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AT OUR KEY DEALERS

Unit 7, Willowbrook Technical Units, Crickhowell Road, St. Mellons, Cardiff CF3 OE1, Wales, UK Phone: 0222 795621 Fax: 0222 794267



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#### NAD 402

A real cracker of an AM/FM tuner from NAD, but don't leave it out on Christmas eve, or it might just disappear with the milk and mince pies! 16

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#### EAR834P HEAD AMPLIFIER

COMPACT DISC

**ROTEL RCD965 DISCRETE** 

HARMAN KARDON HD7725

Christmas list.

when he reviewed it?

Dominic Baker would rather keep an ear out for this EAR head amplifier than for the delicate sound of Reindeer hooves on the roof. 41



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	Ortofon MCI Turbo cartridge
	Pro-ject 2 turntable
	NAD304 amplifier
	Celestion 3 Mkll loudspeakers
£700 CD system	
	Yamaha CD-X 570 CD player
	Rotel RA-935BX amplifier
	Mission 760iSE loudspeakers
£1500 vinyl system	

Michell Mycro turntable Goldring 1022GX cartridge Denon PMA-350II amplifier Spendor SP20 loudspeakers

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£1500 CD system

A new CD player from Harman Kardon. Dominic

Todd has a quick listen before he puts it on his



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#### SENSAURA CD

A new form of surround-sound system from EMI, which aims to expand the soundstage into three dimensions, rather like Santa's outline. **50** 



#### CHRISTMAS SUPPLEMENT

T'was a night before Christmas, and all through the house, not a creature was stirring, except a few with some nous. Here are Christmas present ideas that you know make sense. Tapes, cleaners, 'speaker cables, interconnects, equipment stands, and much more are packed inside. If you're stuck for a way to get those new cables you've been promising yourself, just leave it strategically lying around...

### COMPETITION

So you got socks, ties and a hangover! Then the cat went and jumped onto the turntable practising the Fandango. Take heart, you might be able to get a new system free. Just answer our simple questions and complete the ditty 66

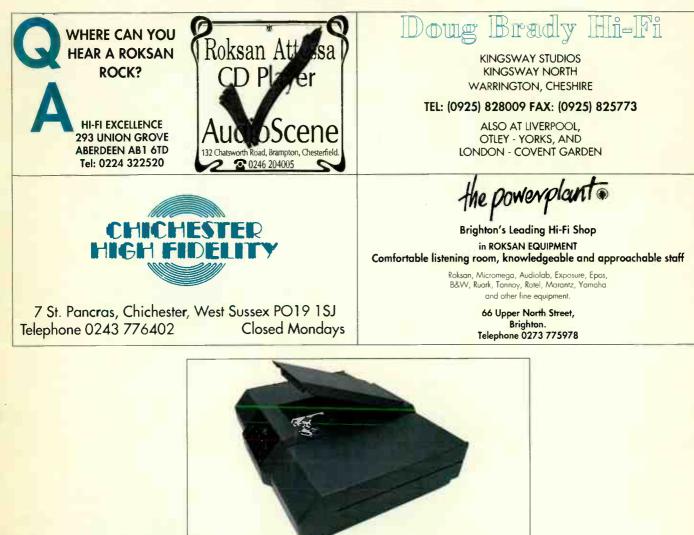


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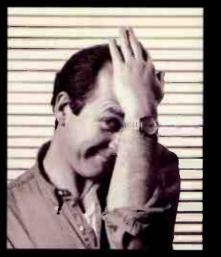
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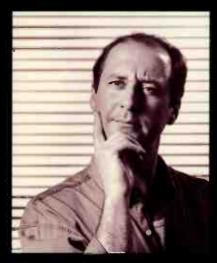
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Naim Audio, Southampton Road, Salisbury SP1 2LN, England. Tel: (0722) 332266

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## news jan '94 trade winds

#### ORTOFON ANNIVERSARY

To celebrate their 75th anniversary Ortofon have produced what they feel is the ultimate cartridge. The MC7500 is machined from a solid chunk of Titanium, one of the strongest materials available. The surface of the titanium body is so hard that the name has to be laser engraved! The cartridge also features a new twin-ellipsoid stylus profile, named Orto-line, which is 25% finer than the stylus on the MC3000 and 5000 cartridges. This allows it to reach further into the grooves of a record and reduces the effective mass.

Other special features include 99.999999% (eight 9s) purity copper wiring, carbon fibre armature, three point mounting to improve the fit between body and headshell and a slightly raised output. At present there is only one in the U.K. and retail price will be £2000. Look out for a review shortly.

Ortofon UK Ltd. Chiltern Hill, Chalfont St. Peter, Bucks SL9 9UG. Tel: 0753 889949

#### CREDO

The Swiss Credo range of audio electronics are now to be distributed in the UK by Townshend Audio.

Townshend Audio Ltd, Tim's Boatyard, Timsway, Staines, Middx TW18 3JY. Tel: 0784 455866

#### **GYROPOWER QC**

Michell Engineering have produced a power supply unit for their Gyrodec turntable. The PSU is built, as you'd expect, from high quality components throughout, including surface mount devices and polypropylene capacitors. It enables the user to change the Gyrodec from 33 to 45 rpm automatically, without fiddling around with the belt. The Gyropower QC costs £349 and is in the shops now.

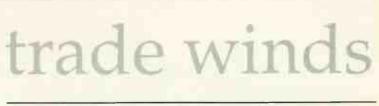
J A Michell, 2 Theobald Street, Borehamwood, Herts WD6 4SE. Tel: 081 953 0771.

#### THE ALEONS ARE COMING!

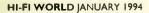
Isak is a new range of equipment stands from Aleon Design. Designed for their visual appeal as much as for their rigidity, they can be supplied with accessories such as spikes, and provide the flexibility of either wallmounting or floorstanding use.

Prices had not been set at time of going to press, but the five-shelf unit should retail for around £300, smaller units for less.

Aleon Design, 98 Grove Road, Walthamstow, London EI 7 9BY Tel: 081 509 3693.



# trade winds



World Radio History

9

Because we thought about it. Deeply. Our R&D people spend their lives immersed in speaker design – but never out of their depth.

Bathtime operatics may have inspired the SIXES concept, first seen in the original successful SIXES. You see, four-square walls generate standing waves which boost 'boom'. Fine for resonant renditions of 'Nessun Dorma', but fatal to accurate musical reproduction.

Similarly, since sharp edges cause sound diffractions. playing havoc with frequency response and believable stereo imaging, our six-sided cabinets adopt a more oblique approach.

The quest for colour-free sound is unceasing. The senior members of the new SIXES family feature our Dual Concentric sound sources, whilst all models incorporate contoured moulded bass cones. low-weight and stiff for agile yet powerful bass response. And tweeters with goldanodised domes, ensuring treble clarity and smoothness.

To read more about the new SIXES – write today or phone 0236 420199. But for the absolute truth, all you have to do is to listen.



There's just one reason why the new SIXES loudspeakers look and sound as they do.

### jan '94 trade winds

#### **BUSY! BUSY! BUSY!**

That's Harman Kardon, judging from the number of their press releases pouring through our letterbox.

They've brought out their first pre and power amp combinations for six years, calling them the 'Signature Series', because each one bears the name of Harman/Kardon's creator, Sidney Harman.

The pre-amplifier is the £500 AP2500 which provides five line inputs, two tape loops and MM/MC phono stages.

The power amplifiers are the 45watts per channel PA2100 at  $\pounds$ 350, the 70watts per channel PA2200 at  $\pounds$ 580, and the

20watts per channel PA2400 at £900. All are bridgeable. Harman/Kardon have also announced the acquisition of AKG, the Vienna-based microphones, headphones, and accessories

company, and also a minority interest purchase in Madrigal Audio Laboratories, the makers of the Mark Levinson and Proceed brands.

Harman Audio, Harman International Industries Ltd. Unit 2, 5 Rowley Lane, Borehamwood, Herts WD6 5PZ, Tel: 081 207 5050

#### JVC BLASTOFF...

JVC are launching a satellite! Well, a satellite system actually, employing a 10cm midrange driver with a 2.5cm soft-dome tweeter, and a 'Kelton type' sub-woofer employing two 13.5cm drive units. The set retails for £300.

JVC (UK) Ltd, JVC Business Park, 12 Priestly Way, London NW2 7BA. Tel: 081 450 3282.

#### ...ALONG WITH BOSTON

Also in the satellite market are Boston Acoustics, who have launched a new version of their Subsat Six satellite and subwoofer system, the Series II model, retailing at  $\pounds$ 450, and an extra  $\pounds$ 30 for the satellite's wall brackets, if required.

Portfolio Marketing, 67 New Road, Little Kingshill, Great Missenden. Bucks HP16 0EU Tel: 0494 890277

#### HARDCORE

Ixos have brought out a new 'speaker cable to build on their success with their onginal 'Hardcore'. The new cable is known as the 'Hardcore I 2' and takes it's name from the fact that there are now twelve cores to the wire, each of the same gauge as that used in the original 'Hardcore'.

To facilitate bi- or triwiring the cores are paired in separate sheaths within the screened outer sleeve. All this for just £5 per metre run!

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

#### THOR, NORSE GOD OF THE HERNIA

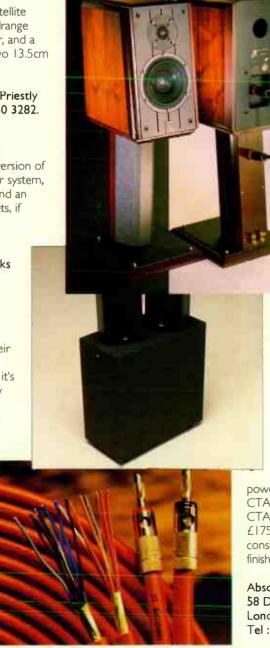
You'll know what I mean if you try to move Alchemist Products' new Thor stereo power amplifier. Weighing in at 120Kgs, measuring  $70 \times 120$  cms, with 24 output MOSFETs, four separate power supplies, with a 3mm thick stainless steel casing, delivering 450watts per channel, and costing a hefty £5995.

They also have Vidar, Thor's little brother, at a mere 250watts per channel and a price tag of £3995, and the Forseti, which is a 'grown-up' Kraken delivering 100watts per channel and costing £899, and also the Anniversary Kraken, all dressed up in snazzy stainless steel chassis and gold knobs, retailing at £499 for the integrated, with the pre-amp at £455 and the power amp at £445.

### Alchemist Products, 4 Rosebery Mews, Muswell Hill, London N10 2LG. Tel: 081 883 3008.

#### **EQUINOX FROM RUARK**

Ruark have designed and built a dedicated bass/midrange drive



unit for their new Equinox loudspeaker, first in a series of expensive audiophile designs. The tweeter is a fabric dome design from Scan Speak which, we found in our drive unit tests, gives superb results. Ruark place the crossovers in the partnering stands, to remove them from the influence of vibration and magnetism. A very high standard of construction, detailing and finish are claimed, to give a product that looks and feels as good as it sounds. Ruark have a great reputation for their loudspeakers. The new Equinox is likely to be impressive, but this sort of quality comes at a price -£1749.

Ruark Acoustics Annwood Lodge Industrial

Estate Arterial Road Rayleigh Road Essex SS6 7UA Tel: 0268 728890

#### LOWER PRICES!

Exchange rate behaviour is quoted as the reason Copland amplifiers are now being offered at lower prices. The CTA401 30watt integrated falls from £1700 to £1495, the CTA501 30watt

power amplifier from £1600 to £1420, the CTASOT sowart power amplifier from £1600 to £1420, the CTASOT from £1500 to £1250 and the CTASO4 valve power amp from £2000 to £1750. So it's never been a better time to consider buying one of these well made and finished Swedes. If you are interested, contact.

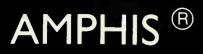
Absolute Sounds, 58 Durham Road London SW20 0DE. Tel : 081-947-5047

# On the Eighth Day.



These CD collection systems, hi-tec in design, will enhance the quality and sophistication within the hi-fi world.

In a variety of styles and finishes this is the ultimate to compliment your CD compilation and complete your sound galaxy.





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### jan '94 trade winds

#### **NEW GARRARD PLINTH**

Loricraft Audio have launched a new plinth for the Garrard 301 and 401, made of 28mm ash or oak, and sporting reinforced corner bracing. The plinth, complete with perspex cover, costs £350. There is a walnut version in the pipeline, possibly costing a little more.

Loricraft Audio, 4 Big Lane, Goose Green, Lambourn, Berks RG16 7XQ Tel: 0488 72267.

