. In every case, there may be a better cable, but it will inevitably be more expensive and may fail to suit the system if either source or amplification is upgraded in the future.

Using a motoring analogy, the Furukawa FD-11 cable is rather like a Mercedes Benz 190; people often criticise it for being a bit utilitarian for the price, but few people who own one would change it for anything else and no-one can complain about the build quality.

In a way, the FD-11 is better suited to the lower and middle priced systems. Those who spend umpteen thousands of pounds on their hi-fi system may find Furukawa a little too restrictive in terms of soundstaging and front-to-back depth. Ultimately, they may also find it a little bland in presentation. For those, who will readily pay hundreds of pounds for a single interconnect, Furukawa will not suffice. For the rest of us, from the owner of a Marantz CD-52 upward, the FD11 cable is well worth considering as your next upgrade. **AS**

(Noel notes: *The worth of something is often more apparent when it leaves, than when it arrives. Our monitor loudspeaker test system was fully wired with Furukawa, twixt da Vinci preamplifier and SA-470 power amplifier, and from latter to loudspeakers, bi-wired.*

Rudely whipped away at the end of the test, I was left with a motley collection of interconnects - and the realisation that the system had become less clear, insightful and precise. So my own estimation of Furukawa is that it offers a perceptible and worthwhile improvement. You can let your girlfriend walk out, but don't let your mates whip your Furukawa cable. You'll miss it.) ●

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Great Hi-Fi Stories... No. 8

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The dream was short-lived. A few days later he called me in desperate straits. His amplifier had overheated so much that it's feet had melted. When he tried to pick it up it was so hot he had dropped it onto the CD player, damaging that too!

I went round there immediately - it was still so hot that I had to use his boxing gloves to move it. Back at the shop I phoned Arcam. "How awful", they said, "you'll have a new Delta 70.2 tomorrow."

"You may be interested to know that our customer is a boxer," I teased.

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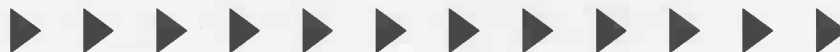


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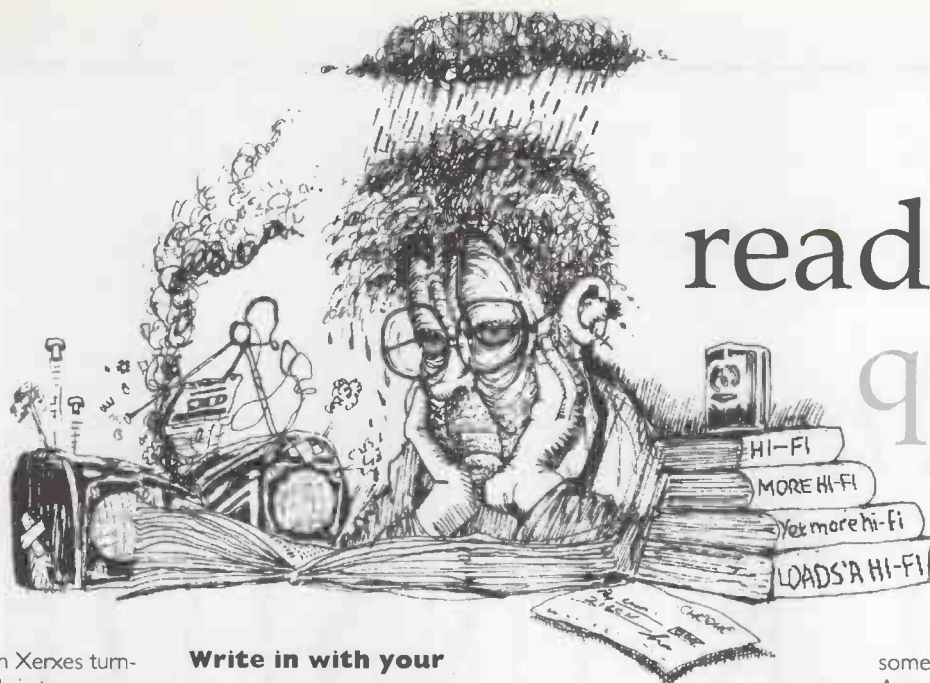
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readers' queries

? I use a Roksan Xerxes turntable with Tabriz tonearm and Corus Black cartridge with a NAD 5420 CD player (Van den Hul CD interconnect) and Gale 201's (Furukawa FS-2T14 cable and marble stands). My NAD 3020 amplifier, which was boxed until this year, has just been replaced by an early Onix OA21 with both MM and MC boards. I would like to eventually upgrade to a Naim amplification system with Epos ES14s and intend to purchase a pre-amp after upgrading the speakers. The Onix/Epos combination sounds very good which is why I purchased the OA21.

Would a Naim 72 work well with the Onix as a temporary measure? I know Onix now produces a pre-amp and I may purchase this if the Naim is unsuitable and if the Onix is worth keeping temporarily. I don't suppose the Naim power supply would work with the Onix/Naim 72? A special cable would have to be made to connect the Onix SOAP power supply to the old OA21. Do you also have any comments on adding an SME V and Dynavec-tor 17D2 to the system?

By the way, are you intending to sell the Horn loudspeaker kits again in the future?

**K. Lacey,
Hove, E. Sussex**

The problem with connecting the Naim 72 preamplifier to the Onix is that it has no internal power. The 72 receives its power from either a 90 or 140 power amplifier, or a separate Hi-Cap power supply. I spoke to Onix on the subject. If there is a DIN socket at the rear of the amplifier, then the OA21 is very old indeed. So old, in fact, that it would not be worthwhile adding a Naim 72/Hi-Cap to it. In this instance, it would be

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better to go for a Naim 62 or 72 preamplifier and a 90 or 140 power amplifier, rather than fiddling around with half-cocked hybrids.

The SME V does work very well on the Roksan Xerxes; before they produced their own Artemiz arm, Roksan used to recommend it highly. Many early Roksans were supplied with a SME V arm, usually with a Koetsu Red Signature cartridge. The Dynavec-tor 17D2 is excellent, with a light, neutral signal. My only concern is that it may not match with the Naim input cards - it may sound too thin. I'm sure that Naim can supply input cards to suit the 17D2. Otherwise, try going for Roksan's own Artemiz arm and Shiraz cartridge. This combination is cheaper than the SME V/17D2. Naim do make specific cards for the Shiraz, or there is always the option of Roksan's own ArtaXerxes head amplifier; the money saved on the SME V/17D2 combination would go a fair way toward this.

Finally, I regret that there

are no plans to re-establish the horn loudspeaker kit, at the present time. If the situation changes, we'll let you know. **AS**

? Ireland is not Hi-Fi land, so that one cannot, as in Britain, listen to and compare systems, nor in consequence, choose components successfully. For that reason, and because I am about to upgrade my existing system (chosen solely on the basis of reviews) I venture to trespass on your generosity with a query.

My present system needs speakers (budget around £1200 maximum), speaker cable and perhaps interconnects and equipment supports. When finances permit, I will budget for a similar amount to the speakers for a CD upgrade. My present system is Pioneer A400 amplifier, Marantz 50SE CD player, Pioneer F91 tuner. The rest is bellwire and borrowed Bose speakers.

The speakers will need to be floor-standing since I have a couple of boisterous dogs. Those that I have selected, again purely on the basis of reviews, are: Snell Type E11, TDL Studio 4, Ruark Talisman, and the Heco Superior or its bigger brother, I think the 800. Or perhaps an Audioplan, since they look as nice.

Priorities: they should play music and, if possible, look well. Any bass that is on the CD, I want to hear it. Occasionally I have been moved or excited by music; I hope to be able to repeat the experience. Musical tastes are eclectic but exclude any current popular music, Rock and Roll, for example. I enjoy popular classics, light opera, some country and folk music,

some of Mary Black, Bob Dylan, Armstrong, Beatles, guitar (Rhinehardt) and some types of jazz.

My system creates a soundstage of sorts; I would prefer speakers that create a good soundstage and image well. Some of the musical terms used by reviewers are incomprehensible for the same reason that one could not distinguish colours if one was blind from birth. Since I am not awash with funds, these may be the final upgrades, and since it is 'silly money' for me I do need to get it right.

**Michael Johnston,
Dundalk, Eire**

You make no mention of the size of room that you are using the system in. If the room is quite small, then go for the Audioplan Kontrapunkts, or the floorstanding KEF Q90s. Larger rooms may need loudspeakers like the KEF Reference 103/4s or the Ruarks and Snells that you mentioned. However, the Snell E11 loudspeakers are not floorstanding - they require very heavy Huygens stands. In addition, no one imports Snells at this time and the Audio Note versions are not ready as yet. I have no experience of the Heco Superior range, so I would not like to pass comment without having heard them first.

One loudspeaker that we can immediately discount from your list is the big TDL Studio 4. This needs more power than the little A-400 can deliver, so that it would soon run out of steam. My personal preference would be either the KEFs or the Audioplans. They are both very different; the KEFs on the analytical side, the Audioplans richer and warmer. Both loudspeakers have superb imagery, with the KEF enveloping the listener in sound and the

The KICK INSIDE

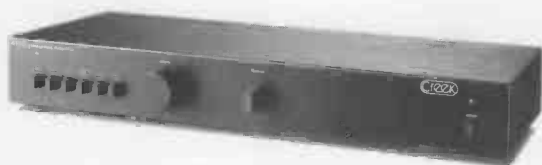
In a comparison test in Hi-Fi World's November issue, the Creek 4140 was regarded as the best of a group of amplifiers from six manufacturers. Some of them world heavy-weights.

Best? How can one define best in fidelity?

What made the 4140 outstanding in comparison to products by Pioneer, Marantz, Arcam, Musical Fidelity and Sonic Link, was, we quote, it's "pace and life", while being "detailed and coherent in presentation" it never sounded "out of control or nasty" on moving magnet or CD.

Probably the most telling comment was "It is one of those amplifiers that has an almost in-built sense of rightness to it that provides a strength the others lack."

What truly makes an amplifier better is its ability to convey the composition, the musicians and their performance. This test proves that this capability belongs to Creek.



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Audioplans giving a more traditional 'soundstage' behind the loudspeakers. If you went to the Belfast show, it would have given you a pretty good idea of the Audioplans ability.

With regard to cables and tables, these can make or break the system. Depending on budget, Furukawa FD-11 (and FA-11 for the tuner), Moth Ley Line Black (but watch out for hum fields - the Ley Line is very sensitive to them), or Audioplan Music Cable X-Wire would be a good CD-amplifier interconnect. Again with tables, yer pays yer money and takes yer choice. Target, Sound Organisation, Sound Factory, Audiotech and Mana will all offer improvements over stacking one atop the other. The Mana seems to resolve the most detail, but is also the most expensive.

Finally, loudspeaker cable. Almost any cable will be an improvement over the standard bell-wire. Audioquest, Furukawa (especially their big Evencap FS2T55F or As-Cast FS2T15 solid core), or Audioplan cables will offer a major upgrade. Be careful though. You may find that the cost of the ancillaries fast approaching the cost of the original equipment. **AS**

? My thirtieth year fast approaching. I have found myself adrift in a sea of doubt. It has taken me two years to get to the system I now have: Teac CD-P3000 CD player, Teac V-270C cassette deck, Technics SLQ 300 turntable, Sherwood AL 100 amplifier and Tannoy M20 Mercury speakers.

With a growing family - four little sib's under five - the problems are also to do with cost. How can I improve on this system without going OTT? CD, Tape amp and speakers work well together, but not the turntable amp and speakers.

I have tried to improve the M20's; I had to, with my two year old son poking his fingers into the original drive units. I replaced them with Peerless 220WR's on a friend's recommendation. Seeing that my only problem lies with the turntable, what do I do? The cartridge is the one supplied originally on its nth stylus. Would it benefit from a pre-amp in the link or should I just wait until the kids grow up and I'm in my prime at forty plus and start again?

D. W. Jones,
Caernarfon, Gwynedd,
Wales

Simple really, change the turntable! You don't mention how much that you have to spend, but I would imagine that you are looking at the sub-£300 mark. As such, The Systemdek 11x (or 11xe, with its electronic speed control), Rega Planar 2 and 3 or the Linn Basik all come to mind. A new addition at this cost is the Pro-ject 2, imported by Kronos Distribution. Add to this a good inexpensive cartridge, such as the Audio Technica AT-95E or the Goldring 1012 and you are away.

As with any turntable, a good support is needed. As children are involved, try for a Target or Sound Organisation wall shelf, possibly with the other products on a Target, Sound Organisation or Sound Factory stacking table.

Finally, I do not know too much about the sound quality of the Sherwood amplifier. If it still sounds rough after all the suggestions made, then (and only then) look at different amplifiers. A good alternative would be the Arcam Alpha 3, the Creek or even the Marantz PM40SE. Add to this a good set of cables and loudspeaker stands and you have the makings of a good system. **AS**

? My system is Linn LP12/ttkok LVII/K9, Ion Obelisk 3 plus X-Pak 1, Linn Helix speakers biwired with Linn K20 cable and Denon DCD1700 CD player with Denon tuner and cassette deck. The system is two years old and is placed on wall shelves; the speakers are seven feet apart and twelve inches from the wall in a room twelve by fifteen feet. I have approximately £900 to upgrade with.

I am looking for a punchier sound with depth and deep bass. I was thinking of the Audio Alchemy Digital Decoding Engine for the CD and the laminated baseboard for the Linn LP12. Now the problem: I think the speakers are the weakest link in the system; but which is the next best move - better speakers, Lingo or something else? The Linn can sound a little thin at times. My music tastes run from hard rock to middle-of-the-road.

Richard King,
Worcester Park, Surrey

The problem here lies with a combination of source, amplifier and loudspeakers, all working to produce a sound that is slightly lacking in weight. The Linn K9, certainly without the benefit of either Lingo

power supply or Trampolin baseboard, can sound a little thin, especially if it is partnered with your amplifier and loudspeakers.