#### **MUSIC TECHNOLOGY COURSES**

Evening courses entitled 'Introduction to Sound Recording' and 'Introduction to Music Technology' to provide a BTEC National Certificate in Design will be re-run by South Thames Colleges. They are part time, two days a week, and provide an introduction to modern music recording techniques, using MIDI, synthesisers, as well as an introduction to the music recording industry. For course fees, times and all other information, contact

John Dodd or Des Lyver on 081-870-2241, extension 340 or 345. The colleges are situated in Wandsworth and Tooting, South West London.

#### AV ROUNDUP

It seems like everybody's moving into AV and home theatre, or that's how it would appear from a general press release from Celestion. This is packed with little gems like "nearly two thirds of the population are preferring to see the latest...movie on video" or "in North-American homes...80 per cent of new speakers are bought as part of a home theatre system", and "surround sound products...fired the imagination of 60% of the UK's under-35s". Yes, they're still trying to convince us that people don't want to listen to music anymore, that hi-fi is dead and AV is where it's at. Some believe them; we don't.

So what's happening in the fast, new exciting world of A/V, where your living room becomes a cinema?

The folk at Polk will be launching their RM5000 "sonically and cosmetically integrated four piece front stage home cinema system" at £1099, early in 1994.

B&W have their slightly more expensive seven box (three front and two side monitors, with two passive subwoofers) THX system retailing at £4395, and available now. THX is the Lucasfilm surround sound system, as opposed to the more common Dolby.

Richard Allan Audio are direct-marketing their six box (centre channel, two side, and two rear loudspeakers, and one subwoofer) A/V-I system at just £199. They also have a 'Gold' version of this system, employing their Minette Gold 'speakers, at just £299

Last, but not least, Tannoy have their 623 dual-concentric loudspeaker, shielded for centre-channel and side/surround use, retailing at  $\pounds$ 180 each.

Polk Audio, Tyttenhanger House, Coursers Road, St Albans AL4 0PG. Tel: 0727 827311.

B&W Loudspeakers (UK) Ltd, Marlborough Road, Lancing, West Sussex BNI5 8TR. Tel: 0903 750750

Richard Allan Audio Ltd. Bradford Road, Gomersal, Cleckheaton, West Yorkshire BD19 4AZ. Tel: 0274 872442

Tannoy Ltd. Rosehall Industrial Estate, Coatbridge, Strathclyde ML5 4TF. Tel: 0236 420199



#### **COMING SOON** We hear that ...

#### HEYBROOK

Heybrook have been at work on an integrated amplifier for some time, known as the Integra. It is due out within the next few months. Hopefully, it won't get as delayed as the revised Sextet loudspeaker, expected for the Penta 1993 show but now on a back burner. Apparently, Heybrook are selling as many Sextets and Quartets as they can make, which is hardly surprising considering how good they sound. It's nice to know that good products still sell well. The A/V boys should take note.

#### CELESTION

Or perhaps they have - taken note that is. Big in A/V are Celestion, but in spite of Dominic's naughty comments in his column last month, they are actually hard at work developing a new range of hi-fi loudspeakers that will be truly different and attractive, we are told. Will Dominic have to eat his words? Should we start printing Hi-Fi World in rice paper? If Celestion are right, perhaps so.

#### TANNOY

Designer Paul Mills of Tannoy has, for years, been experimenting with the thomy problem of motional feedback controlled subwoofers. We've also experimented with this possibility , finding they can deliver astonishingly tight and fast bass - then the cone flies out. Whoops! Scared of decapitating their customers, the British hi-fi industry have steered clear, but for Paul Mills, who has conquered the problem. What is it? The trouble lies in the cone knowing where it is in the gap; absolute position sensing is needed or the system goes unstable and it's time to dive for cover. Various methods of position-sensing are possible, but all have drawbacks. It looks like Tannoy reckon they have cracked the problem though, so expect dynamite bass shortly, possibly from a very small cabinet - suit of armour unnecessary.

#### SHOW NEWS

Suits of armour do, however, have their uses at hi-fi shows, especially when they get crowded and you want a drink from the bar. So polish up your mace, saddle up your white charger and prepare to set to in the crowds at the Bristol Hi-Fi Show, now officially known as the Sound & Vision Show in acknowledgment of the industry's current feeding frenzy over A/V. We'll be macing a few TVs while we're there, just so people can get to hear something better - our super exotic 300B valve amplifier.

The venue is the Marriot Hotel in Lower Castle Street, Bristol. The drawbridge goes down at 12 midday on Friday 18th February, whereupon festivities commence. It flies back up again at 6p.m. on Sunday 20th February when the sales serfs make a frantic dash for their white chargers (Vauxhall Cavaliers) in order to get home before midnight. Merriment and ribaldry are to be found aplenty, between those times. So bring a wench, keep a firm grip on her, and enjoy yourself at Bristol's Sound and Vision 94 show.



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# **TOP TUNER**

Just when your Troughline thought it was safe, Noel Keywood finds NAD's £160 402 tuner is

after its crown.

h what a surprise! - and a very pleasant one too. After seas of mediocrity, here at last is a solid state tuner that does start to approach the magnificent sound quality of the Leak Troughline. NAD's new 402 tuner has a wide open sound stage, plus powerful but well defined bass reproduction, not short of rhythm and energy. There's oodles of insight, and a sparkle in the treble. How NAD have managed to get such an impressively scaled sound from modem silicon chips I don't know, but the 402 does it well.

The only small drawback revolves around operating convenience. Being a budget design, NAD have decided to cut the number of buttons they have to fit by making the normal Up/Down tuning buttons act as preset selectors. This eliminates the usual row of ten or so station selector buttons, but it also means more button stabbing is needed. Also, the back-lit liquid crystal frequency display doubles up to show tuned frequency as well as station store number, another cost saving measure.

However, in their favour, NAD have made efforts to minimise the impact of these compromises - and for me they worked. The

station number store is 'circular', going from No12 straight to No1 in the Up direction, rather than stopping (the tuning system does likewise, going straight from 108MHz to 87MHz). That

halves the maximum number of times a button must be pressed to find a wanted station. The buttons act quickly too, which also helps. And finally the display automatically alternates between store number and frequency a few

times to make the link between them clear. The 402 has medium wave as well as stereo VHF/FM, so you can get Virgin 1215 if you want, providing you don't mind the trailing wire aerial NAD supply with it. There's no loop aerial of any sort, so medium wave lovers need to inspect their picture rails for this one. A few drawing pins and a longer piece of wire than that supplied will get more stations, although more interference as well I suspect. In Central London the bit of wire made just four stations available - not a lot. station, the increasingly crowded airwaves on VHF came spilling through. Like so many tuners adjusted to autotune with a poor aerial, the 402 stopped at every squeak and whistle in the ether, thinking it had found a station, but that's not uncommon.

Stereo Turier 402

It can, alternatively, be manually tuned, but I found the on-tune light could not then make up its mind, suggesting on occasion that no fewer than three successive fine 0.025MHz steps represented the correct tune frequency. Any one may have been good enough for satisfactory sound quality, but only one could be correct. A curious extra entitled Lock then has to be used to force a final decision. But these little difficulties are likely to be one-off for most people, because once the station memories have been

> filled, manual or automatic tuning becomes unnecessary, unless more than twelve stations are available.

Apart from a Mono button and Blend, both of which cut down hiss on weak stereo stations, the 402 has no other facilities. To use it

after programming in required stations, switch on, make sure Mode is set to Preset and then just press the Up or Down button to trawl through the twelve station

 After seas of mediocrity, here at last is a solid state tuner that does start to approach the magnificent sound quality of the Leak Troughline.

> There was no problem with the VHF section though. This is a sensitive tuner and from our external aerial, which supplies a strong signal of many millivolts from each

stores. Build quality and styling follow NAD's tradition of being simple, stark and satisfactory. The 402 is finished in er - a sort of grey, with green hue. Perhaps the marketing department of Dulux would call it 'Lichen'. The front panel is a plastic extrusion and the buttons poking through it have vanous colours according to function. There's a good visual balance and a lack of clutter that make for a neat yet simple appearance.

93.50

But the outstanding feature of this

tuner is its sound quality. It excels by possessing a lucidity and a sense of depth and body to the sound that is rare in modem tuners. Our listening tests show that bass commonly sounds strangled and the upper mid-band flat and coarse on so many modern designs, even when they measure well. The 402 magically avoids these problems. It has plenty of bass welly for Reggae, Disco and Rave; the beat just pounded out of the speakers on Saturday night's programmes, as strong as that from the Troughline. In the upper midband there was little sign of compression and coarseness; in fact the 402 comes across as open and sweet in its treble - rare indeed. It needs good, live, studio transmissions commonly found on Radio 2 - to show just how much of the studio atmosphere

SEARCH

comes across. Terry Wogan was in good form when I tuned to 2; his dulcet Irish tones - that deep croak! - were rich and resonant, hanging between the speakers in the room. But for a short while I was alarmed to hear hiss - and then suddenly it stopped. I'd been listening to a tape running. As the continuity engineer switched back to the studio there was silence: this tuner does not hiss at all.

The old 4025 was a superb tuner; the new 402 betters it. It betters most other tuners though, which is embarrassing for the competition - at any price. In fact really expensive tuners commonly sound worse because they over-process the signal. If you are in the market for a tuner with really superb sound quality, ignore the low price of the 402 - it is simply one of the best available.

#### **Dominic Says**

I have been using a Troughline for several months now, and am still overwhelmed by the scale and depth of presentation it

#### MEASURED PERFORMANCE

The much admired, but now obsolete NAD 4025 tunct has a flat frequency response to around 12kHz above which it rolled off smoothly, contributing to its attractively with sound. The new 402 is different: it may sound. The new 402 is different: it may up to 16kHz, as the analysis shows. This will at least add an air of brightness, making the 402 sound less fulsome and warm than its predecessor. It will also add a cense of insight and analysis to the sound. It is a result up with the best of the crop, prespective of price; tuners cannot easily a higher than 16kHz when a pilot tone filter is used.

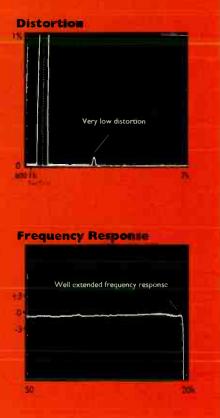
Unusually wide channel separation and the iow distortion also mark the 402 out is a ligh performer. I was expecting to maximum i satisfactory but unexceptional in level of around -72dB, since over the later or two in noticed tuners seem number to unpass this, doubtless because the current silicon tuner chips available in florence offer no better. So when a finite of 75dB wis notched up, with ImV of signal from the anal, the 402 showed tend to be blove most others in the field at present. It means that, fed a strong enough sent interval. hiss from the tuner will be inaudible. This is good news for critical Radio 3 listeners.

The 402 showed it was up with the best in its ability to separate stations from each other (selectivity), and it is also very sensitive too, again matching the b st by needing  $20\mu$ V for hissy stereo (-50dB noise). An output of 550mV is enough to ensure the tuner matches any amplifier.

In summary, the NAD402 measures extremely well by the highest current standards. It has no weaknesses or foibles, other than a frequency response trait that suggests its sound may be a little lighter or more insightful than others. **NK** 

#### TUNER TEST RESULTS

Frequency response		8Hz-16kHz
Stereo separation		57dB
Distortion	(50% mod.)	0.08%
Hiss (CCIR)		-75dB
Signal for minimum hiss		ImV
Selectivity	(at 0.4MHz	80dB
Sensitivity		
mono		1.2 V
stereo		20µV
signal strength mete	r	none



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produces. To date I have not heard a solid state tuner to rival this vintage wireless, although the Aura TU-50 and Naim NAT 03 both come reasonably close with a warm and detailed sound. However the new NAD402 is something else. As Noel says, don't be put off by the low price, it stamps all over the Aura and races up towards the NAT 03 in terms of sound guality.

So often cheap synthesizer tuners

sound thin in the bass, coarse in the mid and lifeless in the treble. The NAD 402 defies all of these characteristics and produces a deep, powerful and richly textured sound. If I were to be really critical, it does lack the authority and punch in the bass of a well sorted Troughline and isn't quite as sweet at the very top, but if a manufacturer were to try and produce a Troughline nowadays I doubt if you would see much change from £1000. The NAD 402 at £160 has to be the tuner bargain of the year and easily sees off the competition below £500  $\bullet$ 

NAD 402 NAD Marketing Ltd Adastra House 401-405 Nether St London N3 LQG

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review

# **Top Aerials**

#### Noel Keywood explains why the NAD402, or any

#### tuner, will benefit from a good aerial.

Does a tuner as sensitive as the new NAD402 need a proper aerial, or can it make do with an indoor wire dipole? The answer is "yes" and "yes". Use an indoor wire and it will get plenty of stations, but also a lot of hiss and noise accompanying them, unless there's a transmitter nearby (i.e. within 10 miles or so). For hi-fi sound quality, which with tuners specifically means much improved insight and clarity, an outdoor aerial is usually essential, and you'll get distant stations too.

Let me describe the differences in more detail. The radio gives us speech and music and, generally, we only expect it to be intelligible, hi-fi tuners can give a lot more than mere intelligibility, even though users don't commonly realise it. Given enough signal, they can display a strong insight into the material being transmitted. Live studio acoustic comes through - the presenter shuffling papers, people coughing, chairs squeaking, even the hum of air conditioning. A good hi-fi system will project that atmosphere into the room and it's quite a revelation to hear so much, although also a little unsettling when the mics pick up some of the less attractive sounds people make with their mouths, tongues and a little saliva. Then the continuity engineer will switch, say, from live studio speech to a taped outside interview and you'll suddenly become aware, as never before, that the tape recorder has hiss and that behind the oft strained tones of the reporter there is traffic noise, wind and goodness knows what else going on. Other worlds can sweep into your listening room.

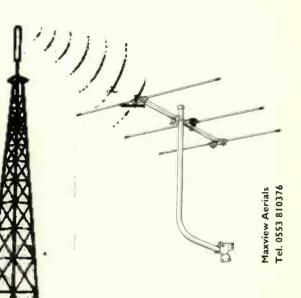
To get all of this you need to provide a tuner like the NAD402 with at least ImV or so on each station. The specifications appear to suggest that a lot

less signal is acceptable. Stereo sensitivity measured 20µV (twenty microvolts) which is fifty times less. Unfortunately, that's to get good intelligibility, not real hi-fidelity. It is the amount of signal required to get background hiss down to a level equivalent to that of a cassette without Dolby and not many people would

feel that had much to do with hi-fi. What is needed is a signal strong enough to get hiss down to the lowest level possible, a condition known as 'full quieting'. Most tuners, including the NAD402, need at least ImV for this, then hiss will become effectively inaudible. With the NAD it sinks to -75dB, a very low value.

Indoor dipoles typically give around a few hundred microvolts ( $\mu$ V), except when close to a transmitter. It is impossible to be precise about this, because the surrounding terrain has a big influence on signal strength, as does transmitter power. Where a transmitter is in line of sight though, 5-10 miles is about the limit of a simple dipole aerial. At around fifty miles away, it is common to need a three or four element aerial to get a strong enough signal for full quieting.

Aerials must be mounted as high as possible to obtain a strong signal. They need to be pointed toward the local transmitter, whose position is given by reception maps available from the BBC and IBA. If you use these, then you'll need a compass. In some locations, two transmitters may be available, usually in



opposite directions. Local aerial erectors are best consulted and used for outdoor work, for their local knowledge, possession of a signal strength meter and for your own personal safety. You can usually get an aerial erected for around  $\pounds 60$ .

One of the great potential benefits of buying a budget tuner like the NAD402 is that it leaves change for a good aerial. And there's no doubt that a 402 plus a good aerial will eclipse any tuner you can think of, irrespective of price, working from a poor aerial. That's the worth of a good aerial •

#### Contacts:

BBC Engineering Information 201 Wood Lane London W12 7TS Tel: 0345-010313

ITC Engineering Information Crawley Court Winchester Hampshire SO2I 2QA Tel: 0962-848647

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# MISSION ACCOMPLISHED

Dominic Baker and Simon Cooke agree that Mission's latest version of their 760

loudspeaker is a very accomplished performer.

ealthy competition between loudspeaker manufacturers over the last few years has produced some of the best budget miniatures ever seen. Nowadays it's hard to make a mistake with £130 to spend on a pair of speakers with so many good ones around. Celestion's Is, Goodmans' Maxims, Tannoy's 603s, Richard Allan's Minettes and Mission's 760is are all fantastic value for money and offer a level of sound quality way above what you'd irnagine from the small price tags. Recently both Goodmans and Tannoy have updated their budget blasters and Richard Allan have produced a super Minette, the Minerre Gold, Now it's Mission's turn.

The f 149 90 76015Fs are virtually identical in appearance to the standard 760is, the only hint of change being the second set of terminals on the rear panel for biiring. However these are not just a bi-wired version of the 760is, higher quality crossover components and internal wiring have been used to further enhance the already excellent 760i. But how do these changes affect the sound?

Well, you get a surprisingly huge sound from such a small box, the new 760ISEs fill a room like a floorstander should. Used a few inches away from a rear wall the sound stage is wide and spacious and they really impress. The bass is not particularly deep, but what is there is solid and powerful and once they get hold of a bass line they refuse to let go. They have plenty of punch as well, the small lightweight drive units stop and start quickly and cleanly giving them an energetic and snappy sound.

The new 760iSEs are not as forward sounding as I remember the originals being and in many respects they are a lot more reliped and civillsed now. But the basic character remains, and shines through a new, more tidy sound. They are now more in command of what's going on than ever before and will take some real punishment.

#### One area

where Mission 'speakers have always been a little weak is in the treble They don't have so much fine detail, but they have a bright and open character that never becomes harsh, making listening enjoyable rather than tiring.

The new Mission 760/SFs didn't disgrace themselves even on the end of a fairly esotenc. £3000 system. I've heard 'speakers costing several times the price sound considerably less musical and involving. This makes the 760/SEs one of the best miniatures around at the moment. Never mind the low price, their performance is nothing short of excellent.

#### Simon says

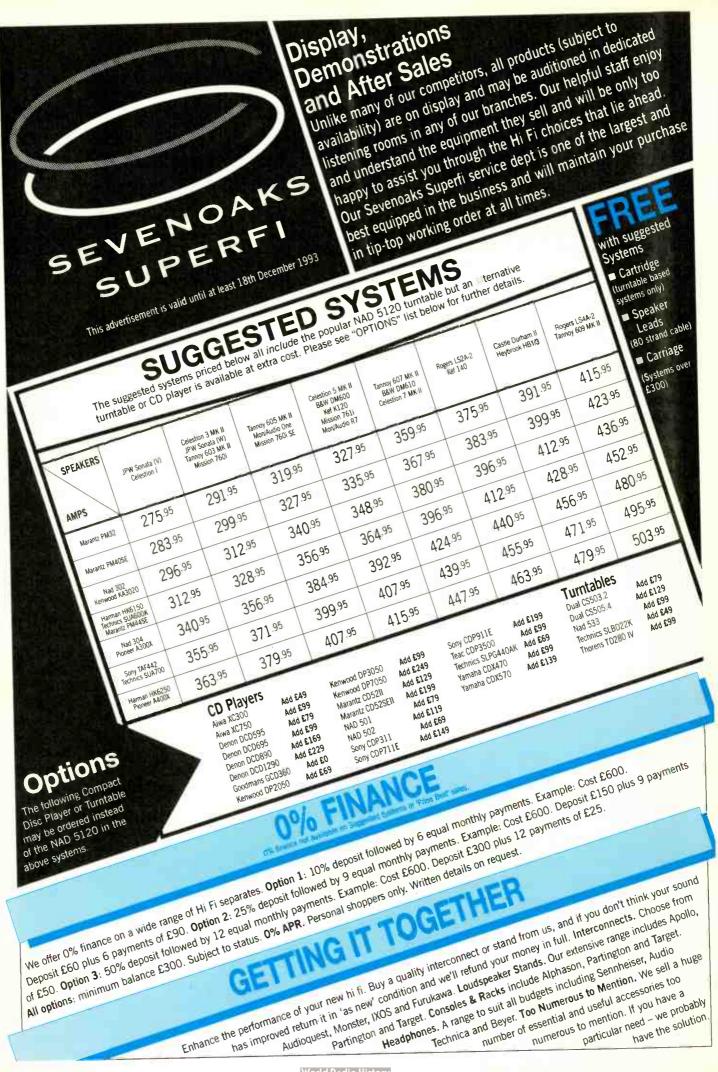
The Missions are very impressive at the price, and although they are simply not big enough to drive the realistic bass of a large orchestra or even the deep thrumming of a solo double bass, they really come into their own with the faster, higher bass frequencies, and from then on it's music and metronomic rhythm all the way. They can be driven quite hard without complaint, and paint a room-filling and

believable picture of music of any kind. The mid is easy on the ear, and although the treble is a little soft, there's enough there not to lose the interest, and then some. Only on really stinging steel guitar or harp did the tweeter's soft tone disappoint, so think twice before you buy them if you're a National or pedal steel fan, although, come to think of it, there isn't much out there that would better the Missions, even if you are.

All in all then, a most impressive loudspeaker, which will give Mission's competitors quite a lot to think about O

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# DICTIONARY DEFINITION

Simon Cooke listens to the new Tannoy D100 'Definition' loudspeakers, to find out how they define the music.



annoy have domesticated their D700s, shrinking them down to bookshelf size. The new D100s use a 6.5inch version of their dual-concentric loudspeaker drive unit, which places the tweeter in the centre of the bass/inidrange driver to produce a full-

range, point source 'speaker. The new speakers have the same classy rosewood veneer finish and triangular cabinet cross-section (to reduce internal standing wave propagation) as their larger siblings. Another characteristic which the D100s and '700s share is that they are

both quite unforgiving of amplifiers with sharp, gritty treble or reticent bass, but in the case of the D100s, a valve amplifier can be used with greater ease, and I found our K5881 drove them better, or at least more musically, than our

• They can, however, drive out enough low

separation that they did not integrate the left and right channels, although the school was infinitely not in this box? and income the integr of the stage projected in two different failers, and out forming a dean weet process the room. The framous luid to be town to difficult to contromisiting so take care to

frequency energy to give an impressive sense of atmosphere and space in well recorded group vocals such as a Tallis Scholars recording or Gregorian chant. \*\*

Against a walt the D1001 go on period by but not exceeding low, solo double pass not naving encogh energy to raily reverbence. They can however, one out encount low frequency encoup to give an impressive serie of manufacture and solar in well recorded mup vocas such as a Tail's Schniar recording on Segurini chart. The motion series in the solar solar being well period path realling but a first the fir forward but mealering but a first the first forward that mealering but a first the first forward in the solar but a first the first forward in the solar but in the first forward in the solar but a first the first formation in the solar but is a period of the minimized was the way but others the minimized was the way but others the minimized was the way

ecommended for inteners who would like a three-dimensional backwalde image of the performance. Be careful when partnering them, however, cose they are morelless with poor dour on. If you're confident of your amplifier though, give 'em a whirt'

Rosehall Ind. Est. Coatbridge Strathclyde ML5 4FT Tel. 0236 420199

£650

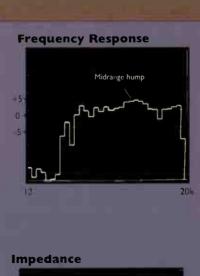
#### **MEASURED PERFORMANCE**

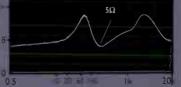
Tannoy's D100s use one 6.5inch dual concentric driver instead of the two 10inch drivers found in the bigger D700s. Because of this they obviously don't have quite the same power in the bass, a gradual downward trend from IkHz on the frequency response plot indicates that they will have a light bass, so wall reinforcement will probably have to be used to balance the sound.

From IkHz to around 3kHz there is a raised hump that will push the midrange forwards, especially vocals, which is not necessarily a bad thing. This kind of lift in the mid normally emphasises detail, giving an open and spacious sound and clean and powerful vocals. Above this small hump there is a short, sharp dip, presumably where the 6.5inch cone passes over to the centrally mounted tweeter, which has a smooth, slightly rising response. This should give highs a slight sharpness, although with such a small lift, not an unpleasant one.

The D100s, unlike the D700s, are a much easier load for an amplifier. Although they are not quite as sensitive, 88dB, they have a higher overall impedance which only dips below 50hms for a short range. Overall, using pink noise over the full audio band to give an idea of what the amplifier actually has to drive, impedance measured a high 9.5ohms, which means that they will not draw much current. So although they are less sensitive, they are more efficient.

Overall, the D100s are a nicely engineered pair of 'speakers, used against a wall they should produce a reasonable bass for their size and the forward mid will give clear and powerful vocals. DB





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"Rock fans will enjoy the way the speakers handle the kicking bass line..."

What Hi-Fi? Sept '93.

"Celestion 3's just want to get up and go." What Hi-Fi? Aug '93.

"Their superior drive and rhythmic integrity make them most suitable for rock fans." What Hi-Fi? Sept '93.

"A loudspeaker that's ready to rock and roll." Alvin Gold, Audiophile Aug '93.