While I would normally suggest a Lingo to improve things, it does remove the Linn's 100Hz 'bloom' that may make the system sound even thinner. Conversely, there is more depth and resolution to the Lingo'd Linn, giving more punch and attack. With about £900 to spend, if we were looking purely at the vinyl side of things, I would suggest a full reset, the Lingo and a Linn Asaka cartridge, in place of the K9. If funds permitted, try to squeeze in a Trampolin as well. This improves things at the source.

If some of the money is to be diverted to a Digital Decoding Engine, a product that I cannot recommend too highly, then this cuts things a little fine. The Lingo is still a good bet, but your wallet may not stretch that far.

Before committing yourself here, do try to listen to a different pair of loudspeakers. I would suggest having a look at Heybrook HB-1s, or models like the Rega Ela, Royd Apex or possibly the Castle Chester, although I have yet to hear these (they are in a box downstairs!). This may be a cheaper solution to your problem. **AS**

? I am currently shopping for an up-market turntable, albeit in its 'budget' guise, and I don't intend to upgrade the analogue front end any further. It now comes down to either a Thorens TD3001/RB300, a Linn Sondek/Akito or a Michell Gyrodec/RB300 with dedicated power supply. Though I'm acquainted with the sonic character of both the Linn and the Thorens, the Michell remains an unknown factor to me. So, prior to auditioning it myself, I'd like you to comment on its virtues or vices, not forgetting its rhythm/timing properties.

I also intend to upgrade my present - humble amplification and speakers to something more substantial. The hardware that really whets my appetite is the Onix OA21S with its SOAP power supply and the Epos ES11's - or anything similar. Would these components 'synergise' well with the decks I mentioned, and would the Roksan Corus Black cartridge prove to be a good match?

Finally could you give me some advice on speaker cable

that would work well in this kind of system (biwired) not exceeding £10-£12 per metre?

Wouter Quaethoven,
Belgium

As both a Gyrodec user and a fan for many years I'm about to turn unpopular in support of this highly underrated turntable. Its main vice is that it has no character; a peculiarity of a design which has a suspension without a plinth and a massive platter is that it takes its character almost entirely from the cartridge. This is rather different from the other turntables you know, in that the Michell would appear bass-light certainly by comparison with the Linn. Its virtue is the same, coupled with about the best pitch stability in the business. It also accepts pretty well whatever arm from Rega RB300 to outrageously expensive. John Michell, having brought out the deservedly acclaimed Iso cartridge to line-level amplifier, will also shortly be bringing out a pre-amp and power amp, the prototypes of which were said by one dealer at the Penta Show to be Krell-beaters at half the price, and could well be worth waiting for. However, if you are determined on the Onix OA21S, its tonal characteristics require a Linn, and the welly that offers in itself. **EB**

If I may put my oar in, I feel while Eric's comments about the Onix and its partnership with the Linn are true, it also suits the Thorens well. The 3001/RB-300 has many strengths that match the Onix - it also has the ability to play 45 rpm records, which the Linn cannot do without difficulty or a Lingo.

The SOAP power supply really comes into its own when used with a Moving Coil cartridge; either look at a cartridge like the Goldring Eroica LX or Ortofon's MC10 Super, new MC15 Super or Quartz models, or stay with the Corus Black or a Linn K9 and forgo the SOAP.

Yes, this system, with the Epos ES11s would synergise well. Used with Linn K20 or Audioquest Type 4, Furukawa FS-2F09, DNM Rainbow, Supra 4 or even solid core lighting cable, this system would mesh together easily. I have used this system, with a LP12/Akito/K9 and Linn K20 cable and find it very easy to listen to for long periods. Once again, stands and tables play a vital role, so do not skimp here, either. **AS**

WIN A WORK

Your chance to own a pair of Art Audio Tempo monoblock valve amplifiers, complete with Art Audio VP-1 preamplifier.

Last month, we looked at the excellent Art Audio Tempo valve power amplifiers. Having been extremely impressed by the products, we felt that they would make a superb competition prize. Art Audio agreed!

A power amplifier is useless without a preamplifier, however, so Art Audio have also included their VP-1 preamplifier as part of the prize. If you were to buy this system from a dealer, it would cost over £1800. However, you can win it for the cost of a stamp by completing three simple questions.

Please send your completed entries, by the 20th February, 1992, please, to the following address:

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

We will endeavour to publish the results in the May 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. Employees of Art Audio, their dealers, and employees of Audio Publishing Ltd. may not enter.

ENTRY FORM

1. Apart from the Tempo, name two other Art Audio products.

2. Does the Tempo operate in Pentode or Triode mode?

3. Who makes the valves? Is it:

- a) Tai Chi Silver Tiger,
- b) Ginseng Brass Monkey,
- c) Shuguang Golden Dragon.

Finally, a tie breaker.

Complete this epic poem with two printable lines:

Valves can sound warm,
Valves can sound nice,
Valves are more linear
Than a solid-state device.
But the reason why I like 'em best
And I may be wrong or right

Name: _____

Address: _____

Daytime tel. no.: _____

Please send your completed entries, by the 20th February 1992, to:
Art Audio Competition, Hi-Fi World Magazine, 64 Castellain Road,
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OF ART!

competition



Hi-Fi World Special Audio Accessories

A range of high quality audio accessories selected by us for their usefulness and effectiveness.

New CD cabinets , sweatshirts and T-shirts have been added to the collection.



KONTAK

Contact Cleaning Fluid
Kontak is an effective two part cleaning solution that removes contaminants from electrical connectors of all sorts. It is applied with pipe cleaners supplied. Clear instructions list the most sensitive contacts that need treatment in a hi-fi system, although items like fuses which are not mentioned should also be treated.

The dirt that Kontak removes is clearly visible on the pipe cleaners, demonstrating just what degree of contamination contacts have reached and what Kontak is achieving.

Users commonly express surprise at the amount of dirt and contamination Kontak removes. After application, a system regains its original life, sparkle and vigour.

KONTAK PRICE: £21.20



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 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 £24.95



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 ROLLER PRICE £2.75**



NAGAOKA STYLUS CLEANER

Here's another simple but effective cleaning kit from Nagaoka. It consists of a stylus brush and cleaning solution. Use carefully to keep your pickup cartridge stylus and cantilever clean.

STYLUS CLEANING KIT . £2.50

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



GOLD PLATED 4MM BANANA PLUGS

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

GOLD PLATED SPADE CONNECTOR

For amplifiers with loudspeaker screw terminals, here is a heavy, duty gold plated spade connector. It has the same unique axial clamp connector as the 4mm plugs described above.

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) £14.95



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 ... £7.00



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. LaserGuide 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 £99/PAIR

NEW!

SWEATSHIRTS AND T-SHIRTS

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 when you work off the Christmas pud. The sweatshirts and T-shirts come in white, grey, black, red and navy-blue in Medium, Large and Extra Large sizes; track-top sweatshirts (with hoods) are also available to keep the winter frosts out of your hair.

SWEATSHIRTS £12.00
HOODED TRACK-TOPS. £15.00
T-SHIRTS £7.99



RECORD STORAGE CUBE

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
50 RECORD SLEEVES WITH 4 CUBES
FOR 6 CUBES, JUST PAY FOR FIVE (£210)
FOR 8 CUBES, JUST PAY FOR SEVEN (£294)

NEW FOR 1992!

CD CABINET

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

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SOUND ADVICE

The entire Art Audio range represents outstanding value for money. *Hi-Fi World, Dec 1991*

The Tempo amplifiers compare very favourably with any valve amplifier on the market, from home or abroad, regardless of price. *Hi-Fi World, Dec 1991*

This is one of the finest pre-amplifiers I've ever heard. *Hi-Fi Choice on Concordant Excelsior*

It creates one of the deepest and most solid sound stages of any pre-amplifier I have encountered, valve or solid state. *Hi-Fi World on Concordant Excelsior*

The Art Audio Quintet was the surprise of the group. . . sweet open and lucid. *Recommended Hi-Fi Choice, Nov 1991*

The combination of Concordant Exultant and Art Audio Quintet is truly a marriage made in heaven. *Hi-Fi Choice, Nov 1991*

A very high and wide stereo display with pinpoint accurate stereo images. *CD Review On Pentachord Speakers, Nov 1991*

The Pentacolumns are among the most revealing speakers I have heard. *Hi-Fi World, Dec 1991*

**We could not have said
better ourselves**

. . . . if you would like to hear these and other valve amplifiers for yourself - give us a call.

It is true the Art Audio and Concordant systems are well matched. However, heard through the remarkable Pentachord or Pentacolumn active speaker systems, music becomes a revelation in transparency. The result is stunning.

New additions to our range include:

- Michell Mycro - a worthy partner to Gyrodec.
- Integrated valve amplification from Copland and the CVT3030 from AMC.
- Apogee Centaur Minors, Magneplanar, Mytho and Ruark speakers.
- Grado and MAP cartridges - moving coil detail with moving magnet musicality.

The only London stockist of Groove Tubes - the ultimate valve.

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COMPACT DISC

AIWA XC-700 £170
Using Philips SAA-7350 Bitstream chip, this player sets new standards of smoothness and clarity at the price.

NAD 5420/5425 £170/£290
One of the best implementations of Japan's MASH low-bit system, offering a big, solid sound with plenty of weight.

ROTEL RCD-865 £300
Engagingly full of richness and life, with a natural and effortless quality; a player that transforms facsimile into reality before your ears.

PIONEER PD-8700 £300
Chunkier than most of its compatriots, to allow space for a turntable (!), a lean, dry quick-witted player which makes no concessions to difficult discs.

PHILIPS CD-850 £400
All the finesse of top quality Bitstream, with an open, balanced and involving performance.

ARCAM ALPHA ACD1 £420
Offers a warm, full bodied sound with big bass.

ARCAM DELTA 70.3 £699
Arcam's first Bitstream player. Its refined, but powerful sound sets the standard at the price.

MERIDIAN 206B £950
'Entry level' Meridian player. Detailed, with a wide soundstage, but somewhat lacking in 'joie de vivre'.

NAIM CDS £2937.50
The current talking point in the world of hi-fi. A worthy contender for the 'best CD player in the world' throne. Perfect partner for a Naim system.

D/A CONVERTORS

ARCAM BLACK BOX I, II AND III £210, £260 & £360

Three solid performers that can transform a mid-price Compact Disc player with a digital output. They get progressively better as the price gets higher.

DELTEC LITTLE BIT £300
Sets up a wide, open stage and places a captivating performance within it. Spectacular Bitstream technology at a very low price.

AUDIO ALCHEMY DIGITAL DECODING ENGINE £376
Paperback sized Bitstream converter that offers a serious upgrade for the price. Sweet, open and detailed.

MERIDIAN 203 £495
Impressively detailed and complex sound, if a little lacking in involvement.

MICROMEGA DUO BS £499
Superb, warm, rich analogue-like Bitstream sound, from the idiosyncratic French. Latest guise suits a wide variety of converters, as opposed to earlier versions.

DELTEC PDM SERIES II £595
Spacious representation with strong embodiment of performers. Natural and relaxing, but superbly refined and subtly impressive.

MERIDIAN 606 £1200
Now revamped to allow for the DAC-7 Bitstream, the earlier 606 was a fine performer, improving on the traits of the 203, but still a trifle uninvolved at times. We shall see how the DAC-7 version fares.

DELTEC PDM-II £2000
Uses Philips new Bitstream DAC-7 super-chip to give a performance of unparalleled drama. Frighteningly deep and controlled bass, master tape standards of fidelity. Very forthright; a trifle violent in its truthfulness. Literally - stunning!

TRANSPORTS

ARCAM DELTA 170 £620
An easy yet tidy sound that underpins digital converters well.

MERIDIAN 200 £750
Well built transport mechanism which lends a fine sense of solidity and detail to music. Well suited to non-Meridian DAC's too.

TEAC P10 £1400
Orders events in a precise manner, lessening time domain confusion and blurring. Succinct and impressively controlled.

MERIDIAN 602 £1500
As with the 606, this improves over the 200 transport. Good build quality and a strong sound, if a touch bland when used with the wrong DAC.

MICROMEGA DUO £1745
With the new CD-ROM chips, the Duo transport has a glorious balance of delicacy, imagery and drive.

TURNTABLES

REGA PLANAR 2 £155
The first of the real 'hi-fi' turntables. Excellent value for money, having been spent where it matters - the arm and the bearing. Quite transparent and lucid, it fares well against some more expensive turntables.

SYSTEMDEK IIX-900£190(no arm)
Great package. A suspended turntable that is easy to set up and takes a variety of arms (the Moth arm being the obvious choice). Sound quality is surprisingly natural, if not as precise as some.

REGA PLANAR 3 £249
Improves upon the Rega 2 in almost every way. Sets an impressive standard that others strive to beat.

MICHELL SYNCHRO
without arm £301
with arm £398

Very well built turntable. Distinctive looks. Solid, stable sound, with good bass at the price. Bit lacking in involvement and detail.

LINN BASIK £285
Fitted with Linn's excellent Akito tonearm, the Basik is very much in the Linn mould. Its timing and pace are superb. Very musical.

PINK TRIANGLE LITTLE PINK THING £392
Good-looking, neutral sounding turntable. Excellent soundstaging capacity and decent bass. Best partnered with a Rega, Roksan or Linn arm.

NOTTINGHAM ANALOGUE SPACEDECK £590
Idiosyncratic turntable, with its high mass platter and distinctive looks, that is both fast and goes deep. Well partnered by the Space Arm (£380) and the Analogue Tracer II cartridge (£175) from the same company. Usually used in the context of a valve-based system.

MICHELL GYRODEK £659 (£801 with RB300)

Highly underrated turntable. Impressive build quality, virtually unmatched by the other British high-end manufacturers. Very solid, dry sound. Plenty of bass and good soundstaging. In some systems it can sound a little bland; in others, excellent. Better than ever with its new power supply.

PINK TRIANGLE PT EXPORT £676
Terrific soundstaging abilities, good bass and a neutral performance that improves upon the LPT considerably. Works with all the arms listed with the LPT, plus the SME range.

LINN SONDEK LP12 £679
Still one of the finest, after all these years. Brought into the 90's by the Linn Lingo (or Pink Triangle's Pink Link) power supply at £496 extra, the LP12 has always been the turntable by which all else is measured in this country. Tuneful and musical, placing dynamics above imagery in its list of priorities.