For further information and your nearest dealer call Celestion on 0473 723131

World Radio History

# SMASH THE SYSTEM!

Here's one of the most stylish and four of the best systems available for the money -

#### selected by the editorial team.

 hristmas time is here, by golly, and you're stuck for a present for
 the kids, the husband, the wife, list and test here, so we've chosen one 'lifestyle' product, from Denon, and then we've taken the liberty of putting together more style conscious than usual, whilst still producing an enjoyable sound. Each of the four 'editorial' selections systems test



the granny, or Fido, aren't you? So you flick through the Argos catalogue and what do you find? The hi-fis! Yes! You know that all your problems are solved, or just beginning.

When the doom, gloom, and despondency sets in because you don't know what to look for, you should be flicking through the pages that follow here, to brush up on what's available, and what it can do.

Systems, literally, come in all shapes and sizes, and there are far too many to

our own systems in vinyl and CD at the  $\pounds700$  and  $\pounds1500$  price points, making five systems in all.

Why did we put together our own systems? Because there's no single manufacturer who's yet managed to corner the market on all the components required, it's better to 'mix and match', taking the best components from each manufacturer's range and tailonng the sound to your own liking.

All four systems use serious audiophile products, with the Denon system being

are punst audio systems, compromised only by the price limitation (well, we couldn't have four Yoshino-amplified systems, could we?). We have aimed for the very best, and most enjoyable, hi-fi at each price point, just to demonstrate what you can do with your money.

Remember, though, if you are buying a system, either for yourself or as a present, these are only our personal recommendations as to what's best at the price, so make sure you audition such a system properly before you buy.

# THE STYLE OF LIFE

Simon Cooke finds a single-manufacturer system with style, looks and a good sound to match.



systems test

Here's a 'lifestyle' system, Denon's latest offering to those who think a stereo should also be good to look at. And why not (as they say in film reviews)? Most people agree that modern hi-fi is characterised by the black box and it often seems to us reviewers, as we dig through mounds of the latest hi-fi, that black boxes are all that get produced.

So Denon's D-110 system comes as a bit of light relief, as it comprises four separate silver-finished components: amplifier, auto-reverse twin cassette deck, CD player, and RDS three-band tuner. The four components are linked by two multi-way ribbon leads, which are

colour-coded for easy recognition, and serve to distribute power and signals. All of the requisite cables were supplied, along with bog-standard AM coil and FM ribbon dipole antennae

Setting up the system was a

doddle, almost a 'do it with your eyes shut' job, except for connecting the insubstantial figure-of-eight 'speaker cable. The wire ends are left bare, and there is no tell-tale stripe to differentiate the cores, just a fine ridge which you have to locate by feel. Once you have identified which core is which, they have to be clamped into the binding posts, a job made difficult by the captive mains input lead entering just above them. Since both these binding posts and those on the SC-M2 loudspeakers supplied can take plugs, it seems a pity, and is also a little frustrating, that Denon cannot supply them ready-mounted, like all the other cables in the kit.

Denon's system offers a wide range of features, such as tape-to-tape dubbing, timer functions including sleep, alarm, and unattended recording, a single handset for remote control of all the components (remarkably convenient compared with multi-manufacturer systems, although you could buy a programmable handset for those) and auto power-off. There is also a phono input, so you won't have to throw out your LPs.

Build quality seemed good, and all the knobs and buttons felt firm, with the exception of the volume knob, which did feel a little loose and plasticky. Apart from that, this system had a remarkably reassuring feel for the price.

#### SOUND QUALITY

Sound quality from this system was surprisingly good. I'll admit that I'd had my doubts, because of the old chestnut about single-manufacturer systems not being able to take on a separates systems. The Denon had an easy going, lively quality which captured my attention, and the ability to drive a big, room-filling sound out of the small SC-M2 'speakers provided. These gave a lucid and coherent picture of the music, without the raw and bouncy feeling often associated with small, budget boxes. Since they were so small, the 'M2s couldn't give real deep bass, but the higher bass was smoothly presented and more than capable of forming a good foundation to support the music, especially when fed with faster rock recordings, with snare and side drums leading the beat. Overall, the midrange was clear and smooth, as was the treble,

• The Denon had an easy going, lively quality, and the ability to drive a big, room-filling sound out of the small SC-M2 'speakers. •

and, although it did become just a trifle coarse, it sustained classical and jazz works with commendable ease and insight.

Staging and imagery were good, aided by the warm, open sound of the 'speakers and the level of detail which they presented, although the SC-M2s were not as detailed as some budget 'speakers on the market. They have obviously been chosen to partner this system because of their diminutive size, and to continue the ethos of this system by being easy to tuck discreetly into a corner. Because of this, a few penalties were expected in terms of sound quality, but we found the SC-M2s surprisingly good overall, even compared with larger budget 'speakers.

The three sources available all offer high quality sound reproduction, although I suspect that they do not quite live up to the 'speakers for performance. To take the CD player first; it gave a clear, lucid portrayal of all types of music, sounding very smooth and easy on the ear through the Denon amplifier, and this combination together produced a slightly warm, but revealing, bass and midrange sound. There was a slight graininess towards the top end, especially with orchestral works, but it would take better 'speakers for the problem to become intrusive. All in all, quite a good little player.

The tuner sounded nice, but was let down by the ubiquitous wire dipole aerial provided. It really does deserve better, and sounded far more musical with a good aerial than some budget 'Best Buy' tuners I have heard, or even some £400 models! Okay, so the lower bass was absent due to the 'speakers, but the mid and treble were clean and clear, becoming just a little hard and compressed towards the top. Staging was good, with a nice broad sweep of instruments between the boxes, compounded by the near-absence of hiss and a good level of detail. This tuner may not be a gem, but in this system it's at least a diamond in the rough, and it's a pity that it adorns a system whose buyers will, most likely, never bother with a proper outdoor aenal, as favoured by our local birdlife, to make the most of it.

The drawer-opening twin cassette deck performed adequately, but was limited by slightly mushy treble and bass,

which in turn limited the sound to the 'speaker boxes. It seemed to lack drive, or punch, after the open sweep of staging provided by the CD player and tuner. Although it performed well with pre-recorded cassettes, for the price equivalent of a budget deck, it was not outstanding and is the

weak point of the system. Cassettes recorded from any of the other source components fared even worse, the sound being muddy and muffled overall. Perhaps a single non-reversing cassette deck could have matched the quality of the other components better than this twin 'all singing all dancing' deck.

#### CONCLUSION

As a hi-fi reviewer I am ashamed to admit that the idea of liking a 'lifestyle' system appalled me. It still does - but I like it!

Overall, it should be possible to put together a system for the same money which gives a much better sound than the Denon, but it almost certainly would not have the same facilities, visual appeal or ease of use, and I even doubt whether a three source component system from separate manufacturers would sound so much better as to make it worthwhile for the average hi-fi consumer.

Considering the £800 price tag, this is a very competent system of reasonably good quality, which can give some real insight into the music, and will look good as well. If your offspring are preparing for their A-levels next year, buy it for them and send them to university with a system which will give student-cobbled bargain-basement hi-fi a run for it's money, and which carries kudos on the campus as well.

DENON D-110 SYSTEM

£799.99

# SYSTEM 1

With a budget of £1500, Noel Keywood selected Michell's Mycro turntable, Denon's PMA-350II amplifier and specialist loudspeakers from Spendor



hen I heard a well run in pair of Spendor SP2s the other day, in a shop demo room, their transparency struck me immediately. Vocals in particular seemed beautifully uncoloured and natural. "They're close to an electrostatic - that's why I keep them on demo, beside the ESL63s" Luigi at Hi-Fi Confidential told me. We were talking valve amps at the time; I had our singleended tucked under my arm - and when that was hooked up to the Spendor's, even I was surprised. They're fine speakers, so for my system here I asked for the less expensive stable mates, the S20s.

This system is one that I could live with in that it offers the sort of sound I prefer, but from items less esotenc than those we, well, build for ourselves but sell as well. I chose a solid state amplifier able to combine smoothness with strength, the Denon PMA-350II.

The original PMA-350 always had plenty of go, with rock solid bass and at times a fiery treble delivery that was fine

with some speakers, but kissing the borders of pain with others. With the PMA-350II Denon have smoothed out the treble difficulty, reducing distortion in the process, to end up with a smoother top end. The amplifier still

has plenty of deep bass power, plus a good gnp upon its delivery, making for a well developed sound. Here's a solid state amplifier, widely obtainable at a low price that avoids being Japanese-boring (i.e. flat and lifeless), over excitable or just too smooth. It impressed me, at the price, and it offers a wide range of facilities for those that want them.

I personally feel no need for tone controls, but the PMA-350II has them, complete with bypass switch. It can also run two pairs of speakers and switch between them, and it will accept two tape recorders, offenng dubbing between them. Funnily, I really dislike fiddling with hi-fi once it has been installed, so I'd never use such things, but for inveterate tapers, the switches are all there to be fiddled with if wanted.

Spendor's S20s are room friendly versions of the large and imposing SP2s. Scaled down in size, they seem less scaled down in sound, working well on stands placed within 12in or so from a rear wall, where they benefit from some low frequency reinforcement. Ours came in a pleasant 'natural oak' veneer, definitely smarter than once-dominant teak. An immediate point of visual interest is the clear, see-through cones of the bass/midrange drivers, pointing to the fact that Spendor use their own, unique design. They are paired with a Scanspeak fabric dome tweeter that our tests in Supplement No6 showed gives very smooth treble. The bass unit works in a sealed enclosure (infinite baffle), which provides acoustic damping down below

bass resonance, to better resist subsonic disc warp signals. This greatly lessens cone flap when playing warped LPs, although the Denon does in any case have a warp filter (-3dB at 20Hz) on its disc input. But it is the careful matching of items that is so important in hi-fi to avoid problems, especially from LP warps in vinyl replay.

#### SOUND QUALITY

The S20s sound lucid and balanced. They've got the same striking midband clarity of the SP2s, which conveys vocals especially well. Yet there are no unnatural emphases in this speaker, it doesn't project by enhancement, something I try to avoid. The '20s are just very, very capable, more so than so many competitors. They can deliver bass power with authonty; they don't fall apart under this pressure. The strong bass line on 'You owe it all to me' by Texas growled and rumbled behind Sharleen Spiten's nicely placed and sweetly reproduced centre-stage vocals. The

" clean, well timed bass lines, strong in

definition, plus a fine midband •

Denon was well supported by the S20s -

My only slight reservation concerns the

they really do go very well together.

not uncommon problem of poor disc

stage-to-volume control impedance

matching within the amplifier. At half

volume, treble rolls off early (-IdB at

20kHz), making for a warm sound in

conjunction with the midrange roll-down

of the Goldnng 1022GX cartndge. Denon

should cure this. However, the deck. arm

and cartridge have so much to offer that

the overall scheme of things. The S20s

have plenty of life in them; they don't

dynamically stifle music in the name of accuracy. In fact, I was taken aback to hear

of the opening pyrotechnics on Steve Earl's 'Copperhead Road' (from CD in this

case)

the depth and power the S20s conveyed

offer bass power and control, impressive

dynamics, a beautifully lucid midband and

loudspeakers have flaws of course, in this

case a small amount of boxiness and

consideration by Rock and Classical

listeners alike. I was very pleased to

imaginative yet elegantly simple

stable mates, the S20s.

mediocre image sharpness being most

obvious to me. All the same though, the S20s are thoroughbreds that deserve

stumble upon the SP2s from Spendor and to hear their more domestically acceptable

The Michell Mycro is a wonder of

engineering. Conceptually, it isn't complex,

mechanically it isn't either, yet through the

sweet, well balanced treble. All

So here are a pair of loudspeakers that

the warmth was not especially significant in

use of a custom cast subchassis and precision engineered main bearing, it manages to look breathtakingly simple. The heavy platter is rim driven through a soft, compliant rubber belt that acts as a clutch at start up. Press a little power button on the motor (a sensible place to put the power switch) and watch it scrabble to get the platter up to speed. This doesn't take long, then the Mycro can show off its abilities. Having a very compliant suspension system, it is well isolated and rumble free of course. However, floor bounce will upset it l found, so a firm wall shelf is recommended. The clear acrylic base and lid, possessed of a slight green tint, look wonderful, presenting the Mycro as a piece of - literally - transparent engineering. Anyone suffering black box syndrome should love this silent and beautifully made turntable, complete with Rega RB300 cast alloy tonearm. It offers 33 and 45rpm, plus a platter engineered to properly support a record whilst playing in

> order to minimise sound box effects. Matching the Mycro's smooth cast curves is the Rega RB300 tonearm. It blends in perfectly. The Rega is unusually rigid, due to the fact that it is a one-piece

alloy casting. On the Mycro it possesses the twin benefits of being light and compact too, so the overall package should fit into most homes with reasonable ease. Within the Rega I fixed a Goldnng 1022GX cartridge. Both items are known for their clean bass performance, due mainly to their incredibly rigid structures. I wasn't surprised to find that the set up had no trouble in offering clean, well timed bass lines, strong in definition, plus a fine midband that fully complemented the abilities of the Denon amplifier and the Spendor speakers.

#### CONCLUSION

This system offers a smooth yet dynamic sound, with plenty of go to it, yet finesse too. It treads a fine line between the common extremes of sounding powerful, but sharp and aggressive, or being so smothered in the name of smoothness as to be bonng.

DENON PMA-350II	£219.99
MICHELL MYCRO	£539.00
GOLDRING 1022GX	£79.95
SPENDOR S20	£579.00

# SYSTEM 2

Dominic Baker managed to squeeze in a separate CD transport and DAC with an AMC valve amplifier and floorstanding loudspeakers for his £1500.



systems test

wanted to put together a system that offered an insight into what is available outside of the high street chain stores. Something with a separate CD transport and DAC, a valve amplifier and a pair of high-tech loudspeakers. With  $\pounds 1500$ ? Why not. A little careful searching and I got all of the above and more for my  $\pounds 1500$ .

The CD930 at £200 is the cheapest Philips CD player that I could find with a CDM-9 transport inside. I've had excellent results with stand-alone transports using this same mechanism, so treated with a

little care I was hoping to get similar results with the CD930.

Much talked about at the moment is Townshend's Seismic Sink, which is an isolation platform that absorbs vibration and improves the quality of

sound from CD. As the CD930 is a fairly lightweight affair with a thin steel case I thought that it was about time that I tried one of these platforms.

Although the effect was not quite as dramatic as has been reported by other users, it certainly had its benefits. Without the Seismic Sink the sound of the player was a little coarse in midband. With the Sink placed beneath the player things cleaned up a little, giving a smoother, richer sound with a more punchy upper midrange and a sweeter treble. Obviously, something that works to reduce the effects of vibration will be dependent on its surroundings and the equipment used. If you live next to a main road with heavy traffic going by the result will be very different to that from a farmhouse in Northern Scotland. However, in most cases some improvement will be noticeable, so the Seismic Sink is worth a home audition before you splash out.

The DAC I chose to use was the QED Digit. I did also consider using Select System's Dacula, but the extra cost would have limited my choice of amplifier and loudspeakers too much within a £1500 budget. There are now several versions of the Digit; the one I chose was the £229 Dacpac. This consists of a Digit convertor, high quality Positron power supply and a length of QED Digiflex digital interconnect, not bad value for a top rate outboard DAC. For a little extra an optical input can be had, making it suitable for a wider range of players, and a good and cheap upgrade path is available by adding a second Positron and a modified Digit, as explained in our DIY Supplement No.3

The Digit is very revealing and as a result can become a little unpolite at times, so I wanted to use a valve amplifier to make sure that the sound was smooth and relaxed, but didn't sacrifice any of the qualities of the front-end. In addition, for the system to be suitable for a wide range of uses, it had to have a good range of facilities. A passive pre-amp with a valve power amplifier could be used if you only use CD, but I wanted something with a wide range of inputs including phono, a headphone socket and a tape monitor. Fortunately, such an amplifier exists for a reasonable price. The £529 AMC CVT3030 is an integrated amplifier with a valve output stage and all the facilities I wanted plus bass, treble and balance controls. It even has the 40hm output tap I needed for my choice of 'speakers.

These are the Harman Kardon LS 0500s. They are very similar in character to the LS 0300s, reviewed in our smoothness and openness that the Harmans exploited well.

On Liz Phar's album Exile in Guyville, an impulse buy which thankfully, at £12.99, paid off, a large soundstage with good image detail opened out. A bit like Suzanne Vega with an American accent and rock band behind her, she has a simple style that makes relaxing listening. The system did well, providing plenty of insight into the performance and the character of Liz Phar's voice. In some ways it was a little more energetically portrayed than it should have been, but it

> was gentle enthusiasm rather than an intense vocal onslaught. My only

criticism of this system was that it could become a little unsubtle at times, probably due to the

I hadn't listened to this album in quite a while, but the crisp, forceful sound of the LS 0500s soon had me hooked once again.

November issue, but have a little more deep bass to fill a bigger room thanks to the second bass driver and their floorstanding design. They use Audax's glass fibre bass/midrange units, which have a crisp and clear sound to them, and a large soft dome tweeter for clean and detailed highs.

I decided to finish my system off with a Campaign Audio Design 4-way mains block, figure-of-eight mains lead for the Positron, silver plated copper interconnect and silver plated copper 'speaker cable. The 'speaker cable is for bi-wiring, thin cables for the treble and thicker for the bass, and if you also use similar cables with the LS 0500s be aware that the bottom terminals are actually for the tweeter and the top ones for the bass. Or at least they were on my sample, it is easy to screw the terminal dish in upside down during production, so check first.

#### SOUND QUALITY

The system gave everything I wanted in terms of sound quality. An open, clear and focused midrange, a sweet and detailed treble and good bass depth and dynamics. It has a powerful sound with a large soundstage, but doesn't become wearing after a few weeks listening, unlike some initially more impressive sounding systems.

I went for something raw and powerful first, picking PJ Harvey's Dry album from the rack. I hadn't listened to this album in guite a while, but the crisp, forceful sound of the LS 0500s soon had me hooked once again. This recording is so primitive in many ways, with no effects or electronic instruments, just a couple of mics and a live band, but this gives it an authentic sound. You wouldn't expect Harvey's voice to sound so different if you were watching her live a few rows from the front of a concert, and from experience I know it doesn't. The forward nature of the Digit gave the album real attack and the AMC amplifier a

ruthlessly revealing Digit DAC and the slightly forward and crisp sounding LS 0500s. The AMC does an admirable job, keeping the sound smooth and detailed without highlighting this, but if you place a cold and hard sounding recording in the draw of the CD930, a cold and hard sound is what you get at the other end. I like to think that this is more an accurate, insightful system than one which hides detail to produce a 'nice' sound, what ever the quality of the recording. And this makes it an interesting and involving system to listen to, and one which will always be uncovering new parts of a recording for you to hear.

#### CONCLUSION

If you are in the market for a CD based system and like the sound of any of the systems in this test, remember that they are all personal choices. I chose my system to meet my criteria, yours may be totally different. Even a short demonstration with a good hi-fi dealer is enough to save precious money on a system that doesn't suit your taste. Oh, and make sure you leave enough funds for some music to play on your new system, they're pretty useless without it!

PHILIPS CD930	£200
QED DIGIT, POSITRON AND DIGIFLEX INTERCONNECT -	£229
AMC CVT3030 AMPLIFIER -	£529
HARMAN KARDON LS 0500s	£300
TOWNSHEND SEISMIC SINK -	£169
CAMPAIGN AUDIO DESIGN	

SCREENED MAINS CABLES, SILVER PLATED COPPER INTERCONNECTS AND 'SPEAKER CABLES -

# SYSTEM 3

Dominic Todd, impressed by the Pro-ject 2 turntable, combined it with a classic NAD/Celestion amplifier and loudspeaker combination.

t wasn't long ago when the extinction of all vinyl, bar the most obscure, had been predicted to be complete by the mid-nineties. Whilst vinyl has disappeared from many high street record stores, there has been something of a resurgence of specialist record stores (rather like the specialist CD-only stores one used to find when CD first came out). With this has come a recent wave of quality budget and mid-priced turntables.

No fewer than six manufacturers: NAD, Akai, Project, Townshend, Michell, and Systemdek, have all brought out new turntables within the last year or so.

Therefore my choice of turntable proved the hardest decision. I narrowed it down to the new NAD 533, the Systemdek I 920, and Pro ject 2. All would make

excellent starter tumtables, but in the end I opted for the Pro-ject 2, which is extraordinary value for money when bought with the Ortofon MCI Turbo cartridge (worth £60). The audiophile touches, such as spiked feet and multi-adjustable arm, combine with the detailed and enjoyable sound quality to form the basis of an excellent package. To make the most of the Pro-ject's phono sockets, I've added an Ixos 104 interconnect which should allow more detail through than the standard interconnect.

Choosing an amplifier was made easier by the need for a reasonable phono stage. The NAD 304 fitted the bill perfectly, just pipping another favourite of mine, the Denon PMA-350 Mkll to the post. The NAD offers plenty of inputs (for future additions), plenty of power and, most important of all, sound quality that's good enough to withstand several upgrades in the 'speaker and tumtable department. Like the Denon it also has a high number of quality components and it's clear to see that money has been spent on getting the best performance for the money, rather than flashing lights and gizmos. The styling and build quality have also improved upon NADs of yesteryear, as has circuit design, which now uses the shortest signal paths possible, in line with competing Japanese brands. Unchanged, however, is NADs excellent 'real world' 'speaker-driving capabilities. An output of 35watts may not seem a great deal, but such is the design of the NAD's power amplifier that it is able to produce peaks nearly four times that figure and with good current delivery.

Having such a versatile and gutsy amplifier didn't restrict the choice of 'speakers. However, the limited funds remaining do. The shortlist contained the Richard Alan Minettes (rather too unrefined in the treble region for my liking), the B&W 600s, (too expensive now), and the Tannoy 603 and 605s (the 605s can sound a little uninvolving and the 603s would have been chosen had it not been for the Celestion 3's ability at unravelling detail at lower volumes).

The recently revised Celestions aren't bi-wirable, although this isn't necessarily a bad thing as bi-wiring can make small 'speakers sound overly bright. Improvements have brought about the addition of a rear port, which seeks to improve bass extension a little. In practice bass is reinforced, although the 'speakers can't be placed as close to a rear wall as the original 3s could.

With the lively nature of the MC 1

•• Vocals were well projected, and with any female vocalist one appreciated the refined treble ••

> turbo in mind, I chose Rotel Supra 2.5, which is renowned for its smoothness. Decent, heavyweight 'speaker stands of about 20" complete the picture. Although I've mentioned Custom Design and Foundation, any stand of a reputable make fitting the above requirements would suffice. The only thing missing is a decent support for the turntable. This shouldn't be too important, if a sturdy shelf is to hand, as the Pro-ject has good isolating properties.

The whole system is quite straightforward to set up, and the ergonomic simplicity of the NAD and Pro-ject means that operation can be learned within minutes.

#### SOUND QUALITY

One of the great unpredictabilities of hi-fi is that a system whose individual components excel in their respective classes may prove a disappointment as a whole. Alternatively, a system can excel in being greater than the sum of its individual parts. Although I know the individual components of this system well, the sum could still be unpredictable.

However, in this case, it came as a relief that the system jelled, and worked efficiently as a whole. The initial impression was one of a lively and detailed sound that avoided the boxiness often imposed by cheapish small 'speakers. A Beethoven violin concerto in D, Opus 61, proved light and breezy Stringed instruments were produced with sufficient sparkle and realism, which made a pleasant change from some budget CD players that can sound rather grainy or veiled in comparison. A credible sound stage emerged, aided by the fine imaging characteristics of turntable and 'speakers. The Celestion's refinement managed to keep a grip on the turntable and cartridge, which can sound a little strident in some

systems.

Trying something with a little more weight had me yearning for a larger 'speaker. With June Tabor's 'Freedom and rain', one was left feeling that, despite the system's ability to get the foot tapping with decent pace, there was a lack of body to the sound. Rather than the bass leading the tracks it took something of a backstage position. It did make me wonder if a larger cabinet such as the JPW P1 would have been a better choice. Having said that, the bass was tight and well integrated with the mid range. Vocals were well projected, and with any female vocalist one appreciated the refined

treble, which has to be one of the finest points of the 'speaker, as it doesn't draw attention to itself-often the Achilles heel of cheap compact speakers.

The NAD ensured that there was always plenty of power to enable the system to comfortably reach high levels which, in

some ways, made up for the lack of solidity, although this wouldn't be much consolation to those restricted to listening at moderate volumes.

Raising the tempo somewhat, to Jason Rebello, provided an opportunity for the system to really shine. Whilst it had the ability to involve the listener with an incisive 'out of the box' sound, technical details (which can spoil a good system no matter how involving) weren't left in the dark. Despite some tracks being rather complicated, the system made a fine stab at separating all the instruments, and giving each its own space. Having said that, don't expect pinpoint accuracy with musical images. That's the preserve of costlier stuff.

#### CONCLUSION

At the price, this system offers a good choice for those with only a small room to fill and/or musical tastes that don't require trouser-flapping bass. Yet this is by no means the definitive vinyl system at this price and I'd certainly consider listening to the NAD and Pro-ject with a selection of 'speakers, and maybe even save up a little for something more satisfying in the longer run.