ROKSAN XERXES £695
Fast, tight and clean, some have described the Roksan (especially with its Artaxerxes phono pre-amplifier) as almost CD-like in its presentation. A good alternative to the LP12.

VOYD VALDI £699
Similar to the Pink Triangle, the Valdi is an expressive performer, with a deep bass that sneaks up on you. Matches Audio Innovations equipment well.

PINK TRIANGLE ANNIVERSARY £1175
One of the finest sounding turntables in production, the Anniversary takes the listener nearer the recording studio than almost any turntable. Suits the same arms as the PT Export.

TOWNSHEND ROCK REFERENCE £1995
Great soundstaging, pitch stability and timing, the Rock Reference has a bass performance that is deeply impressive.

TONEARMS

REGA (MOTH) RB250 £78
Excellent value for money. The one piece Rega arm. Lucid and graceful.

REGA RB300 £115
Little to beat this arm at the money. Has appeared in some outrageously expensive turntable packages without sounding out of place. Very slight softening of notes, when compared to the finest.

LINN AKITO £137
Different presentation to the Rega arm. Not quite as happy with expensive MC cartridges as the RB300, it nevertheless shines with cheaper MM's (especially on all Linn turntables).

ROKSAN TABRIZ £165
Good bass and not too tizzy for the price. Works very well in Roksans (naturally) and Pinks.

LINN ITTOK LVIII £560
Great dynamics, excellent timing and delves deep into the lower registers. Latest models use refinements developed on the Linn Ekos.

NAIM ARO £752
Unipivot tonearm with a seductive soundstage and a lot of character. Can resolve an vast amount of information from a groove. Works well in a Linn, its sheer freedom of movement makes it difficult to use with a more 'springy' deck.

LINN EKOS £1097
A sort of 'Turbo' Ittok, the Ekos improves upon the strengths of the Tik-Tok, making it more transparent and dynamic, without becoming overtly so.

SME SERIES V £1247
Probably the finest built of all pick-up arms, the V seems to have little to criticise about it, on the right turntable. Some suggest that it can sound polite; it performs (without getting in the way of the music) with grace and artistry. Strong soundstaging properties; it does not appear to have the problems associated with other arms at frequency extremes.

CARTRIDGES

AUDIO TECHNICA AT95E £18
Probably the finest starter cartridge. A little bright, scratchy and a trifle thin, it still represents excellent value for money.

ARCAM C77 £22
Good all rounder. Quite neutral and tidy, but a bit lacking in life. Works very well in old arms. Can be upgraded by styli changes.

ORTOFON 510 £30
Even-toned, with excellent bass and good stereo imaging (all due to its solid body) for the price. Also upgradable via styli.

GOLDRING I020 £49
Sweet sounding cartridge, similar to the Ortofon in many ways, but has less clattery treble. The mid point of their 1000 series cartridges.

DENON DL110 £70
Moving-coil at moving magnet money. Old-ish - it has so far had quite a lengthy lifespan - this maroon tortoise-shell coloured high-output cartridge has subtle detailing and a fine delicate sweet sound.

LINN K9 £89
Can sound a bit forward and lacking in bass in some turntables and arms; the Linn nevertheless has a tight, crisp sound, with plenty of speed of attack. It is also quite detailed.

ROKSAN CORUS BLACK £110
Very expressive and musical cartridge. Coherent and detailed, it can be a little bright in some systems.

AUDIO TECHNICA AT-OC5 £122.95
Needs an exceptionally good front end to sound good, its resolution of detail is very good for the price. A cautious recommendation, as it can easily sound raucous and fierce in the treble.

SHURE VST-V £173
Excellent tracking moving magnet cartridge. The Shure offers some of the fine detail of MC's with the brusque-ness of an MM.

ORTOFON MC30 SUPER £270
Despite being detailed and analytical, the MC30 still sings a seductive song. Very solid body.

GOLDRING EXCEL £499
Smooth, detailed and refined sounding cartridge. Bit relaxed and easy on the ear, but still high in enjoyment quotient.

LINN TROIKA £798
One of the most musical cartridges ever, the Troika uses a three point mounting. As such, it is somewhat limited to Linn and Naim arms (and would usually appear on the LP12).

LYRA CLAVIS £980
The cartridge that currently resides at the top of the U.K. music lovers' list. One of the finest cartridges ever made. More music than hi-fi!

AUDIO NOTE IOIIV £1295
A lean, clean, pick-up machine. For the Audio Note/Audio Innovations user, the Io is almost impossible to beat, short of the more expensive Io Ltd.

ORTOFON MCS000 £1500
The big information retriever. Can resolve more detail from the plastic than almost any other cartridge around. Slightly too analytical for some tastes.

HEAD AMPLIFIERS

MICHELL ISO £393
There really is that much in the groove. Astounding detail, rock-solid images and air and space precisely where the musicians (let alone the studio engineers) heard it. We were so impressed the Iso now has a permanent place in our reference system.

CASSETTE DECKS

DENON DRM-400 £140
The least expensive usable cassette deck available. Plays prerecorded tapes well and produces acceptable recordings. Variable bias, wobbly speed.

TECHNICS RS-B665 £180
Unusually speed stable, giving clean clear recordings; poor with metals. Plays prerecorded tapes well. Good for piano.

NAD 6325 £160
One of the best at the price: superb with prerecorded tapes and makes excellent recordings. Awkward to use.

TECHNICS RS-BX 606 £170
Three head recording at an unbeatable price and a sound quality that is near-unbeatable at twice the price! Near-Nakamichi Nirvana for pocket-money.

World favourites

A comprehensive selection of our preferred products

AKAI GX-52 £200
Fine recordings from the GX head on all tape types; good replay too. Excellent all round.

NAD 6340 £220
Unmatched ability with prerecorded tapes and makes very stable recordings on all tape types.

JVC TD-541 £280
In the class of '60, or rather with the class of the Technics '606, though slightly less engaging at first listen. Serious machine for serious recording and listening.

NAKAMICHI CASSETTE DECK 2 £300

Especially good with metal tape, with which it makes fine recordings. Excellent with prerecorded tapes too, but slightly inferior to NAD.

NAKAMICHI CASSETTE DECK 1 £600

Our sample had poor speed stability, but otherwise the Cassette Deck 1 offers a good, if somewhat overpriced, all round performance.

NAKAMICHI CR-7E £1500
As cassette goes this is the ultimate - and better than the Dragon. Near perfect recordings on all tape types; replays prerecorded tapes extremely well too.

TUNERS

DENON TU-260L £1100
Sensitive and has a clean, balanced sound. Astonishing value.

NAD 4225 £159
Fine, spacious presentation; smooth and easy sounding. The best under £200.

ION SYSTEMS FMT-1 £259
Fine minimalist tuner with good stereo, deep bass and excellent detail. Probably the cheapest 'real' tuner on the market.

ONIX BWDI £395 (exc power supply + lead)
Great partner for the OA21s, as it can be powered from the amplifier, the tuner has a wonderful open clarity that belies its price.

QUAD FM4 £399
Revealing and airy, and a ruthless way with anything other than high studio quality from the transmitter.

NAIM NAT-02 £853
Little box, big money, dead good. Try and find better unless it's a...

NAIM NAT-01 £1377
All else is mere artifice. If you want better radio reception, go and live in the BBC's studio.

AMPLIFIERS

NAD 30201 £149.95
Well known budget classic. Its crown has slipped a bit of late, but it still represents the standard to beat. Distinctive 'NAD' sound.

DENON PMA-350 £169.99
The usurper to NAD's throne. Packs a lot of punch for the money. Phono stage not as strong as the rest of the amplifier.

ARCAM ALPHA 3 £200
Lean and lively, with an astonishing amount of detail built in; the best at this price for line-level sources and won't disgrace an LP collection.

MISSION CYRUS ONE £200
Well-known British amplifier. Minimalist appearance, suitable partner for most equipment.

CREEK 4040S3 £220
Easy on the ear, the Creek seems better suited to LP than CD.

PIONEER A-400 £230
One of the most controversial and popular amplifiers today. Excellent sound, especially when partnered with extremely esoteric source components. As with the PMA-350, weakest link is the phono stage.

ONIX OA21S £350
Yet another minimalist amplifier, the OA21 has the rare combination of detail, finesse and balls.

CROFT MICRO RANGE from £265
Hand built range of pre and power amplifiers. Exceptional value for money. Very warm and inviting (and so is the sound).

AUDIOLAB 8000A £350
Well-built amplifier with a strong following. Very neutral sound for the price.

NAIM NAIT 2 £389
The classic small integrated amplifier is still hard to beat. New CD only version is not so hot, though.

LINN INTEK £398
Since the price reduction and sonic improvements, the Intek has become a worthy competitor for the Nait, but has more power.

ION OBELISK 3 £399
Great stereo, with a punch. Ion Systems' top integrated puts build and sound quality far above big boxes or loads of buttons. Upgradable with their X-PAK-I power supply and can also make a fine stand alone pre-amplifier.

NAD 1000+2100 £179.95/£289.95
Good, all-round budget powerhouse pre/power combination. Can be made even more powerful by adding another 2100 power amplifier.

AUDIOLAB 8000C/8000P £325/£545

Built like a tank. Clean, neutral sound with a slick styling to match.

NAIM SEPARATES RANGE
A legend in its own lifetime, the Naim range has always been hard to beat, even harder to criticise. Goes from the reasonably priced NAC 62 at £405 up to the remarkable NAC 52 at £4535

ION SYSTEMS SAM 40 from £949
Highly expandable pre-power amplifier system. Great sound from the outset, it gets better as the system expands. Easy and inexpensive way to go active, as the circuitry fits within the amplifier.

AUDIO INNOVATIONS SERIES 500 £990
Sweet sounding valve integrated amplifier. Good looking, but a little system dependant.

MUSICAL FIDELITY P-180 + CRPS £799/£499

Stonky power amplifiers, which are both powerful and refined (especially with the addition of the Choke Regulated Power Supply). Go well with Croft and P.S. Audio pre-amplifiers as well as Musical Fidelity's own.

CONCORDANT AMPLIFIER RANGE from £675

Possibly the finest valve preamplifiers made in this country (particularly the £1800 Exquisite), the company's modifications to the Quad II also add considerable worth (and warts) to this classic mono power amplifier.

ART AUDIO TEMPO MONOBLOCKS £699 each.
Smooth, graceful triode-only amplifiers, that put many more expensive valve amplifiers to shame. Well built, rich-sounding and dynamic.

DELTEC DSP-50S/DPA-50S £725/£925

Noel's favourite. Very clean, very clear, very neutral.

AUDIO INNOVATIONS SERIES 200 PRE AMPLIFIER/FIRST AUDIO POWER AMPLIFIER £305.50/£1531.50

Pretty amplifier combination which can sound very sweet with the right components. Very lucid and transparent.

ALCHEMIST FREYA PREAMPLIFIER GENESIS POWER AMPLIFIER £1150 £1400
Combining the sweetness of a valve amplifier with the solidity of solid state devices, the Alchemist amplifiers have dynamics a-plenty.

ART AUDIO MAESTRO £1927(PR)
Beautiful looking valve power amplifiers. Not powerful, but very sweet and involving, especially when used in triode operation.

JOHN SHEARNE PHASE ONE £2398

Pretty, valve-like amplifiers with a sweet, lucid sound. Highly suited to neutral sounding equipment.

LINN KAIRN/LK-280/SPARK £1295/£653/£639

Top flight Linn amplification. A little forward for some tastes, but very detailed and designed with the future in mind.

MUSICAL FIDELITY SA-470£6000
Expensive, powerful and feels as heavy as a car engine, the SA-470 appears to have no limits whatsoever (more than can be said for those who have to lift it).

LOUDSPEAKERS

GOODMANS MAXIM II £90
Fine 'giant killer' loudspeaker. Not as small a sound as would be expected from a small box. Will not compromise expensive equipment.

GOODMANS M500 £130
Fine budget loudspeaker. Not very subtle, but highly efficient, even-handed and dynamic. Good for loud rock.

NAD 8225 £149.95
Very light, open and clear sound for the money.

WHARFEDALE 505.2 £190
Gets a bit befuddled with complex music, but can still sound excellent in some areas. Still one of the loudspeakers to beat at the price

B&W DM610 £199
Our latest test winner. Very competent and musical, without any nasties.

HEYBROOK HB1S3 £249
Powerful, efficient loudspeakers. Lots of welly, lots of bass. Enjoyable to sit in front of, if not the most refined of treble performances.

NAD 8100 £299.95
Fun floorstanding loudspeaker that goes deep and loud without shouting too much. Our Ad. Manager's current favourite!!!

EPOS ES11 £330
Few can match the virtues of the ES11. One of the finest at the price. Great imagery, weighty bass without becoming overpowering. A goody!

ROGERS LS3/5A £350
Smooth, refined and open sound. Little real bass, but excellent soundstaging and phrasing. One of the finest classical music loudspeakers around, only matched by the Harbeths at the price.

HARBETH HL/P3 £359
Souped-up, bi-wirable version of the BBC design, as typified by the Rogers LS3/5A. Even better imagery and clarity, especially on vocals. Best suited for Radio 3 and Radio 4 enthusiasts, the HL/P3's lack a little in volume and a little depth to the bass.

LINN KAN II £439
So called to prove that you can get a big sound from a little box. Incredibly fast, pacy loudspeakers, that give the appearance of a huge bass response, given the box size. Perfectly suited for the Linn/Naim system, may not prove so wonderful with other equipment.

KEF 101/2 £495
The baby of the KEF Reference series. Tells you exactly what is being played, does not mask flaws in the system prior to the loudspeakers. Very system dependent, but can sound good with the right system.

PENTACHORD £499 (or £990 for sub-woofer system)
Real wood finished pentagonal loudspeakers with Bandor units and no crossover. With the addition of the sub-woofer, they are capable of a superbly transparent, but deep and dramatic sound.

NEAT PETITE £525
Baby loudspeakers with a sound quality that positively trounces the opposition. Tight, fast, great stereo and good dynamics. Few little boxes come close.