PRO-JECT 2 & ORTOFON MC TURBO	€249.95	
NAD 304	£229.95	
CELESTION 3MK2	£129.00	
CUSTOM DESIGN STANDS	£59.95	
5M ROTEL SUPRA 2.5		

**IXOS 104 INTERCONNECT** 

# SYSTEM 4

Simon Cooke combines the smoothness of a Yamaha CD player, the light and dynamic presentation of a Rotel amplifier and the room filling sound of Mission's 760i SEs for his £700 budget.



systems test

y £700 CD system is fronted by the newly-launched little brother to the CD-X 870 CD player (which came first in our November group test), the CD-X 570. It's a competent, solidly-built and well-specified CD player priced at just £240 with all the functions that you'd expect from a standard model. These include remote control, skip, memory and random play, as well as a couple of less common features, such as readout dimmer, output volume control (make sure that this is set to maximum for the best performance) and peak search. The latter repeats the section of a CD containing the highest signal level - useful when recording onto tape. In fact, the only thing missing is the flip-over fascia panel section which its bigger brother sports, so it doesn't look as sophisticated as the '870, but that's not really important.

The amplifier I selected is the latest from Rotel, the line-level

RA935BX, which gives an impressive performance for just £199. The fascia bears a central volume control, two knobs for source and record select, and a 'speaker select button, so it's quite uncluttered There are inputs on the back for CD, tuner, aux.

and two tape loops, as well as two sets of speaker binding posts. Of these inputs, only those for CD are gold plated.

The RA935BX continues Rotel's tradition of simple, uncluttered fascia design, and also provides the 'Rotel sound', which many of you will be familiar with from your own first systems. It's a light, yet dynamic sound, often a trifle thin at the top. This last blemish I have tried to tame with the fullish, mildly bloated but smooth sound of the Yamaha CD player. Another palliative would have been the NAD 304 which Dominic Todd used, but that sounded too full for my taste when paired with the Yamaha, even if the treble was softened. However, I would concede that some people may prefer such a system to the one I eventually settled on. I did successfully tailor the sound of the NAD set up to my taste by using the £120 QED Digit, but that left no money for cables and stands, so I used the Rotel.

For loudspeakers, I was going to use the £80 Richard Allan Minettes, as they impressed me so much when I heard them last summer. At the last moment, however, the Mission 760iSEs came in and, although almost twice the price, they were exactly what was needed to lift the sound of the system, since they are very 'out of the box' 'speakers.

The Missions are a two-way, frontported design, retailing at  $\pounds$  150.

For stands and interconnects, I used a pair of Target 'speaker stands, and QED Incon and 79 Strand as interconnect and 'speaker cabling, the latter trimming the last remnants of 'sharpness' from the system. This is something I would not normally do, as I like a brighter sound than most people, but here I was looking for the 'best' all-round system at the price, which could be recommended to everyone.

## SOUND QUALITY

Putting these three components together created an interesting system with a realistic out-of-box sound, which could easily fill the room with music.

The bass presence really came from the Yamaha, since it has quite a warm, mellifluous, sound. This, as I said earlier, was trimmed back by the Rotel amplifier and the lightness of the Missions, just enough to leave the musicality of the original player intact, but without the slight 'overhang' on the bass which the player innately suffered. The bass overall was capable of forming an impressive rhythmic too much, most of the time. Occasionally the performance slackened a little on fast strings, again on the Warren Zevon live CD 'Learning to flinch'. Sustained strings, such as violins, however, had a resolution of tone and level of detail that's difficult to beat at the price; the system gives quite a few more expensive selections a run for their money.

Staging and imaging were impressive at the price, with the Missions painting the broadest possible picture of the soundstage; it seemed to extend even beyond the confines of the room at times, with some very well recorded orchestral pieces.

Even though the soundstage was extensive, a firm grip was kept on the positioning of the performers; there was no trace of the fluidity or mobility which many systems suffer at the edges of a wide stage. All of the players, whether centrally placed or peripheral, had a

> concrete presence to them, lending a reality and believability to the performance. The stage even gave the impression of extending forwards at times, so that on live rock recordings the audience welled out of the stage,

engulfing the room in their exuberance, and adding to the atmosphere of the recording in a way that few systems endeavour to, welling out and involving the listener in the music.

### CONCLUSION

It's not so long since I was looking for a system. I had to keep pushing up my budget to find components that would keep me involved in my music when I changed from, for instance, Bach's thundering 'Toccata and Fugue' to the unaccompanied Breton harp of Alan Stivell. These items couldn't deliver the power to give a piece like Bach's 'Toccata' the 'oomph' it deserves, but that is more than made up for by the detail and punchiness of the performance, and the delicacy of the Breton harp.

Here's an all-round system with plenty of insight and involvement. It may not be perfect, perhaps, but it is a good deal more than your average seven-hundred quid's worth of kit.

YAMAHA CD-X 570	£240
ROTEL RA-935BX	£199
MISSION 760iSE	£149.90
TARGET AUDIO STANDS	£67.90

QED INCON AND 79 STRAND CABLES

 The midrange was clear and lucid, having both force and the ability to breathe.

> foundation on which to build the rest of the performance. It was quite fast, but not particularly deep. The TDL RTL 2s reviewed in our December issue would, perhaps, have given better bass quality, but they cost a hundred pounds more than the Missions, leaving nothing in the kitty for cabling. If you go for bass though, do try them.

> The midrange was clear and lucid, having both force and room to breathe, whilst not slamming out of the 'speakers' as though possessed, as so often happens with budget systems. The thundering drum line at the beginning of Runrig's live recording of 'Nightfall on Marsco/'S tu Mo leannan' having force enough to pin me to my seat without becoming flaccid, yet the haunting purity of Mouth Music's 'Fraoch a Ronaigh' came across with a gentle, icy purity. In fact, all of the CDs I tried were handled well, from solo harp or vocals to large orchestral or rock works. Even the steel guitar on Warren Zevon's recent live album was well handled in this area wowing and grinding impressively, right up there in the middle of the soundstage. My one quibble was that the system fell prey to the reticent vocals of some tracks, not quite resolving the words through the strings, but I've heard worse at more than twice the price, and this is some kind of peculiarity of the CD

The treble was a little soft, although the Rotel and Missions seemed to me to be a particularly good partnership, with the Missions softening the faint 'sting' of the Rotel's top end, while the Rotel just managed to prevent the tone softening

## close your eyes and see

2:42

## the Arcam Delta system

International Sectors

Close your eyes and see Arcam's Delta system of state-of-the-art hi-fi components.

Ignore the fact that the Delta 290 is our finest integrated amplifier, the recipient of a coveted Design and Engineering Award from the world's preeminent consumer electronics show, the Chicago CES. Don't be swayed just because the UK hi-fi press agree, giving it "a compelling and enthusiastic Recommendation" <sup>(i)</sup> and describing it as "an amplifier with real clout, able to deal with virtually any level of musical complexity". <sup>(i)</sup>

Next cast a jaundiced eye on the Delta 280 tuner. Again, disregard the pleasing aesthetics and the convenience of remote control<sup>\*</sup>. Don't even be led by reviews revering its sound as "lucid", "warm" and "attractively open". <sup>(3)</sup>

Then, visit your scepticism on the Delta 270 CD player. "Solidly built", it "strikes a balance between smoothness and punch" to gain a class leading, 5 star recommendation. If that's not enough, take a sideways look at our remarkable two-box CD player, the Delta 250 CD transport and Black Box 50 DAC. "To justify their significant cost, two-box systems really have to offer that little bit extra in terms of sound quality; but Arcam's combination does just that - and more". <sup>(6)</sup>

Next, move on to the Delta 100 cassette deck. Try to dismiss once again its 1992 Chicago CES award and the reviewer who gushed, "In the beginning, I called for a round of applause for Arcam's bravery in producing a British-made cassette deck. At the end, 1'm asking for a standing ovation".<sup>(6)</sup>

Finally, muster up your best disinterest for the "extraordinarily well engineered" 7 Delta 2 loudspeakers, "a firm, positive sounding design with bold bass and mid and a firm grip on the musical architecture". <sup>(9)</sup>

In fact, ignore everything anyone else tells you. Ignore even what your eyes tell you is true. Just let your ears decide.

Just listen. Close your eyes, open your mind, and see the light.

1. Hi-Fi Choice, March 1993. 2. Audiophile, February 1993. 3. Audiophile, April 1993. 4. What Hi-Fi? Awards issue 1993. 5. What Hi-Fi?, November 1993. 6. Hi-Fi World, April 1992. 7. What Hi-Fi? Awards, 1991. 8. Hi-Fi News Buyers Guide, November 1993. • CR200 System Remote Control handset to operate all the electronics listed here is an optional extra.



For your free copy of our brand-new 'Soundscapes' brochure with full details of the Arcam Delta range and the name of your nearest dealer, complete and return this coupon to us. In addition, if you would like independent reviews of any of our hi-fi equipment, please state which products and we'll be happy to send you the relevant material. Arcam, Pembroke Avenue, Waterbeach, Cambridge CB5 9PB. Or telephone: (0223) 440964 (24 hours) HFW 1-94

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# CONCLUSION

U sually, in our group tests, the conclusion is taken up with comparisons, criticisms, and a ranking of the components in order of performance in the test, as well as general comments and opinions about them.

That all goes out the window with this test, however, because these systems have not been compared with each other and, in fact, cannot be, since it is really matter of finance as to whether you go for the  $\pounds$ 700 or the  $\pounds$ 1500 system, and personal taste whether you like vinyl or CD as your source. After all, what's source for the goose is not always source for the gander.

the 402, one of the best tuners we've heard at any price, and it costs just  $\pounds 160!$ Another long term favourite is Aura's TU-50, priced at around  $\pounds 260$ , a unit that sounds open and clear across the upper midband, where so many Japanese tuners sound grey and grainy. Embarrassingly though, the NAD rather steals everyone's thunder when it comes to tuners.

Whichever tuner you choose, budget for a good aerial and installation charges as well. A good aerial won't make a silk purse out of a sow's ear, but it comes pretty close. It's almost not worth thinking about a tuner unless you splash out on a decent aerial to complement it, for the

aerial is the basic source, much like a pickup cartridge in a turntable. Do aerials have their own particular sound? Naim say they do!

In digital tape, we haven't come across many outstanding machines, but the Pioneer D-500 DAT recorder at £600 is a very smooth-sounding player which would be a good choice, if you want

a digital tape source.

On the other hand, of course, you may not want another source, but you might want to go for the best sound at a higher price. So what recommendations can we make for upgrades to these systems?

Firstly, for the CD systems, an outboard DAC would be the first upgrade to consider, assuming that the rest of the system is balanced. The  $\pounds$ 700 system could benefit from the QED Digit used in the  $\pounds$ 1500 system, or perhaps a

The more expensive DACs listed above would all be good upgrades for the  $\pounds 1500$  system, as would DPA's Bigger Bit at  $\pounds 650$  or the Pink Triangle Ordinal at  $\pounds 695$ .

With the two vinyl systems, the cartridges would most probably be the best place to upgrade, the £700 system should benefit from the Goldring 1022GX at £80, as used in the £1500 system, rather than the Ortofon provided, if finances will permit. Upgrading the cartridge on the £1500 system to the excellent Goldring 1042 at £100 would make sense. Further up the scale, the Shure VST-V at £150 is one of the finest moving magnets around.

If you want to go for a Moving Coil cartridge, the amplifier will need upgrading, for which the Audiolab 8000A would be suitable at  $\pounds$ 430. The  $\pounds$ 100 Ortofon MC15 cartridge springs to mind as a good first move into Moving Coil cartridges. If you feel like a better amplifier, but want to stay with Moving Magnet cartridges, the Sugden A48B is also worth considering at  $\pounds$ 460.

Either of the amplifiers listed above are possible upgrades to the amplifiers we used. The amplifiers from the  $\pounds 1500$ systems are also worth considering as upgrades to those used in the  $\pounds 700$ systems. In addition, the loudspeakers could be used to upgrade the cheaper set ups in the same manner. In fact, the whole point of this group test, as I've said before, is to present four preferred selections offering the best sound for the money. If you want to go for one of them, but don't quite like the sound when you audition it, you should try interchanging with the components used in another system.

Basically, all of the components we used are better than average in our

opinion and deserve general recommendation. When it comes down to it, it is you who has the final choice of what you buy, so don't be afraid to 'mix and match' the components to suit yourself. The most important thing to remember about



more expensive DAC. Select Systems' Dacula at £376, DPA's Little Bit II at £450, or the £500 Crystal EMF would all be worth considering for this system, preferably as a precursor to upgrading the rest of the items, or you won't be making the most of them. buying a system is that it is your hardearned cash you're spending, so don't just take our word for it, but go out and audition all the various components you can, until you have built up a system that suits you, and above all, enjoy yourself. Have a happy Christmas, too



But enough of the bad puns, already! We've all enjoyed reviewing components throughout the year, as well as putting together our favourite systems for this issue, but there's still a lot of ground we haven't covered with them. After all, nobody has tried tuners, cassette decks, DAT, DCC, or anything like that with their systems here, since the brief was for the best sound quality at the price, which means, generally, one source only.