TDL STUDIO 1 £599
Smalish transmission line loudspeaker. Good imagery, well focused (when positioned properly) and some of the deepest bass you can imagine. Slightly room dependent.

PROAC STUDIO 1 MK 2 £612.25
Since removing the metal dome tweeter, ProAc's Studio 1 has taken the lead among neutral loudspeakers at this price break. Very musical.

NAIM IBLS £815
Small, floorstanding loudspeakers, best suited to Naim amplification. Can sound excellent in the right room (being fast, expressive and tight), but thin and reedy in others. Can be driven passively or actively.

AUDIO NOTE AN-J £799 (Copper Wired) £999 (Silver Wired)

Excellent soundstaging, a natural performance and high efficiency from these derivatives of the Snell design. A good match with Huygens stands. Work well with valves, especially Audio Innovations/Audio Note equipment. Silver wiring is a worthwhile option.

HEYBROOK SEXTET £899
Revealing, lucid floorstanders. Not smooth, but tight and fast-paced. Need careful partnering with ancillary equipment.

KEF REFERENCE 103/4 £995
Capable of showing up every detail in the recording and every defect in the hi-fi system (or the room), the 103/4 have imagery and coherence and can go very loud indeed.

LINN KABER £1198
The obvious upgrade for owners of Linn Kans. Need a lot of power to drive properly. Active version also available.

TDL STUDIO 4 £1499
Bigger version of the Studio 1. Needs a large room. Capable of moving a lot of air. The best loudspeaker for organ music, short of the really big TDL's. Impressive, awesome and a bit frightening.

NAIM SBL £1527
Highly suited to the Naim system, the SBLs are impressive, dynamic, powerful and expressive sounding, especially in active guise. May prove too intense an experience for some people!

QUAD ESL-63 £2072
Large electrostatic loudspeakers. Imagery and detailing second to none, but lacking in bass. An academic among loudspeakers.

LINN ISOBARIKS from £2190
Few who listen to Isobariks working properly cannot fail to be stunned into submission by their gut-wrenching dynamics. A bit larger than life at times. If the Quad is an academic, the 'bariks are the Mike Tyson of the loudspeaker world.

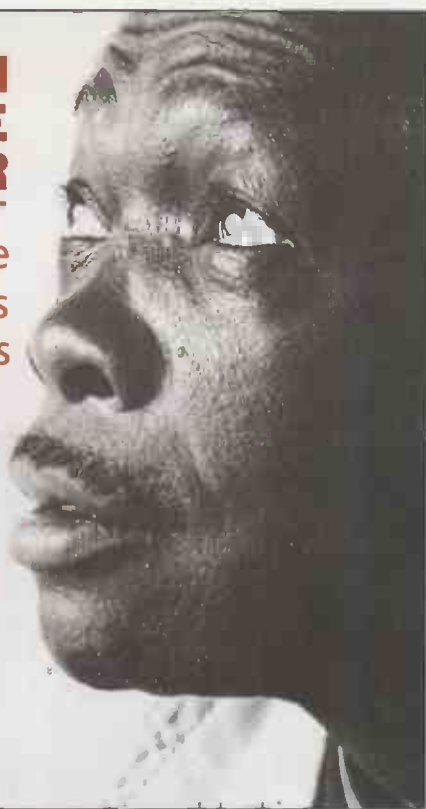
NAIM DBL £6000
Huge, active-only loudspeakers, which make even the powerful Isobarik quake in its boots (stands?). Can produce immense sound pressure levels. Not for the squeamish!

MERIDIAN D6000 £7500
The pinnacle of Meridian's research into active loudspeaker systems. Makes other systems seem primitive by comparison. Once set up, it becomes one of the easiest systems to use. Very controllable, the overall sound is slightly bright in some rooms, but is otherwise intensely dynamic and powerful.

TANNOY WESTMINSTERROYAL £10000
Vast full-range horn loudspeakers, which are very popular in Japan. Incredibly dynamic and detailed, with a rich sound and efficiency that lends itself toward valve amplification.

JOHN LEE HOOKER

The Complete Chess Folk Blues Sessions



JOHN LEE HOOKER
The Complete Chess Folk Blues Sessions
 MCA MCD-18335

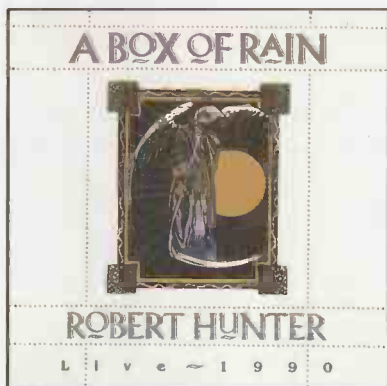
● This disc should be compulsory listening for those who discovered Hooker via his recent albums "The Healer" and "Mr. Lucky". Whilst both issues are well worth having and thoroughly admirable records in their own right, this release demonstrates how effective he can be without the gloss of modern recording techniques and the entourage of stars who studded the last two albums.

Without intending to decry those discs I have to say that I think that this release allows a closer insight into what makes JLH tick. It's disarmingly direct and honest. The first nine songs are lifted from the original "Real Folk Blues" album and the rest of the songs are all previously unreleased recordings. Hooker plays with a band of uncredited musicians though it's probable that the second guitar was played by Eddie Burns. Although the band and Hooker don't always seem in total accord, when they hit the button simultaneously the action gets hot.

One of the album's high spots is "One Bourbon, One Scotch, One Beer" which I last heard played by George Thorogood. GT's version is a turbo-charged re-working of this song with some of the dirtiest and most deliciously disreputable slide guitar you could wish to hear. The original hasn't the sumptuous over-driven distortion and spit that Thorogood's delivery affords it yet somehow it sounds even dirtier in its naked form. Similarly, the original cut of "The Waterfront" here should be compared with the Van Morrison/Hooker version on the Mr. Lucky album. I know which I prefer. Which proves, I suppose, that

there's no substitute for authenticity.

If you're seriously into guitar-based rock music you need to own at least one John Lee Hooker record. If you're only prepared to buy one make it this album which shows whence all the electric boogie bands drew their inspiration.



ROBERT HUNTER
A Box Of Rain
 RYKODISC RCD10214

● I never tire of electric guitar bands but in occasional mellow moods I often reach for albums by singer/acoustic guitar players. It serves to remind me just how expressive the unamplified instrument can be. Increasingly, however, acoustic players are moving away from straight-miking their guitars and using pick-ups and body-mounted transducers so that they can patch in effects too, so narrowing the divide between the acoustic and the solid bodied instruments. Robert Hunter plays this way on A Box of Rain but it's of no great consequence. An acoustic guitar is still an acoustic guitar no matter how much gadgetry you hang on the end of it.

Hunter is, of course, one of the

With profound apologies for getting stuck in a groove, Malcolm Steward has found yet another R'n'B guitarist he wants the world to know about.

malcolm steward

Grateful Dead and his lyrical contributions to the band's repertoire include familiar songs like "Magnolia" and "Terrapin Station" and their most recent chart appearance "Touch of Gray". A Box Of Rain contains nine Dead classics recorded live during Hunter's December 1990 solo tour and three new studio tracks. The tour cuts were recorded direct from the desk and three of these are used. However, on the last night of the tour audience tapes were made onto DAT and these were, to quote Hunter, juicier than the board tapes. All of the songs on the album, however, are direct to 2-track with no overdubs but just a little tidying up before mastering.

This will be a mandatory purchase for Dead Heads but it should also be considered by anyone who enjoys singer/songwriter stuff and, furthermore, by anyone who likes to hear music recorded in the good old-fashioned way: that is, for those whose heritage contains little more than sequencers and sampling, where you start at the beginning, work through the middle, drop a couple of bum notes, finish at the end, then leave well alone. You don't go back and drop-in replacement bars and notes or tweak all the spontaneity out of the event in an attempt to perfect it. If you've grown up listening to Scritti Politti you might find it hard to believe that music actually sounds better when it's not note-perfect. Strange but true.

BLACK ROCK COALITION
The History of our Future
 RYKODISC RCD 10211

● The Black Rock Coalition is a coalition of black musicians who play rock music, before you ask! So what? say you. But underneath the stone upon which this apparently obvious statement is writ there lies a whole army of racist and political worms awaiting somebody with a shovel. The Black Rock Coalition comes armed with a digger. . .

In the introductory notes to this release, Greg Tate, a founder member of the BRC and a writer for The Village Voice, explains the concept: "Black Rock means Black people exercising their democratic rights in music. For some folks, rock immediately conjures up images of long haired white boys carrying on public love affairs with their stiff-necked guitars. To the more militant-minded American musicologist it means a style of music pioneered by the unholy and underpaid trinity of Bo Diddley, Little Richard and Chuck Berry, only to be ripped off for obscene profits by the likes of Elvis Presley, The Beatles, The Rolling Stones and Led Zeppelin. From a Black Rock Coalition standpoint "rock" connotes not only rebel music but an artistic marketplace where making a personal statement is as revered as doing whatever's clever to get on radio playlists.

In rock being a self-conscious artist and getting paid in full are not considered contradictory impulses. In the Black pop divisions of the major labels, a Black performer who doesn't conform to standard formulas, formats and fashions and subject matter is considered unmarketable and unmanageable.

This, and what follows, is all powerful, emotive stuff which without equally powerful music to back it up could run the risk of being dismissed as mere rhetoric. That's not the case, however. There's some serious music here, the kinda stuff that pins you to the wallpaper whether it's the hardcore red-line grind of Blakasaurus Mex's "Think Twice" or the spartan subtlety of Blue

Print's ambling "M.L.K. . . . Check!" Bass freaks should take the latter's title literally and check Marque Gilmore's Chapman Stick playing which I'll swear goes down so low it touches DC at times. My personal favourite here though is the CD's second track "H.O.P.E." by Royal Pain. Sublime stuff: if Bob Dylan had been black this is what he would've sounded like.

Forget your preconceptions: if you think it's possible to categorise musicians by slotting them into convenient racial pigeon-holes this disc might come as a surprise.

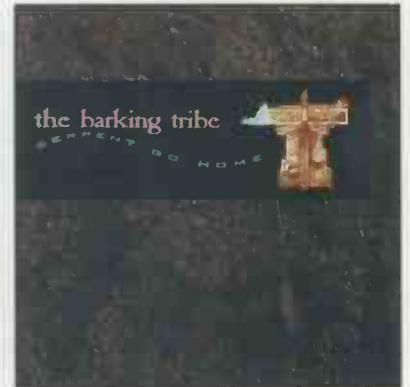


NIRVANA
Nevermind
 GEFEN GEF24425

● Have you ever caught a band on TV or the radio, just a segment of a song, maybe, and thought YES! and promptly decided to be on your record shop's doorstep the following morning ready to buy their album the minute the door was opened? That's what happened to me with this band. I wandered to the kitchen to make a coffee and take a break from work, passing the TV room where my family was trying hard to stay awake watching The Word. Congratulating myself for being so industrious that I could avoid watching the professional Northermer and the super-intelligent blonde hosts I continued on my way until a violent explosion of noise issuing from the set stopped me dead. Had Terry and Amanda spontaneously-combusted in front of an audience of millions? Had I missed the TV sensation of the decade? Sadly no. It was just Nirvana cranking their way through "Smells Like Teen Spirit". This wall of sound was the product of a new power trio. I'd never heard of them before but I knew I'd like whatever else they did and it was all down to bass player, Chris Novoselic. I have a theory about bass players: the lower they wear their instrument the better they are. Mark King, of Level 42, for example, doesn't get a look-in because he can hardly get his chin over the top of his bass. Chris Novoselic represents the other end of the spectrum: he uses his bass to hide the fact that he's not wearing any socks. *Quod erat demonstrandum.* . .

What simply killed me about the song they performed on T.V. and, subsequently the album, was the band's use of musical contrast, which is extreme. In fact, it's extremely extreme

in an intensely extreme way. One second they're being boy-next-door types, about as threatening as Cliff Richard, the next they're adopting a stance so belligerent that Freddy Krueger would wet himself - check out the aptly descriptive "Territorial Pissings". If you're happier with the gentler side of life try "Lithium". Just be prepared to lift the stylus real quick. Playing the 'what if' game, what if Norman Bates joined The Byrds and Marshall amps did go to eleven? The answer is in two parts: Nirvana and Nevermind.



THE BARKING TRIBE
Serpent Go home
 RYKODISC RCD 10200

● As Lou Reed correctly opined all that's necessary for rock and roll is two guitars, bass and drums. All I would add to that roster is one more element: intelligence. The Barking Tribe have all five ingredients.

Serpent Go Home is the four-piece's debut and it is, to paraphrase the low-rent mass media, a stunner. An artful mix of mania and melody it encapsulates the vitality and spirit that separates rock music from the Radio 2 fodder that is Dire Straits, Bryan Adams and Phil Collins. The band's music has an individual identity despite strands which connect to the work of other prime movers in the true rock tradition like The Violent Femmes, R.E.M., and Sonic Youth et al.

The diversity of the influences present in the band's music coupled with their own invention results in a hybrid with wide appeal to lovers of guitar-based rock. Sorry, I'll re-phrase that: if it's not guitar-based it can't be rock. Let's say instead that the album crosses musical territories with scant regard for the sectarian devotion in which some rock fans revel. If you like metal, there's heavy guitar work on offer; if you like thrash there's speedy stuff; if you like jingley-jangle arpeggiating there's enough to satisfy Mr. Rickenbacker himself.

In fact, if you've ever wondered what would have happened if Peter, Paul and Mary had teamed up with ZZ Top, this album will give you the answer. If you never wanted to know you should still buy the album: it's worth having just for the opening track "Pretty In Print", and you can look upon the other thirteen songs as a bonus.





RECORD OF THE MONTH

ROBERT WARD AND THE BLACK TOP ALL-STARS
Fear No Evil
 SILVERTONE ORECD520

★ Another R'n'B guitarist to get turned on to? Yep! I know the world's full of them but there's always room for a class act even in this over-populated field. And be in no doubt Robert Ward is definitely a class act.

Whilst there's every possibility that you've never heard of the man it's quite likely that you've heard his distinctive picking behind the voices of legends like Eddie Floyd and Wilson Pickett. Look out for The Falcons' (fronted by the wicked Pickett) "I Found A Love", the record on which his achingly soulful guitar playing first hit the mainstream. During the sixties Ward led the Ohio Untouchables, a band which later evolved into the successful Ohio Players. In the seventies he became a session player for the Motown label working with bands like The Temptations and The Undisputed Truth. Then he effectively disappeared for two decades. Don't ask me how such a talented musician could escape the notice of A&R men for twenty years but Ward vanished. Until 1990, that is, when he was re-discovered by Black Top Records' Hammond and Nauman Scott.

It's always said that something worth having is worth waiting for. In this instance I'd agree - but twenty years is rather too long. If I'd heard this disc twenty years ago there's every chance that I would have persevered with playing the guitar. Who knows where that might have led? Perhaps the world's a safer place with me behind a word processor instead of a Stratocaster.

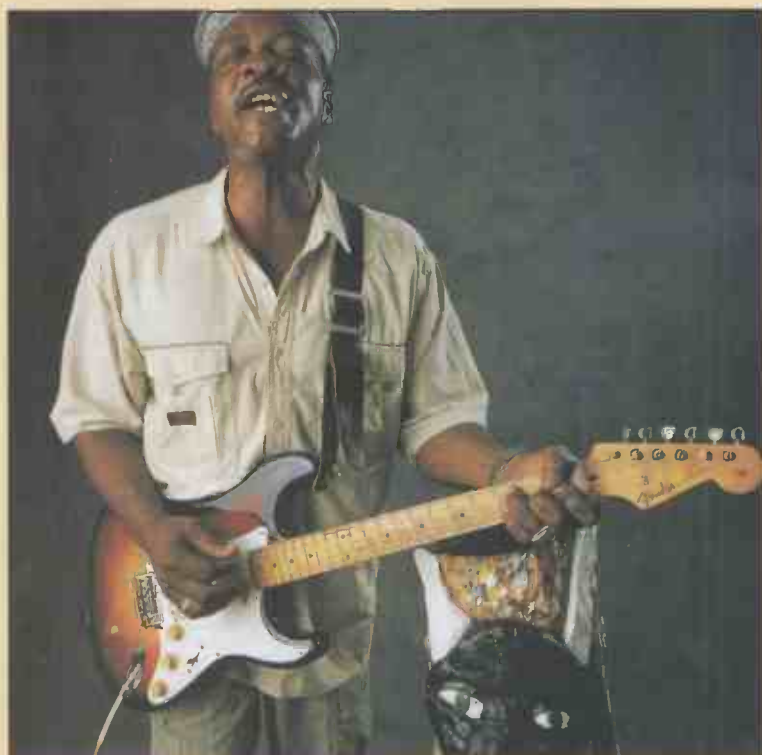
There's no question that this recording is the sort of stuff that

will firm up the resolve of guitar students everywhere. Young players coming up in the wake of stunt-axemen like Steve Vai, under the impression that if you can't play a hundred pull-offs a second you ain't got what it takes, will be perplexed by Ward's sparse style. How can you play so profoundly using so few notes? Ward's economic delivery convincingly demonstrates that it ain't the number of notes you play that counts, it's where and when you drop them that matters. In fact he regularly shows that restraint can beat flash any day of the week in having an effect upon the listener. Silence can be telling and Ward uses it to masterful consequence.

His technique shows an astounding talent for balancing ingredients, and in this respect he's like a master chef. He spices up the basic constituents to create a dish that's unique, but he carefully avoids the temptation to swamp the flavour of the base with too much embellishment. Listen to the last track on the disc, "The Comfort Table" which features just his voice and guitar, to see just what I mean. Just when the phasey, reverberant guitar tone is getting so deep that you could swim in it, Ward unleashes a staccato ripple of stinging notes that are all leading edge which brings you out of your reveries and refocusses your attention on the lyrical attack. This one song hit me harder than any other I've heard this year. So much so that after I'd had the album for a week, this was the only track I'd

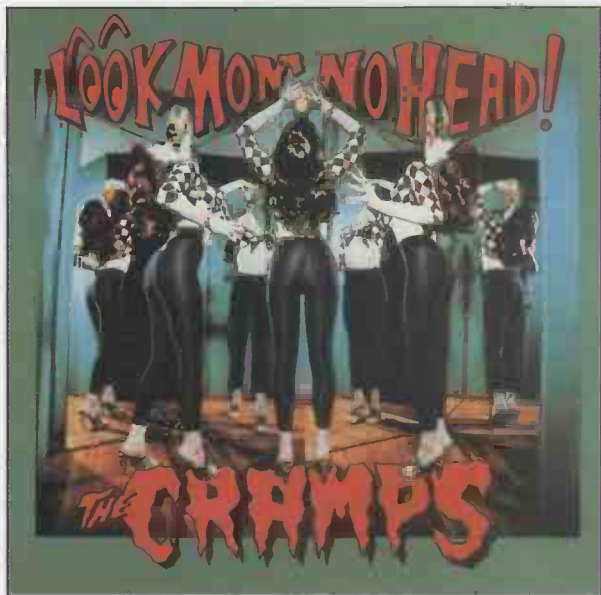
played more than once. Every time I loaded the disc a conditioned reflex made me head straight for track fifteen. When I realised that I couldn't justifiably make this my album of the month without listening to the fourteen tracks which preceded it I finally got round to checking them out. It came as a massive relief to discover that there wasn't one which was in any way disappointing. Meters' George Porter Jr. on bass, with George Rains on drums, lays down a groove that starts rolling on track one and never misses a beat for the next thirteen numbers. The music is pure R'n'B which touches base at times with classic soul, gospel, blues, and funk. But it's all done in the very best possible taste: there's no blatant commercialisation on view, no let's-play-some-thumb-bass'-cos-the-kids'll-buy-that. Ward's committed to R'n'B: just listen to the funky-up "Born To Entertain" if you want proof of that. His chops on this cut should carry a Government Health Warning: Listening to guitar playing with rhythms this dirty could radically improve your sex-life.

Enough said. Buy this disc today. Take it home, play it, enjoy it, fall in love with it, then say 'Thank you Robert!' loud enough for him to hear. I did. ●



**Horror movies provide
the inspiration for two
of this month's
selection, with Van the
Man breaking his
silence**

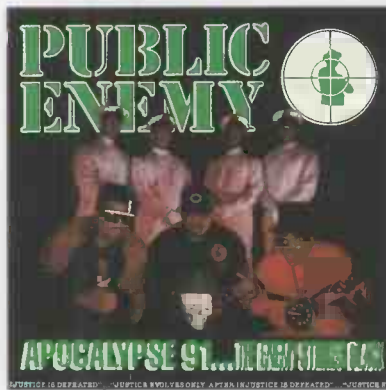
*giovanni
dadomo*



THE CRAMPS
Look Mom No Head!
BIG BEAT CD WKDI01

● Consummate stylists, The Cramps have spent about fifteen years being a major (if this isn't too much of a contradiction in terms) cult band. Sole survivors of the original line-up, singer Lux Interior and 'Poison' Ivy Rorschach (guitars) continue to mine their self-styled - and quite rich, if technically limited - vein of Psychobilly rock. What this amounts to is the breathlessly hiccupped vocals and rhythms of fifties rockabilly overlaid with a lyrical bent that draws its major

inspiration from the Z-grade horror movies and comics of the same era. With a live tour for promotional back-up (and one thing the group have always given is Grand Guignol value for money to the underfed black-clad legions that make up their hard-core support) there's really no way the record can, in its deliberate, and no doubt knowingly minor way, fail to hit its intended target audience. I love 'em, but then my cranium's been gone a long time. Ace cuts: 'There's an Eyeball in my Martini' and a ripper cover of Beefheart's 'Hard-workin' Man' from the movie Blue Collar.



PUBLIC ENEMY
Apocalypse 91 - the Enemy Strikes Black
DEF JAM 468751-2

● Public Enemy are generally credited as the group who put the politics and black consciousness into rap. Mixing a heavy, frequently highly inflammatory - not to say ambiguous - political stance with powerful music and words, the group paved the way for such notorious newcomers as Ice-T and NWA. Four albums on (five if you count master deejay Terminator X's solo effort) and Public Enemy's bark and bite are as loud and efficient as ever. In this latest collection of hard-hitting lyrics and even harder hitting rhythms, we hear about the evils of alcohol, the wickedness of the New York Times, get a word of encouragement from the Ku Klux Klan. . . to mention just a few of the topics tackled within. The music, thanks mainly to the Terminator's brilliant way with found sounds, is as powerful as ever, old soul riffs bleeding into weird noises, horns, sirens, newscasts - it's sonic collage at its best and most invigorating. You may not be moved by their politics, but I defy any living thing not to be touched by thundering cuts like 'Bring Tha Noize' (sic) featuring metal merchants Anthrax. An earful of Molotov Cocktail, no less.



**WHERE THE PYRAMID
MEETS THE EYE - a Tribute
to Roky Erikson.**
VARIOUS ARTISTS
SIRE 26422-2

● If America has an equivalent to Syd Barrett, then it's Roky Erikson. Happily, Roky's still around and making records, whereas Syd's a legend pure and simple. Roky wrote and sang for Texas' Thirteenth Floor Elevators, one of the first and arguably the best of the US psychedelic bands. They recorded a quartet of bizarrely loveable albums for a small Indie, International Artists, and even scored a couple of chart singles before dissolving. Roky then spent a few years in the wilderness (which included a stint in the loony bin) prior to re-emerging as a solo artist sometime in the late seventies/early eighties. The archetypal cult figure, Roky's closest brush with a high profile came with an album of crazed psychedelic Heavy Metal released on Epic some ten years back. He continues to perform and record on various independents, a wild eccentric figure whose primary sources of inspiration nowadays are the Z-grade horror movies of the late fifties which have provided him with some of his best subject matter in this latter period of a wayward but always fascinating career.

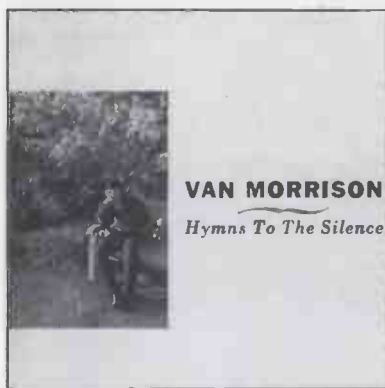
This sort of Various Artist compilation has become a staple of the Indie scene in the past couple of years, with Syd Barrett, Lou Reed and others getting the treatment. Now the big guys have caught on - witness the recent Elton John/Bernie Taupin tribute, from which the Saints preserve us.

This one is Various Artists in the truest sense of the word, from grizzled fellow Texans such as ZZ Top and Doug Sahm, via diehard New Wavers like Julian Cope, through to the ubiquitous REM, and right up to date with (semi-) unknowns including John Wesley Harding, Southern Pacific and - gulp! - would you believe Vibrating Egg?

I was never a huge Elevators fan, so the really big surprise here is how many cracking good songs Roky's

been party to in his twenty-five-odd chequered years of music-making. Here's Richard Lloyd with a dazzling, guitar-borne rendering of 'Fire Engine', a long-standing live favourite since his days with seminal late seventies New York band Television; and what of the Judybats' 'She Lives (In A Time Of Her Own)'? A real ear-opener, not to mention a good dozen others.

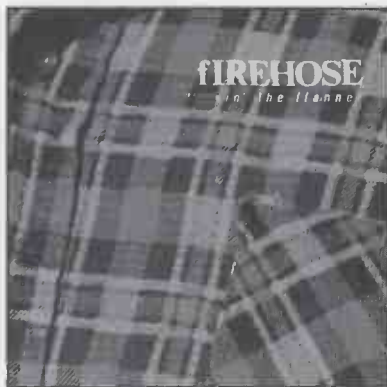
I could drone on, but won't. Suffice it to say that this collection meets all and any of the criteria for a successful 'tribute' album: it sends you back to the originals with hungry ears, plus it stands sturdily on its own several legs. The real irony is that this collection of cover versions is undoubtedly one of my fave albums of the year. Unhesitatingly and wholly recommended.



VAN MORRISON
Hymns to the Silence
 POLYDOR 849 026-2

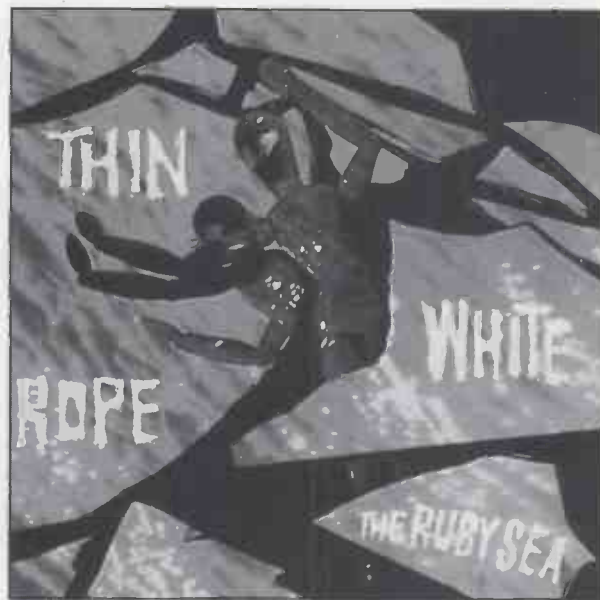
● It's nigh on impossible to name another artist who's been around as long as Van Morrison and who can match him in terms of consistency and quality of product - The Stones? Neil Young? It's a short and highly debatable list. And this, his - what?-let's say umpteenth collection, is proof positive that, at his best, the old warhorse (if you'll forgive the mixed metaphor) still has plenty of fire in his belly. For the first hour or so of this double-album set, Van sings and swings his way through a highly enjoyable, eclectic selection of songs couched in that familiar, idiosyncratic fusion of Soul 'n Blues 'n Roll that is the Morrison trademark. The arrangements, musicians, playing and - first and foremost - the man's splendid voice, are all as strong and inspired as ever. To my ears, it's one of the best things he's done in ages, even if the sheer length of the project does eventually turn out to be its own (and only) enemy. Which is to say that after an hour or so the mind can't help but stray, letting the music become background, coffee-table material. Mind you, even Morrison's fillers (does the world really need

another version of 'I Can't Stop Lovin' You' no matter how efficiently rendered?) are streets ahead of most people's best. Among the guests we find Georgie Fame, who lends his unique organ work to several cuts and whose smokily sexy, half-lidded, vocals join Van on the perky 'So Complicated', one of the best of several excellent new songs. Another stand-out is 'I'm Not Feeling It Any More', an acid comment on the double-edged blade of success, delivered over a splendidly soulful vamp. Erstwhile collaborators The Chieftains also pop up again, injecting a touch of the Ould Oirish, and there are even some spoken bits as Morrison takes yet another nostalgic stroll down the streets of his youth. As I say, a little trimming wouldn't be total sacrilege, but for all that, this is still peak-time Van. His legion of fans won't be disappointed.