So you're sitting there, reading this, and thinking "what if I want more than one source?,' aren't you?" Most people want a cassette deck, at least, if only to tape for in-car use, and many want a tuner as well, so we'll round off our test with a few recommendations of other sources which won't disgrace your system.

Think cassette, and the first name that'll probably spring to mind is 'Nakamichi'. It's a name synonymous with the best that Compact Cassette can offer, and their DR2 deck, at £500, will make the most of any of the systems here, whilst the DR3 at £300 would be a better partner for either of the £700 systems.

For tuner fans, there's also a choice of models. The Naim NAT 03 at  $\pounds$ 500 is worth considering if you're going for a  $\pounds$ 1500 system. For the  $\pounds$ 700 systems, there is only one tuner to recommend, and that's the latest model from NAD,

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# COPPING AN EARFUL



## Noel Keywood pins back his ears for Tim de Paravicini's EAR 834P disc pre-amp.

I hadn't encountered before.

And so it continues; Tim relies on his transformers, plus an intimate knowledge of audio

engineering, to come up with products that, generally, are unusual, but also very well engineered. The 834P falls into that mould with consummate ease. How many valve phono preamps are there in the world, complete with custom designed MC input transformers?

The benefits of experience show through in build quality, ergonomics and sheer practicality. 834P is a strong black box, made from mild steel, as it has to be for hum screening purposes. It has a rotary on/off switch and a gain control on a thick alloy front panel. The rear panel carries an IEC mains input socket, phono inputs and outputs, a fuse holder and an earth terminal. There's also a small push-button

There was extra weight and slam real heft in fact as the drum riff nearly exploded out of the speakers, right to left.

> to change from MC to MM. The gain control on our sample was a hurried addition and it was of too low a value, reducing maximum output and, therefore, the overload ceiling. I wired it out and all observations refer to the 834P sans this output level control. A properly sorted level control will be available for an extra  $\pounds 20$  on the production version. The cathode follower output line driver used is best loaded by around  $47k\Omega$  minimum.

Switching on, there was no thump with volume up; music just fades in gently. That's valves. Same at switch off: the music just slowly fades out. The 834P is incredibly 'civilised' in this manner. Switched to moving magnet and fed by a Goldring 1042 there was no hum and hiss was inaudible, except with an ear pressed against the loudspeaker. The 834P is extremely quiet.

I wasn't surprised by its sound - here's a disc preamp with all the liquidity, lack of hardness and graininess that you can expect from valves. Here's a big, clear open sound, full of life and vibrancy. Where I had earlier clenched my teeth at the glassy hardness of a solid state 'audiophile' preamp (not worth reviewing I'm afraid to say), playing some tough cuts, bright in themselves, like John Fogerty's 'Centrefield' and Grace Jones 'Warm Leatherette', the 834P delivered with smoothness and warmth, but not dullness. The slight bass lift - admitted by Tim to be a deliberate hint of subjective tinkering made itself known in Sly Dunbar's panpotted drumming on the track 'Bullshit', for example. There was extra weight and slam - real heft in fact as the drum riff nearly exploded out of the speakers, right to left.

The 834P underlined the contribution of these rhythm masters (i.e. Shakespeare and Dunbar). But it didn't bring Jones forward in the mix, where she is in any case quite a way back, nor did it draw attention to the hardness in the recording, a feature solid state disc stages sometimes emphasise to the point of pain. When I cranked the Garrard 401 up to 45rpm,

just to try out Carol Kenyon's delicious 'Dance with Me', the metronomic bass beat had seismic depth and power to it; the 834P can at times really flex its muscles, shaking room and 'speakers.

Much the same generally large and fullsome balance came over in more natural mixes, notably on the new Lemonheads album, 'Come on Feel the Lemonheads' where the 834P had Evan Dando large and real, centre stage at the end of 'The Jello Fund', his guitar sounding rounded yet clean, full and rich, with no hint of edgy brightness. The new Texas album, 'Ricks Road', also sounded fulsome and warm, yet clear and fluid in its balance, with Sharleen Spiteri right out on her own, singing clearly whilst playing guitar.

ell of course, it had to have valves in it, and it had to be a bit radical. Tim de Paravicini has just produced the much threatened 834P disc preamplifier stage, capable of working with moving magnet or moving coil cartridges. Designed primarily to complement the EAR834 valve amplifier, it can also be used with any other amplifier. And it's different.

Not only does the 834P employ valves for good sound quality, it also uses input transformers for moving coil cartridges to give, potentially, less hiss than is possible by any other method. In most preamps, the MM/MC switch controls a ×10 amplifying stage; in this one it merely

switches in the transformers one per channel. They're not the sort you usually see. Tim prides himself on being able to design and hand wind (for prototyping) any transformer going, and to make it perform better than any other as well. His MC transformers in 834P take the form of bright metal cylinders, which nestle up close to the input sockets.

The cases are made from Mu-metal, for screening and flux concentration. With generous cores and cans, these items are relatively large, considering they handle minute signals; no cost cutting here.

I first encountered Tim, indirectly, when back in 1976 I was asked by Hi-Fi News to test "a valve amplifier". The then editor, John Atkinson (now editor of Stereophile in the U.S.A.) admitted that he was astonished to be presented with a valve amplifier for review, believing they had had their day. Having assiduously worked my way through the Mullard book of valve amplifiers in my teens, I was less astonished. However, what did surpnse me was the performance of that amplifier - a PL509. It had transformers in it of an ability

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analogue replay Project Michell Townsend Wilson Benesch Basis Kuzma SME Sumiko Lyra Transfiguration

digital replay TEAC Aura Micromega Counterpoint Mark Levinson Accuphase

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> *audio-visual* Harman Lexicon JBL

Normally, I use a Deltec phono stage. It's wonderfully pure in its sound, enormously detailed and analytical, yet not hard or remorseless. The Michell Iso is another - the only other - great solid-state phono stage, with a holographic sound. Tim's 834P matches the Michell Iso and Deltec disc preamplifiers in terms of sheer ability, but it offers a guite different sound. It is less coolly analytical, but very insightful all the same. It has a fuller sound, and of course one with tremendous depth to it, as only valves can manage. I hardly feel the need to say it is one of the best phono stages you can buy, but it is. Supremely quiet, more civilised to use than solid-state and with the most wonderfully full yet relaxing sound, here's an exceptional phono stage. Just don't expect to be able to find it available all over Britain. True hi-fi does still exist, but it's difficult to obtain. 834P is a little piece of audio wonder.

#### **Dominic Says**

I have been using the fantastic slate plinthed Garrard 401, SME 401 Celebration arm and Ortofon MC2000 cartridge over the last few weeks since the Penta hi-fi show, where it was first demonstrated. At the show, a hassled looking Tim de Paravicini dropped off 834P for us to have a play with, and it is this head amp that I've been using with the Garrard. As Noel suggests, in theory, step up transformers used to provide the extra gain necessary for MC should result in virtually no increase in noise. So the 834P should have an ultra quiet MC stage - and It does! If the volume is turned up to a reasonably high listening level and the stylus lifted from the groove, the hiss/hum is inaudible a few inches back from the loudspeaker cones, and this was using sensitive loudspeakers (90dB) which tend to highlight noise.

With the Garrard/SME/Ortofon set-up, EAR834P head amp, Audio Innovations valve pre/power amplifiers and stripped down Quad ESL63s the sound was nothing short of breathtaking. Images were conjured up within a massive soundstage with such solidity and depth that you can just drift into the audience and spend hours enjoying the performance. The 834P has a lovely sweet, musical and spacious sound which makes it involving to listen to; even after hours of listening it doesn't

#### become tiring.

The enhanced bass, although not strictly accurate, does add some speed and slam. With the B-52's Wild Planet album it adds real punch to the sound and the tracks bound along energetically, Kate Pierson's voice full of character and power. When the cymbals were hit hard the sound remained clear and free from grittiness.

At £290 you can't fault the 834P. The quality of engineering and the lucid, musicality of this head amp stand out above the crowd. I rely mainly on CD as a source, but the last few weeks I have tom furiously through my own, fairly limited, LP collection and numerous albums borrowed from friends; I must admit that I haven't enjoyed music quite so much for a long time, and the 834P enhanced my pleasure

#### EAR 834P £290/£310 with volume control. Esoteric Audio Research, Unit 11, Stukeley Meadows Ind. Est. Huntingdon, Cambs. PE18 6ED Tel: 0480 45379

## MEASURED PERFORMANCE

An unusual and fascinating feature of this preamplifier, attributable to the use of input transformers for moving coil, is the low hiss on this input. Normally, where an additional x10 preamp stage is used, switching in MC raises hiss considerably. With the 834P, hiss increases by just 1dB, amounting to  $0.06\mu V$  of equivalent input noise (CCIR). That's about as low as it is possible to go with MC - and certainly one of the lowest figures I have measured, making the 834P very quiet.

The use of valves, especially in a confined space, threaten hum. There was a little, measuring 0.24mV equivalent input noise. The impact of this can only be assessed subjectively, because comprising mainly 50Hz, our analyser showed, the ear is less sensitive to it than hiss. It's a low level of hum, but the question has to be: is it low enough? It's obvious from the internal construction, with a tin plated mild steel screen, Mu-metal shrouded input transformers and a screened toroidal mains transformer, that every precaution possible . has been employed to combat this potential difficulty. Listening tests showed that hum was effectively inaudible however. Hiss was also inaudible on both MM and MC.

Frequency response has been curtailed at low frequencies by a warp filter, albeit with a low turnover frequency of 20Hz (-IdB). The filter used to achieve this affects MM and MC equally, also adding a bit of bass lift around 60Hz, which will usefully add some speed and bounce to the sound. The RIAA equalisation characteristic is followed perfectly (MC and MM), to within less than 0.1dB error, except above 20kHz on MC, where output rises to hit +1dB at 60kHz and +5dB at 124kHz, when the transformers are fed from a low impedance source that accurately mimics an MC cartridge. This rise isn't a rise, so much as a lack of fall (-6dB/octave, ideally). Being out of the audio band it should not affect sound quality and certainly, in use, the 834P showed no signs of brightness or glassiness.

Distortion was low at around 0.04%, except as full output was approached. Being second harmonic only, as the distortion analysis shows, it was subjectively innocuous, not being of a nature to add roughness or coarseness to the sound.

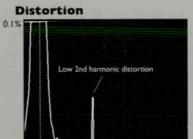
Valves can swing a lot of volts, so overload margin should not be a problem. I measured high overload margins of 80mV on moving magnet (MM) and 8mV on moving coil (MC). However, the 834P should see a  $47k\Omega$  input impedance or more, which most - but not all - amplifiers have. This preamp was designed for the EAR834 integrated valve amplifier of course, not your run-of-the-mill solid-state black box. Its output level is attenuated by a low input impedance, reducing the overload margin.

This is a quiet and cleverly engineered valve phono preamplifier. It measures very well in all areas and offers a radically different way of engineering a phono head amp. **NK** 

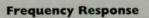
MOVING MAGNET	
Frequency response	18Hz-83kH
Separation	460
Noise	-760
Distortion	0.03
Sensitivity	1.7m
Overload	80m

#### MOVING COIL

Frequency response	18Hz-60kHz
Separation	44dB
Noise	-75dB
Distortion	0.04%
Sensitivity	0.17mV
Overload	8mV

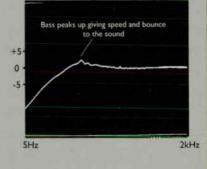


7kHz



Unter

800Hz



Ηz JB

ΙB

×





## GERMANIUM

I have not been around long enough to understand all this single-ended valve working, with H.T. lines and transformers and things. All I know is transistors, and from what I can make out, singleended means a commonemitter Class-A type amplifier. In most text books it strongly advises against using these for power amplifying because they are inefficient, but we're talking audio here so that doesn't count.

About a year ago I designed, and have since been refining, a Class-A amplifier. It is based on the AD149 PNP germanium output transistor. Although germanium is noisy and can't take heat, it is the superior semi-conductor when it comes to conducting (higher mobility, smaller band-gap, lower impurities required to dope into P-type). These are getting rarer of course so they might appeal to those who like hunting for old Russian valves. I hope that this shows it is possible to pick transistors with

# World

character! Just as with 300Bs, EL34s etc. The whole amplifier uses just 4 transistors per channel, with only 3 capacitors in the signal path, no filtering or anything like that.