FIREHOSE
Flyin' the Flannel
 COLUMBIA 468422-2

● An American Indie-grown combo, often exhilarating to listen to but rather irritating to write about, as they don't fit any of the pre-set categories so beloved of folks like meself. Firehose utilise the classic lead-bass-drums line-up to excellent, often surprisingly fresh effect, with adventurous guitars and a flamboyant but rarely over-flash bass-man. I'd say they've listened to a fair bit of jazz, include some Beefheart fans (the mad Captain's 'Clear Spot' period in particular) and just a spot of seventies prog-rock. They never ramble on like the bands in the latter category used to, being far more likely to throw in a smidgin of frenzied Husker Du-style thrash instead. The lyrics, oddball, even Dadaist in places, are delivered in a rich quasi-Country tone, viz. the loopy 'Walking the Cow'. But overall this must be a predominantly instrumental band, and a welcome breath of fresh air once you get past the surprisingly orthodox - and very atypical - opening cut.



THIN WHITE ROPE
The Ruby Sea
 FRONTIER 34632-2

● For my money Thin White Rope are the finest of the new American bands to pop up on the Indie scene in recent years, second only to The Pixies. Why, like the elvish folk, they still haven't broken through to mainstream audiences, is an incalculable mystery. Their music (no resemblance here to The Pixies' whatsoever, by the way) is a rich and accessible blend of rock and country; their tunes are memorable, and lead writer/guitarist/singer Guy Keyser has a unique, quintessentially American voice, as rich in experience and full of colour as a Steinbeck novel. They remind me of vintage classics like The Band and Little Feat, and deserve at least similar levels of respect and acceptance. This fifth album is yet another strong, awe-inspiring collection, jam-packed with dazzling guitar-work, strong hooks, welcome dabs of quirkiness (try 'The Fish Song', a wry little re-telling of an ancient story) all hung together by Kyser's comfortable-as-an-old-cowboy-boot, immaculately weathered vocals. Not a band that deserves to be ignored or pigeon-holed, I defy anyone who hears them not to become a fan.

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In the autumn of 1991 the world of music, not just the world of jazz, lost one of its leading lights. Miles Davis died, aged 64. During his life he had been involved in virtually every development that genre witnessed since the forties when he first picked up the horn and started to play.

Miles Dewey Davis was born in 1926, in Alton, Illinois but the family moved to East St Louis in 1927. He came from wealthy, middle-class stock, his grandfather a land-owner, his father a dentist and ranch-owner. His mother played the violin and his sister the piano. On Miles' thirteenth birthday his father gave him a trumpet and appointed Elwood Buchanan to be his private tutor. Soon Miles was playing in his high school band, and in 1941, whilst still at school, joined Eddie Randall's Blue Devils, a local combo. In 1944 his father sent him to New York to study at the Julliard School of Music but the young Davis soon left and started to hang out in the clubs on 52nd Street with the likes of Coleman Hawkins and Charlie Parker, having made the latter's acquaintance when he played in St Louis with Billy Eckstine's band.

One year later, at the age of nineteen, Davis had joined Parker's quintet and made the first recordings of bebop. His deliberately understated style contrasted markedly with that of the leading players of the day like the exuberant Dizzy Gillespie. At twenty-two Davis was leading his own groups, including the nine-piece band which heralded the invention of 'cool' jazz. Although the tuba band, as it was called, wasn't a great success the recordings it made (on 78) were later issued on LP by Capitol and are recognised today as significant milestones in jazz history. Birth Of The Cool signalled the point where Davis moved away from the speed of bop towards a way of playing that was more introspective and haunting: the style for which he will be remembered.

Around this time he also developed a taste for heroin and his career shifted into a low gear for the ensuing five or six year period. In 1955 he got clean and signalled his re-entry to the world by putting together one of jazz's all-time great bands: with Philly Joe Jones on drums, Paul Chambers on bass, Red Garland on piano, and the relatively unknown John Coltrane playing sax, the Miles Davis Quintet had arrived. Never a virtuosic player, Miles made up for his technical limitations with an inventive approach to both solo and ensemble playing.

After Birth Of The Cool his experimentation led him towards complexity, with albums like the orchestral collaborations between himself and arranger Gil Evans - Sketches Of Spain being a personal favourite - and the simplicity of, say, Kind Of Blue. The latter saw Davis throw out chords as a basis for improvisation replacing them with modal scales and tone centres. It was an attempt to create more freedom for soloists and it predated, and probably greatly assisted, the progression towards the free jazz of players like Ornette Coleman who insisted that a musician had to be free to produce any sound he liked at any point in time he deemed appropriate. Coleman then went on to produce radical quartet recordings based upon that theory to prove his serious intent. From a purely personal viewpoint I'm happier to support Miles' modal approach: I recognise

that there's order within chaos but Coleman's work sometimes makes me wonder!

Throughout his life Davis continued with his experimentation, which led him to the fusion of jazz and rock disciplines. Jazz/rock has a bad name in many quarters and as far as I'm concerned quite rightly so. Davis' work in this field, however, was innovative and rewardingly musical. It began with the album Miles In The Sky, where he introduced electric instruments into his quintet's line-up - piano, bass and George Benson's guitar - and the regular beat of rock drumming.

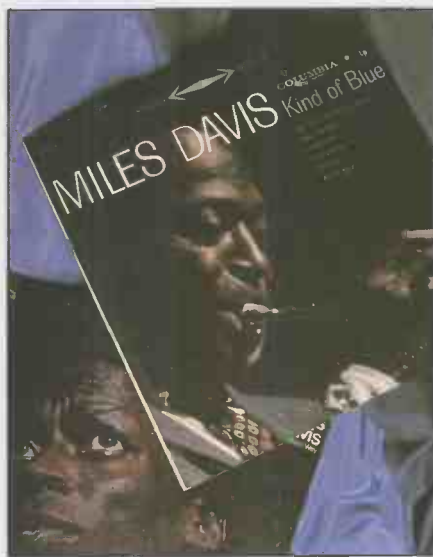
The rock influence grew with Filles de Kilimanjaro and on In A Silent Way Miles brought in three keyboard players - Herbie Hancock, Chick Corea, and Joe Zawinul. Also in that line-up was a young guitarist of whom you might have heard - John McLaughlin. The next recording featured a

success of the LP marked Miles' second coming.

Skipping the rest of that decade we find him collaborating with funk bassist Marcus Miller, producing what were, for many of his older fans, his least impressive recordings. Albums like TuTu and Amandla were, outwardly, very heavily pop-oriented, and at first hearing you can appreciate why they were disappointing for the purist audience. Shake off your preconceptions and nostalgic leanings, however, and they appear more as they are intended to be: quite simply they show that Miles was moving forward again. He'd done bebop, he'd done cool, he'd done the wilder, freer, rockier stuff, now he was doing his electronic funky thang. No matter what the genre, it was still unmistakably Miles. Even in its most contemporary settings, there was never any question that

musical milestone

Malcolm Steward takes a retrospective look at the music of Miles Davis, who died last autumn.



group which Davis called "the best damn rock'n'roll band in the world". The members included Wayne Shorter, John McLaughlin, Chick Corea, Joe Zawinul, and Jack DeJohnette. The team was sent into the studio without the benefit of rehearsals and with only sketchy instructions and told to jam: the outcome was the two-LP CBS album, Bitches Brew. In the following years Davis' became the jazz equivalent to a rock super-star, packing concert halls world wide.

A car accident in the early seventies slowed his progress and marked the start of his reclusive period. The recordings altered too, becoming rockier, with more amplification and electronic instruments being deployed and the musical emphasis shifting away from soloing towards more ensemble playing and funkier rhythmic patterns. In 1981 he released The Man With The Horn, one of his most commercially successful LPs. His new wife, the actress Cicely Tyson, had urged him to shrug off his cloistered existence and get out and play. This and the

that horn sound was being produced by anybody other than Miles. His whole past was encapsulated in every single note, squeak, wail and phrase he blew.

Where he would have gone next will remain an unanswered question. Constantly surprising, confounding, and challenging the listener was a preoccupation of Miles Davis. He never pandered to public taste, nor did he set out deliberately to bewilder his audience. These were simply by-products of his visionary, imaginative character. He'll be sadly missed but he thoughtfully left behind some of the most exciting and satisfying music that this century has produced. If you're searching for technical expertise there are hosts of players who could out-run him but if you're looking for emotional content I can think of no one with the same ability to rearrange your feelings by the simple act of putting a horn to his lips and breathing through it ●

SELECTED RECORDINGS:

This list is far from being a complete guide to Miles Davis work but it includes a few personal favourites and some acknowledged must-haves. I've included albums from all the periods mentioned and wouldn't even dream of suggesting where you should start... although if pushed I would admit to having an incredible soft spot for Sketches of Spain.

BAGS' GROOVE Miles Davis and The Modern Jazz Giants
BIRTH OF THE COOL
BITCHES BREW
IN A SILENT WAY
KIND OF BLUE
MAN WITH THE HORN
PORGY & BESS with the Gil Evans Orchestra
SKETCHES OF SPAIN with Gil Evans
TUTU

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GEORGE LLOYD Royal Parks; Diversions on a brass theme; Evening Song; HMS Trinidad March; English Heritage
John Foster Black Dyke Mills Band, conductor David King
ALBANY TROY 051-2 (DDD/59.30)

● Although primarily a symphonist, the Cornish-born composer George Lloyd has developed a notable affinity with the brass band, so often the butt of humour (and sometimes deservedly so) but also, as Lloyd has demonstrated, capable of the most refined and evocative musical expression. This recording from the American Albany label, a 'rush release' by classical standards as it was only recorded last July, is the best showcase to date of George Lloyd's glorious brass scores.

Many of his works for the medium have been commissioned or adopted as test pieces. One of them, a three-movement suite entitled 'Royal Parks' opens this programme. Lloyd took as his subject Regent's Park in London (he lives but a few minutes' walk away) and between two illustrative outer movements, 'Dawn Flight' and 'Holidays', offers a sombre tribute to the bandmen killed in the Park by a terrorist bomb in 1982. Tuneful and technically demanding, it is glowing evidence of how confident Lloyd is in the brass band idiom, and how well he appreciates its potential.

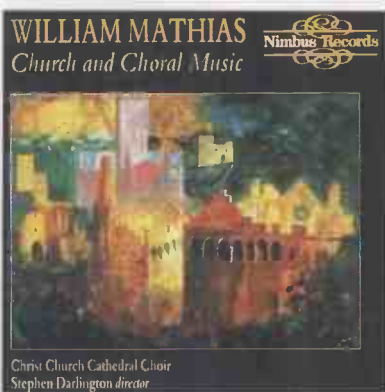
'Diversions on a bass theme', another test composition, is similarly challenging. Melodies flower from the first bar, the bass theme which gives the work its title, and every instrument gets the chance to show what it is capable of, with flourishes galore. But, proving that brass band music in general (and Lloyd's in particular) isn't all about showpieces, this is followed by the quietly contemplative 'Evening Song'. How beautifully the Black Dyke band play this, demonstrating that its reputation is based on a musical sensitivity as well as sizzling technique.

The 'HMS Trinidad March' is a straightforward slice of swagger for the ship on which Lloyd served during the Second World War. It rather belies the fact that the experience of conflict, especially the Arctic convoys, left its composer in a state of mental distress for several years after, bringing his musical career to a shuddering halt. It is a measure of his recovery, perhaps, that fifty years on Lloyd felt able to produce

a fresh arrangement of the piece.

Commissioned by English Heritage, the eponymous composition is the longest on this disc. Truly symphonic in character and stature, it provides a suitable climax to the programme and, like the other pieces, is expertly conducted by Australian, David King.

The incomparable sound of the Black Dyke band is well-captured by the recording, made in Dewsbury Town Hall. It's clear and well-defined, but I did find some of the perspectives confusing: distant percussion contrasted with brass sounds which, when playing quietly, withdrew into the speakers. Yet, at other times, the spread and 'bloom' of sound was thrilling.



WILLIAM MATHIAS Church and choral music
Christ Church Cathedral Choir, director Stephen Darlington; Simon Lawford, organ
NIMBUS NIS243 (DDD/76.09)

● A belated welcome for what is an outstanding recording of contemporary sacred music. Born in Whitland, Pembrokeshire in 1934, William Mathias has enjoyed success as a composer in many genres, but music for the church, its festivals and special occasions, has always been an integral part of his output. And what wonderful music it is. Not in the least pious or sentimental; I hear a kinship with the liturgical music of Poulenc, with its bright transparency and deliciously sour harmonies, but Mathias is very much an individual voice.

The programme opens with an anthem composed in 1988, 'I will celebrate' and continues with the lyrical 'O how amiable', written for the 1983 Llandaff Festival. 'Rex Gloriae' is the title given to a splendidly-crafted quartet of Latin motets and Mathias's equal stature as a composer of organ music is evident from the short, but sublime Canzonetta Op78 No2. This receives its first recording here, as does the vital, glowing music of the Missa Aedis Christi (Mass of the House of Christ), a commission from the Christ Church choir and dedicated to the memory of Sir William Walton.

For the dedication of a new organ at Jesus College, Cambridge, Mathias produced one of the very finest settings of the Evening Canticles - the Magnificat and Nunc Dimittis - of recent times, the

The Russian masters

dominate this month:

Prokofiev (twice - seeing as

it would have been his

hundredth birthday),

Moussorgsky,

Rachmaninoff and

Shostakovich, but that

doesn't preclude visits to

Leominster Priory,

Dewsbury Town Hall, or

Hollywood, California, to

explore the 'serious' side

of two of the greatest

composers of film scores

*peter
herring*

exuberance of the Song of the Virgin contrasting with the devout meditation of the Nunc Dimittis ('Lord, now lettest thou thy servant depart in peace'). Stephen Darlington concludes his imaginative and representative selection from Mathias's liturgical music with 'Ave Rex', settings of four medieval Christmas carols, including the well known 'There is no rose of such virtue', and two of the anthems especially commissioned from him for royal occasions, the last being 'Let the people praise thee, O God', which provided a memorable musical interlude during the wedding of HRHs the Prince and Princess of Wales.

William Mathias belongs firmly to the great tradition of English - and Welsh! - church music, a worthy heir to Britten and Vaughan Williams. Nimbus get a superlative sound - clear, yet atmospheric - from the acoustic of Leominster Priory and the excellent presentation is rounded off with the use of John Piper's gorgeous painting of St David's, Pembrokeshire for the booklet cover - the sort of cover that makes you yearn for LP sleeves again! ▶▶



RECORD OF THE MONTH

★ To me - and, I would guess, to you - the names of Erich Korngold and Miklos Rosza mean some of the truly great Hollywood film scores. Rosza wrote the music for Hitchcock's 'Spellbound', 'Ben Hur' and 'A Double Life' and collected Oscars for all three. Then, with the score for 'Double Indemnity' of 1944 he challenged traditional Hollywood musical tastes in no uncertain fashion. Rosza also worked with Alexander Korda on the magnificent 'Four Feathers' of 1938 and 'The Thief of Baghdad' of 1940. Korngold, too, enjoyed enormous success in the cinema, beginning with 'Anthony Adverse' of 1936 and the original 'Adventures of Robin Hood' in 1938.

Yet it was not for nothing that Rosza's biography was entitled 'Double Life', for that is exactly what both composers led. Though it is as masters of film music that they will be chiefly remembered, Korngold and Rosza originally made their mark in the concert hall, especially in the early years of the century. Gustav Mahler hailed the young Korngold as a genius and he was called 'the new Mozart'; Rosza signed a contract with music publishers, Breitkopf and Hartel while still a student and early in his career his works were being performed by such eminent conductors of the day as Bruno Walter, Karl Bohm and Eugene Ormandy.

It can only be speculated what direction the careers of these two gifted composers would have taken had events in Europe during the 1930s taken a different course.

Korngold was born in Brno, Czechoslovakia, and was a musical prodigy. A fluent pianist by the age of six, he began composing small pieces just a year later. A cantata, written when he was ten, brought fulsome praise from Mahler. In his teens, two one-act operas firmly demonstrated his credentials in that genre and his complete mastery of the contemporary musical idiom. In 1920, when he was twenty-three, Korngold produced his most enduring masterpiece, the opera 'Die Tote Stadt', a work worthy of the attention of any recording company.

Korngold went to the United States in 1934 to work on Max Reinhardt's film of 'A Midsummer Night's Dream'. While he was there, the menace of Nazism manifested itself with the annexation of Austria. Korngold did not return until after the war, becoming an American citizen in 1943 and composing the scores for seventeen films - and often providing music of a quality which far surpassed the images it was supposed to serve.

Miklos Rosza, too, was enjoying success in Europe as a composer when, in 1940, the war forced Korda to take his production team to Hollywood. Rosza, now 84, has lived there ever since and written the scores for no less than 94 films.

But it is not the film music of these two composers which make this recording from the American Bay Cities label so interesting, but a coupling of two youthful, yet remarkably accomplished chamber compositions.

MIKLOS ROSZA
Duo for violin and piano Op7
ERICH WOLFGANG KORNGOLD
Violin Sonata in G Major Op6
Stacey Woolley, violin; Scot Woolley, piano
BAY CITIES BCD1027 (DDD/61.22)

★ Korngold's Violin Sonata dates from 1912, when he was fifteen and was dedicated to no lesser musicians than the violinist, Carl Flesch and the pianist, Artur Schnabel. It is evidence of its quality that they immediately added the work to their repertoire and, indeed, the first thing that strikes the listener is the extraordinary maturity and complexity of the music. It is no apprentice work, rather the music of a rounded, confident composer, completely at one with his chosen idiom. In its exploration of tonality, its heightened drama and passion, the

inspiration of Mahler and Richard Strauss is evident. But it remains an inspiration, not a dominating influence; Korngold speaks with his own voice.

Technically, the work is demanding, especially in the lengthy scherzo, where the very extremes of tonal range are explored. There is a beautifully poignant adagio and it is a measure of Korngold's confidence that he did not feel he had to round the sonata off with a dazzling, upbeat finale that would guarantee the applause. Instead, the work ends with a wistful allegretto-andante - truly lovely music. Previous recordings of the work have disfigured the score with unnecessary cuts; this is the first time the Sonata has been issued complete and the performance wholly justifies that decision.

The Hungarian-born Miklos Rosza was much captivated by the folksong of his native land, as of course were his compatriots Bela Bartok and Zoltan Kodaly. Rosza wrote his Duo Op7 when he was twenty-four, in the period between graduating from the conservatory in Leipzig and moving to Paris. The Magyar influence is apparent, but the themes are wholly original despite their folk-like character. Lively dance-like themes contrast with the lush harmonies of the largo doloroso, but the four-movement structure of the work is in the disciplined nature of sonata form. Like the Korngold sonata, the Duo displays a complete mastery of the dialogue between violin and piano, technically brilliant without descending into superficial display.

The brothers Stacey and Scot Woolley are to be congratulated for bringing these two works to the attention of - hopefully - a wider musical audience. Certainly their playing has a dedication, affection and spontaneity which reveals the astonishing quality and range of these two youthful works. The recording (made in a piano warehouse!) is close, but tonally rich and smooth and with excellent definition and separation.

It is rather saddening to think that the price that both Korngold and Rosza had to pay for their success in Hollywood was a diminished stature in the world of so-called 'serious music'. There was no comparable backlash in the careers of Vaughan Williams or Walton, but then they did compose much less film music and, of course, in England, not racy Hollywood. I wonder how much more fine music has been dismissed through similar, trivial prejudice?



MODEST MOUSSORGSKY

Pictures at an Exhibition (orchestrated Ravel); *Night on Bald Mountain* (orchestrated Rimsky-Korsakov); *Khovanshina* Prelude (Dawn on the Moscow River)
Atlanta Symphony Orchestra, conductor Yoel Levi
TELARC CD-80296 (DDD/43.47)

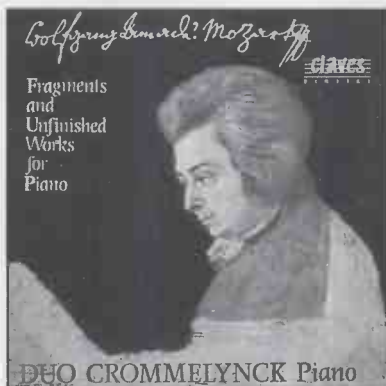
● About fifteen years ago, Jack Renner and Robert Woods' Telarc label made its first real impact on music world - literally and metaphorically - with a recording of Moussorgsky's 'Pictures'. Recorded with Dr Thomas Stockham's Soundstream system, and featuring the Cleveland Orchestra with Lorin Maazel, it was for many the first introduction to the true potential of digital recording. It also happened to be a fine performance at a time when many of the pioneering PCM recordings were artistically non-starters.

Now comes another Telarc 'Pictures' - this time with the superb Atlanta Symphony Orchestra under its young principal conductor, Yoel Levi. From a previous Telarc recording of Prokofiev's 'Romeo and Juliet', it was evident that Levi had a feel for the romantic in Russian music and this disciplined yet far from prosaic interpretation of Moussorgsky's best-known work continues to bear this out. I liked his restraint in the 'Great Gate of Kiev': it is grand enough without being inflated as some conductors are apt to do. The 'Roman Catacombs' are darkly brooding (tremendous playing from the Atlanta brass) and the rhythmic spring in the 'Ballet of the Unhatched Chicks' is pure delight. Throughout, the colours of Moussorgsky's score (not to mention Ravel's orchestration and - the original inspiration - Victor Hartmann's paintings) emerge vivid and fresh. And what a first-class orchestra this is, in every department. They proved it in the recent Tchaikovsky concert at the Festival Hall, and they do so again here.

A sparkling performance, then, of 'Pictures' and of 'Night on Bald Mountain', but what a pity Levi didn't use Moussorgsky's original orchestration rather than the 'civilized' Rimsky version. It is just so much more - well, bewitching!

The recording maintains the Telarc tradition which was established by that Moussorgsky recording of the 'seventies (although the bass drum is a little more 'tamed' now!): broad, spacious sound-

stage, clean and clear, with convincing perspectives and gorgeous orchestral timbres. Artistically and technically, there are many exquisite solos to relish here. Yoel Levi and his Atlanta players have certainly joined the top half-dozen versions of this much-recorded work and, in terms of sound, probably have the edge on the competition.



WOLFGANG AMADEUS MOZART

Fragments and unfinished works for piano, two pianos and piano for four hands
Duo Crommelynck, pianos
CLAVES CD 50-9109 (DDD/59.45)

● I get the impression that, by the end of this bi-centenary year, not a single note of Mozart will remain unrecorded. Here are forty fragments, sketches, fugues, even complete movements, some pieces lasting under a minute, carefully assembled by the duo of Patrick Crommelynck and Taeko Kuwata. It would be wrong, though, to accuse them of 'bandwaggon-jumping', for these recordings were made in 1984 and 1988. Neither is there any pretentious nonsense about undiscovered masterpieces and so forth, though there are some gems to be found here. Track forty, for example, a fragment from a B flat sonata movement for two pianos (K.Anh.43/375c) is one of the most beguiling melodies imaginable.

As the note-writer points out, what all these fragments and sketches tend to do is give the lie to the notion of Mozart sitting down and composing a work effortlessly from first note to last. He may not have indulged in the kind of reworkings that Beethoven, for example, felt compelled to do, but Mozart certainly had his share of creative 'non-starters' except, of course, that Mozart's 'cast-offs' would be others' moments of inspiration!

Though the majority of the pieces recorded here are short, there are several more substantial items, the unfinished sonata for piano four hands K357 and the exquisite E flat Larghetto and Allegro for two pianos. Also included is the first version of the opening movement of the D Major sonata K284 and an orphaned B flat sonata movement K400.

This unusual Mozart offering is finely-recorded and beautifully played and, I would suggest, of much more than just specialist interest.



SERGEI PROKOFIEV

Piano Sonata No.6 Op.82
DMITRI SHOSTAKOVICH
24 Preludes Op.34
Evgenii Soifertis-Lukjanenko, piano
PARTRIDGE I 127-2 (DDD/59.33)

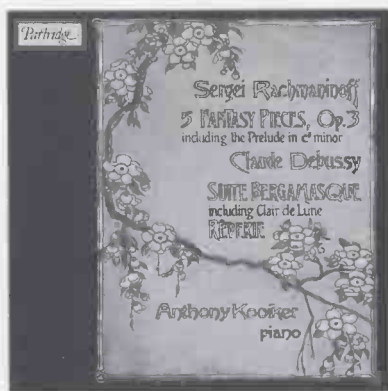
● The Kiev-born pianist, Evgenii Soifertis-Lukjanenko offers a splendid performance of Shostakovich's set of Preludes, miniatures which embrace all manner of styles and moods and offer many clues to understanding the composer's later music. He also seems at home in the idiom of Prokofiev's piano music, though this performance of the Sixth Sonata cannot quite match the incandescence of Ivo Pogorelich's version on DG, one of the most inspired recordings the Yugoslav pianist ever made.

Nevertheless, this is a useful coupling, since neither work is over-represented in the catalogue, and it is decently recorded. You may, however, be bemused by the sleeve illustration which depicts neither Prokofiev nor Shostakovich, nor a slice of Russian landscape. The explanation comes in the booklet note which suggests that both Prokofiev's Fifth and Sixth Piano Sonatas were inspired by the love of women of his acquaintance. In the case of the Sixth, the forty-eight-year-old composer, returning to the Soviet Union after a sixteen year self-imposed exile in the west, had met twenty-four-year-old Mira Mendelson in the summer of 1939.

However, the work does not consist of romantic musings. As the note-writer points out, Prokofiev was as interested in the music of Beethoven at the time as he was in the attractions of Miss Mendelson and the sonata, despite being the longest of the nine he wrote, is as taut and concentrated as any of his music. It is also full of contrasts and invention - too much so for the authorities. Although the work was widely performed after the composer gave the premiere in Moscow in 1940, the artistic clampdown of 1948 saw the solitary recording of the sonata - by Victor Merjanov - destroyed and the composition denounced as "perverted art".

Overall, the generally fine, idiomatic playing of these two major contributions to the canon of twentieth century piano music merits a recommendation.





SERGEI RACHMANINOFF
Five Fantasy Pieces Op3
CLAUDE DEBUSSY
Suite Bergamasque; Reverie
Anthony Kooiker, piano
PARTRIDGE 1116-2 (DDD/40.42)

● Another fascinating recording from the Netherlands label Partridge, combining as it does music of the two great keyboard composers of the late Romantic period. The performances come from the distinguished American pianist, Anthony Kooiker, one of a number of recordings by him on Partridge. This one was taped in 1986, using a Bechstein piano, and the bright, clear vivid sound hides nothing, even the occasional shuffle from the player. Perhaps this is indicative of largely unedited performances; certainly it is preferable to the unnaturally clean, disembodied sound encountered on a number of contemporary recordings.

Contained within the main works here are two of the world's best-known piano pieces: the second of Rachmaninoff's Fantasy Pieces is the Prelude in C sharp minor, while Debussy's 'Suite Bergamasque' contains the immortal 'Clair de Lune'.

The commission for the Five Fantasy Pieces came soon after Rachmaninoff had graduated from the Moscow Conservatoire in 1892. The famous Prelude was performed for the first time in September that year and he premiered the complete set in Kharkov during the following December. Debussy's quasi-pastiche, the 'Suite Bergamasque' dates from two years earlier and may well have been inspired by Paul Verlaine's poem 'Clair de Lune'. For some reason, though, this delightful suite was not published until 1905. The other work by Debussy in this recording, 'Reverie', was one he dismissed in later life. True, its simple style and lack of formal consistency must have embarrassed him, but the haunting melodic line and hushed atmosphere have an undeniable magic.

In both the Rachmaninoff (in his youth the performer heard the composer play the Five Fantasy Pieces) and in the Debussy, Anthony Kooiker offers carefully-crafted, thoughtful, well-shaded playing. Though scrupulous in his approach, and eschewing unnecessary bravura, there is no lack of feeling in his playing. A little more light and shade, especially in the Debussy, would have enhanced the performances, though.



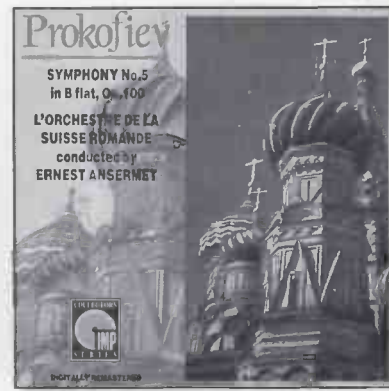
GIOACCHINO ROSSINI
Petite Messe Solennelle
Helen Field, soprano; Anne-Marie Owens, mezzo-soprano; Edmund Barham, tenor; John Tomlinson, bass; David Nettle and Richard Markham, pianos; Peter King, harmonium; City of Birmingham Symphony Orchestra Chorus, conductor Simon Halsey
CONIFER CDCF 184 (DDD/77.31)

● At seventy-seven minutes, Rossini's setting of the Mass is hardly 'petite', nor - judged by other liturgical music - is it especially 'solennelle'. Personally, I have never quite been able to accept its overtly operatic and often oddly 'jolly' style, but I have to say this recording has come closer than any other to convincing me of its qualities.

It is a work of Rossini's retirement, written in 1864 in Paris. It had been twenty years since his last composition of stature, the 'Stabat Mater' and over thirty since his last opera, 'Guillaume Tell'. During those years he had lived a good life off the royalties from his operas and composed only short, salon pieces which he cheerfully described as "sins of old age". So to return to large-scale composition was quite a departure for him. Originally the Petite Messe was scored for the unusual sonorities of two pianos and harmonium, plus four soloists and chorus. An orchestral version, primarily for use in cathedral settings, followed but Rossini was never enamoured with this (in fact, the work never saw ecclesiastical performance as the Pope forbade the use of female voices in church).

Up to now, the score used in performance has been something of a bastardized version published by the Italian house of Ricordi. This recording, however, uses a new edition commissioned from musicologist Nancy Fleming, and based wholly on the autograph score. The differences between this and the Ricordi edition numbered thousands, so the sleeve can rightly claim to be the first recording of the original version.

While the music may not be entirely to my taste, there's no escaping the persuasive quality of the performances here, with both soloists and choir in fine voice. The instrumentalists, too, seem to have relished their contribution and conductor Simon Halsey brings a pulse and a cohesion to the work. The recording is first-rate.



SERGE PROKOFIEV
Symphony No5 in B flat Major Op100
L'Orchestre de la Suisse Romande, conductor Ernest Ansermet
IMP CLASSICS COLLECTORS' SERIES IMPX9006 (AAD/41.34)

● As with the Zubin Mehta Berlioz 'Harold in Italy' last month, another Decca master - this time from 1964 - licensed by IMP Classics for reissue at bargain price. I can only feel that Decca, with at least two other very fine versions of this symphony in the tape vaults (by Walter Weller and Lorin Maazel) feel that the Ansermet is superfluous to requirements. Although IMP have done an excellent job of remastering, bringing out all the warmth and refinement of the orchestral sound, I have to conclude that the performance is no great loss to Decca.

It isn't that it's a bad performance; just that there are so many better ones. Though there is some beautiful playing, especially in the slow movement, Ansermet is simply too hurried and some of the great moments in the symphony pass by quite unmemorably.

It should not be so. This is music that combines joy and sadness, solemnity and high spirits to become an enduring, life-enhancing experience. It certainly left its mark on the first audience in Moscow on January 13, 1945. The siege of Leningrad was nearing its end after 900 days and music which, in Prokofiev's own words, was about "the greatness of the human spirit" moved many in the audience to tears. Though a wartime symphony, Prokofiev's Fifth does not share the grim brutality of Shostakovich's Seventh or the anguish of his Eighth; neither is it the bellicose 'victory symphony' that Stalin was probably expecting from his most distinguished composer. Instead, Prokofiev affirms simple human values: bitterness, yes, but also relief and optimism. He came to regard it as the culmination of his creative life and, although he went on to compose two more symphonies, it has become the apex of his musical output, with its lyrical, majestic opening andante, burlesque-like scherzo, lamenting slow movement and exuberant finale.

The Fifth Symphony is essential to any collection, but not, I regret, as Ansermet plays it. Opt instead for Janssons (with the Leningrad Philharmonic) or Jarvi on Chandos, or Karajan on DG.

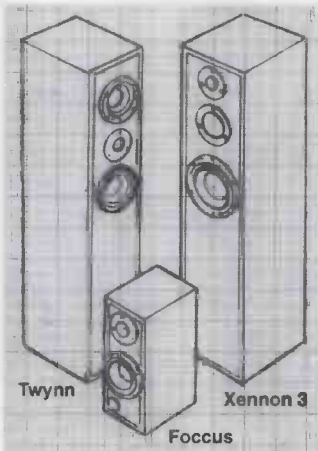
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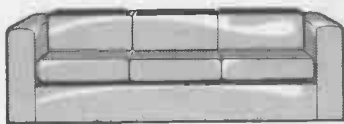
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It wasn't going to be easy for former Beatle Paul McCartney to woo classical music critics with his Liverpool Oratorio. Released in October, it immediately fell prey to several predictably pompous pannings.



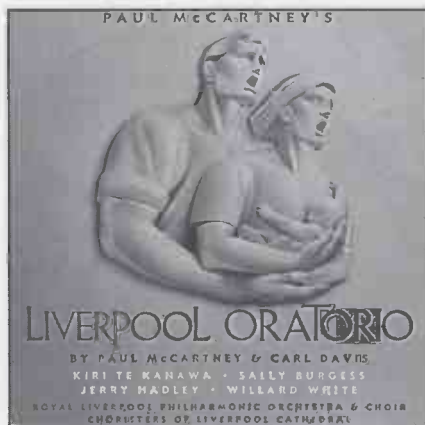
After two years' hard work, an oratorio "without pretence, tuneful and sincere" from Paul McCartney.

PHOTO: David Modell, MPL Communications Ltd.

More Brookside Than Bruckner?

Maybe the work does owe more to Brookside than Bruckner - but was the criticism justified?

Andy Giles takes an alternative view



LIVERPOOL ORATORIO By Paul McCartney and Carl Davis

Kiri Te Kanawa, Sally Burgess, Jerry Hadley, Willard White
Royal Liverpool Philharmonic Orchestra and Choir; Choristers of Liverpool Cathedral. Conducted by Carl Davis
EMI CLASSICS 754371-2 (ALSO AVAILABLE ON LP AND CASSETTE)

It is so much easier to mock than it is to praise. Paul McCartney, one of the most successful song-writers and performers in the history of popular music, suddenly - almost overnight - became a frail talent with no real composing ability, no flair, no style and simply lightweight. His music was fatally flawed.

How did he do it? Dead easy. He had the temerity to compose a 'classical' work. The fact that it is a wholly engaging piece of music which is thoroughly enjoyable, at times moving and always easy on the ear is clearly irrelevant.

With a few exceptions, McCartney's Liverpool Oratorio, a ninety-five minute, eight movement choral work has been either damned with faint praise or unfairly criticised by the self proclaimed cognoscenti amongst the classical music press. OK - Macca's foray into serious music hasn't produced a composition of immense stature that will stand alongside classical masterworks, but it is utterly ridiculous to slag-off what is obviously an honest piece, written with no ill intention by a man whose musical capabilities are surely undoubted.

To begin at the beginning. In commemoration of their 150th anniversary, the Royal Liverpool Philharmonic Society commissioned Paul McCartney to compose a work for them. The Society apparently put the idea to Carl Davis, no mean composer himself, responsible for such popular film scores as The French Lieutenant's Woman, Scandal, and Champion, as well as, perhaps more notably, the magnificent backing music for

the five-hour restoration of the Abel Gance silent movie *Napoleon*.

It might be a little known fact, but Paul McCartney can't actually write music. That is to say that he can't put the notes on the staves. He is the first to admit this though, quite openly and frequently. He's not out to kid you. So, Davis and he worked in a similar fashion to the way George Martin worked with the Beatles. McCartney sat with Davis, telling him precisely what was in his head and Davis wrote it down, made suggestions and offered advice. I asked Paul whether Carl Davis had the last word on the score when it came down to it and was quite firmly told that he did not. He said, "I didn't let him do it on his own as I thought it would start to become more his work," adding that at no time had he felt like one of Davis's students. McCartney is keen to point out his authority in the composing of the piece and is clearly proud of the achievement.

It took McCartney and Davis two years to complete the *Liverpool Oratorio* and it eventually became ready for performance in Liverpool's Anglican Cathedral on 28 June 1991. The cast is strong, let's make no mistake. A figure of McCartney's stature can virtually pick whomsoever he wants, and he went for the best. Dame Kiri Te Kanawa is the soprano, Sally Burgess the mezzo-soprano, Jerry Hadley the tenor, and Willard White the bass. Not a duff note issues from any one of that gathering.

And what of the plot? The *Liverpool Oratorio* traces the story of a Liverpool war baby called Shanty (tenor voice) from his birth through his growing and his meeting with Mary Dee (soprano voice) whom he marries. Of course nothing is quite as simple as that and the oratorio deals with the problems both Shanty and Mary Dee face along the way.

The opening andante is one of menacing strings which depict a world at war. It is 1942. There are sirens over Liverpool but amidst the chaos and horror of the bombs a child (Shanty) is born and there is hope. The scene shifts to 1953 and school where Shanty prefers sagging off to lessons and spends time sunbathing in the graveyard of Liverpool Cathedral. He falls asleep on a tombstone and dreams of ghosts, one of which is his future wife, although how he manages to do this is not clear - to be able to dream about a real person you are due to meet in the future is a rare talent - but let's not get too bogged down with detail. Back at the school, the headmaster (bass voice) introduces Miss Inkley (mezzo-soprano voice) who employs a folk-song to teach Shanty and his classmates Spanish. It's light and breezy stuff, this bit, which comes as relief after all those ghostly visions.

The third movement is all about Shanty's adolescence, his doubts about God and his continued dreams of the future. The Mary Dee figure again intrudes into his thoughts, this time telling him about the death of his father which takes

us to the fourth movement, the funeral. There is a moving andante lamentoso from the orchestra to introduce the funeral of Shanty's father; a trumpet can be heard later over the chorus. (This is a tribute to McCartney's own father who, apparently, played the instrument.) The funeral is a reflective experience for Shanty. He blames his father for his frustrations but ends up realising that his old man was only flesh and blood and not responsible for everything that went on in the world.

Marriage follows death, Shanty meets Mary Dee, they fall in love (one assumes Mary Dee is no longer a ghost) and start a life together. Mary Dee, it seems, is very much the career woman, her work involves fax machines and computers and she holds a position of some authority. Shanty, needless to say, does not. He is an office worker and is easily led to drink by his colleagues. It is during the 'work' movement that we hear the violin solo, an exquisite fragment played with much sensitivity by Malcolm Stewart. The beauty of the violin playing is followed by Shanty being tempted to nip down the pub with his mates and heralds the intimation from Mary Dee that she is pregnant.

The penultimate movement is entitled 'Crises' which is some understatement. Shanty (slightly drunk) rows with the distraught Mary Dee, about money, her feelings towards him (he expresses doubt over her love for him) and general fears and misgivings. Mary Dee is so upset that she rushes away, telling him of her pregnancy as she flees. She rushes into the street, is knocked over by a car and is rushed to hospital where a nurse watches over her as, in delirium, she experiences visitations by ghosts. Shanty, shattered by the events - he might lose his wife or child or both - prays at the bed of his wife. He promises to reform if they are saved. And,

of course, they are.

The final movement, 'Peace' brings the oratorio to a joyous conclusion, Shanty sings to his new born baby: he is united in love with Mary Dee. All is well. And yes - they all, we assume, lived happily ever after.

Corny? You bet. But then what isn't? It will still bring a tear to the eye. McCartney's *Liverpool Oratorio* is a 20th Century work and its subject is relevant to its time. With the exception of some of the ghost scenes, the events are highly plausible. The overall message is the eventual affirmation of family life, lived decently with standards and values that are to be upheld. There really is nothing wrong in that.

Comparing the *Liverpool Oratorio* with earlier works of a similar nature is daft. Many oratorios that I could mention make little or no sense at all, but it doesn't matter. McCartney's effort is to be applauded. It must be put into perspective first. It's a piece of music - with singing - and it has a plot that can easily be followed. It entertains, it pleases, it moves one to experience the emotions of sadness and joy. It is well crafted and the live recording on disc has captured the atmosphere of the Liverpool Anglican Cathedral superbly.

It's never going to appeal to everybody, but taken as it is Paul McCartney's *Liverpool Oratorio* is a solid and substantial work. I repeat - taken as it is. It is not a classic by any means. If anything it is overlong and borrows too obviously and heavily from the more instantly appealing parts of at least two Mahler symphonies. But look, it is without pretence and it is tuneful. And it is sincere. What more do you want?

And, rest assured - McCartney didn't write it for the money! ●



Kiri Te Kanawa
(Mary Dee) and Jerry
Hadley (Shanty)
recording the
Liverpool Oratorio.

PHOTO: David Modell,
MPL Communications Ltd.



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