Unfortunately, the IOW per channel that it produces requires 75W of continuous power, but it does keep the room nice and warm. Talking of warmth, that's how it sounds, which seems to be the predominant term when it comes to you lot talking about valves. At the same time it also has punch and drive, possibly brought out by the sealed box 'speakers it drives (also my own design, but I won't go into that now), and sweet, clear high frequency reproduction. It is still a little hummy, and the hiss is nearly audible, but that will take money to fix (to build a better PSU).

I have noticed the occasional mention of amplifiers like these (e.g. the Yoshino tranny version and one of your reader's MOSFET amps) in Hi-Fi World but you don't say much about them.

## WIN HI-FI WORLD SILVER PLATED COPPER

## INTERCONNECTION CABLES

#### (I metre pair)

The writer of the most interesting or funniest letter will receive a free set of Hi-Fi World's own silver plated copper interconnect cables, worth £69.95.



One thing about the transistor amplifiers is they are cheap. No transformers or weird power supplies are required. Trannies cost pence each, you could build a complete amplifier like mine for under £100, the PSU and heat-sinks being the most expensive parts.

If you are wondering why I emphasise the cost, I am a poor student at Sheffield University doing my final year in Engineering IT, so all of my work is under fairly tight constraints. I hope to be doing some research into the psychoacoustic affect of distortion in amplifiers, which seems to be a very grey area if a Yoshino sounds wonderful with its' enormous distortions, yet a

## Letter of

Hallam

The pleasure I usually take in reading your magazine was somewhat marred by 'Kaleidoscope' in September, in which Noel Keywood wrote clearly, but ill-informedly upon our much-vaunted and muchdecried educational system.

It is true that the biasing of Science and Technology Curricula bear little obvious relationship to the 'real' world - nevertheless we do emphatically NOT spend "hours messing about with ... potassium and sodium". If seen at all, save in a 3minute O.U. Video, then only in minute quantities, with screens, goggles etc. and in demonstration by a (foolhardy) staff member. Nor do we have time, materials or inclination to teach the skills of cabinet making (except where an individual might warrant it).

The ruling factors at the root of all of this are:

a) the National Curriculum, its associated texts, tests, gradings, Records of

Send your letters to Hi-Fi World Letter Page,

b) the devolved 'Local (Financial) Management of

Achievement etc. and

Schools'. It can be seen that these are each the remit of the "Department for (?) Education", i.e. Central Government.

When G.C.S.E. (not 'O' levels) were introduced in 1988, the additional funding available from Whitehall amounted to £6 per child not per term, not per year, just once! Under L.M.S. in 1991, the material budget per child per year in technology was about 63p! Including the costs of textbooks, copying, stationery etc. many schools had nothing left with which to maintain existing facilities, let alone buy electronic equipment.

The Governmentinspired 'A' level syllabi largely ignore component electronics - only stating the theoretical base of ONE transistor type I'll leave it to you to infer which and



cheapy tranny amp has a hundred times less distortion and sounds awful. I do listen to a lot of music, as this is the main aim of all of this, and Hi-Fi World is good in this respect by not just concentrating on what reproduces the sounds, but what also produces the sounds. I listen to a lot of early synthesizer music (Tangerine Dream, Kraftwerk, early Vangelis and The Art of Noise (not so early), definitely not J-M Jarre), as well as a little classical and Judie Tzuke who has a wonderfully clear voice and some groovy tunes.

## Adam Chambers Sheffield.

Yes, thermionic single-ended is 'common-emitter, Class-A'

in solid state terms, but with transformers, as you note. Solid state single-ended is a rarity, but your arguments for it look interesting. Tim de Paravicini insists solid-state Yoshino sounds as good as the valve version and has always looked a bit saddened by the world's lack of interest in this proposition. The amplifier languishes

somewhere in Para headquarters, gathering dust amongst the car tyres, blown loudspeaker cones and 1960s Studer open reel studio recorders that populate its corners. It was always Tim's contention that solid state is no different from valves, but I have to say that I believe there is a fundamental difference between solid-state and thermionic amplification.

I was fascinated to read your justification for using germanium rather than 'superior' silicon. But all those horrid features of solid state make my flesh creep: I mean, who wants something that suffers variable band gap, questionable mobility, impurities and comprises rectifying non-linear junctions that, Scroggie said, don't even obey Ohms Law. How dare they? Give me a nice vacuum with a swarm of warm lectrons flying through it any day!

Single-ended working does for some reason appear to give a warm, smooth yet deeply insightful sound, even though, when engineered properly, it fulfils basic hi-fi performance criteria.

Finally, the psychoacoustic affect of distortion in amplifiers is barely understood at all. Tests have been carried out to determine the threshold of perception and subjective impact of second, third and higher order distortions, as well as intermodulation distortion. but whilst the results are undoubtedly valid, the tests may not represent common everyday conditions. Many audio engineers of experience suspect it is the modulation pattern of various distortions that we are most sensitive to. rather than harmonics in

## the Month

under the present fluid nature of the very organisation of education, who can blame the schools or staff for going along?

Governments stress the need for "Keeping abreast with things" but where's the time (and money) to come from? There is no technology in-service training of any worth, at least in this part of the world!

Such facilities as there are, are unevenly spread one local secondary school can afford to keep up one CRO (Cathode Ray Oscilloscope), by buying 3 in auction - with 1100 or so pupils! Another, with 226, has 6, and, yes, both have physics 6th form studies. Access to computers? At home, yes. At school - one between 2 (4) (8) for 20 mins or so per week.

Given the above, it is astonishing that any worthwhile scientific or engineering research takes place here at all. On the other hand, viewing

64, Castellain Road, Maida Vale, London W9 IEX.

education as an end in itself and not "just" a means to enter industry, the time Mr Keywood laments is not wasted - ever. Michael Dent Cottingham,

East Yorks.

Sadly, you confirm that electronics is still accorded little importance in the modern school curriculum, as it was twenty years ago. You appear to blame the Government for this, at least at A level. But whoever is to blame, the point I was trying to make was that the absence of this subject from modern curricula should not go unchallenged when it plays such a crucial role in our everyday lives.

CR0s are unnecessary, although they help. A blackboard and a piece of chalk are sufficient, when teaching electronics, as they are with mathematics.

Your most contentious comment comes at the end: should education be viewed as an end in itself or merely

training for ā job (and, by implication, an otherwise simple or brutish outlook?). When the consequences of unemployment are so great and damaging, and when a civilised society so needs to possess wealth generation in order to provide the sort of services commonly expected - including education of course - can vocational education be ignored or sidelined in favour of "higher" considerations?

The reason I mentioned the importance of teaching at least basic electrical theory in schools is because it opens up the path to a wide range of jobs later on, for example electrical installation in the building industry, car electronics, service and repair of electrical goods, industrial électronic design, computers; the list is endless - and growing. Surely, we should be attempting to teach young people in Britain something about this subject? NK

World Radio History

letters

steady state form. There's little to suggest that harmonic distortion in itself - especially third harmonic - adds warmth. The reason a single-ended

amplifier can sound "warm" (not all do I have been told), when it measures normally, and when it is operated linearly so only occasional musical peaks suffer distortion, is a mystery many have sought to explain in our letters pages over the last few months. If we knew, there'd be no mystery in hi-fi any more - but that's a long way off I suspect. **NK** 

## EFFICIENCY

A radical proposal for speakers approaching 100% efficiency (!) was described briefly in a recent issue of 'New Scientist' (21st August 1993).

The details they published are rather sketchy but at least give the flavour of the idea which is for a fairly large panel speaker - not a box. According to N.S., scientists from the MOD's Defense Research Agency (DRA) some years ago patented a novel aluminium composite material for use in helicopter sound deadening panels. They also found that when it is electro-mechanically driven the composite behaves as a sound producer. They have demonstrated a metresquare panel of the composite with a mechanical coil attached to the back driven by a power amp (how was not specified by New Scientist). The panel material consists of thin sheets of aluminium metal (0.06mm) that sandwich a 10mm thick air-filled honeycomb of an aluminium alloy. The stuff is expensive of course but volume production ought to produce considerable economies. The DRA's material offers the possibility of such a quantum leap in efficiency that it just cries out for sound quality evaluation. How about it Hi-Fi World ?

Prof Guy Woolley Thurgarton, Notts.

I 'phoned the Defence

Research Agency about this speaker and spoke to Malcolm Nash, the man concerned. He confirmed all their claims, but admitted that although their metre square panel went loud, they had not measured its acoustic output, nor any electrical input, so the high efficiencies claimed were unsubstantiated. I asked if they had a sound pressure level meter, to which the reply was "no", then he told me it had produced 139dB in a test for a fog horn application. How they knew this without a meter is difficult to understand.

Sceptical about these claims, I phoned the senior engineer of one of Britain's most famous loudspeaker companies. He told me he thought it impossible to approach such a performance from a panel, using even the most advanced modern materials. The unit is being made available for proper acoustic tests though, so hopefully we'll know more soon. NK

#### **IN A SPIN**

It has been brought, somewhat belatedly, to my attention that your August issue contained a letter from Paul Zahl of Brussels seeking information on the CJ55 turntable we used to produce. If M. Zahl would care to contact me I will be happy to supply all the information he requires, together with a set of instructions for the very simple setting up procedure which, once accomplished renders further "tweaks" neither necessary nor desirable.

I would, however, be intrigued to learn on what foundations E.B. bases his statement (in his reply to M. Zahl), that I became somewhat disenchanted with the hi-fi business. Clearly there have always been areas of contention and disagreement on certain matters, but I have endeavoured to retain an open mind, although I readily admit to having grave reservations about the magical properties some products claim to possess. I don't recall being particularly vociferous (at least in public) about any of the various controversies which

occasionally rage, and despite the many sillinesses (or perhaps because of them!) there is still a lot of fun to be had.

As one who is rapidly approaching geriatric status in the hi-fi business, I still retain a genuine enthusiasm for the trade, and derive much pleasure and satisfaction from the work I do in conjunction with Castle Acoustics and others. Over the years I have made countless numbers of real friends both at home and abroad through our involvement in the world of hifi. This industry, in my experience is full of kind, helpful, generous people, and I have much cause to be grateful.

If that is disenchantment, so be it!

Colin Walker Frodsham, Cheshire.

### COMPLACENT

I really cannot allow the sheer mind-numbing complacency of the Philips/Decca responses to Amon Ben-Jacobs' letter on CD sound quality to go unchallenged.

I unreservedly accept that the technology of the 16 Bit CD itself is capable of a sound quality that is really beyond serious criticism. Most CD collectors will have discs that prove this to be true, and a small select group of companies, like BIS, habitually achieve first class results - most do not.

I just have to agree with Mr Ben-Jacob that many CD's (full price) give a sound that contains ranging degrees of distortion and it serves no useful purpose to deny faults behind a smokescreen of technological jargon. The criticism comes, not only from private collections, but from professional reviews in the music press. (Less than 10% of the discs recommended in the 'Good CD Guide' have full marks for sound quality).

I have only two Philips CD's 'Concerti Per Oboe' on 420-189-2 recorded in 1986; and 'Vivaldi Guitar Concertos' on 434-082-2 recorded in 1991. To my ear the earlier recording is by far the better of the two; but neither of these CD's comes anywhere near the open-window clarity of BIS-CD-288 recording of the Vanhal 'Double Bassoon Concerto', for very similar forces and therefore musically comparable - and recorded back in 1985!!

I have only one Decca CD - Nicola Hall's astonishing 'Virtuoso Transcriptions' for solo guitar on 430-839-2 on which the sound quality is close to BIS standard - what a pity about the noisy edits, and the traffic noise in the background!!

My experiences with BIS CD's confirms that the medium itself is not to blame for the mediocre results; so, it seems to me that we are driven to the conclusion that, all too often, too little care is taken at some stage/stages in the CD production process - from studio microphone to finished product. If the record companies took a little more care then, I believe, it would not be possible, with domestic quality hardware, to detect sound quality variations between discs!!

We are paying a very high price for CD's and I feel that we have a right to expect first class products without any blemish.

We need corrective action, not denials of the facts, like a lot of politicians with their heads in the sand.

For those who enjoy music of the Mozartian flavour I strongly recommend BIS-CD-288 - partly for the super sound quality - but also for the 'conversation' that is conducted between the two solo bassoons, left and right, exactly as illustrated in the photo on the back of the booklet - as an aid in speaker positioning in a good stereo system. It's a real cracker of a CD and sets a standard that must be the envy of many record companies - if, for once, they are prepared to be objectively honest.

S.C.R. (Rod) Smyth (Address withheld).

saw a lovely little comment the other day that the "rounded valve sound is most likely due to ... valve amplification tending to eliminate the higher frequency overtones normally present in speech and music". It was in the context of radio, but I suspect it was meant to embrace all "valve amplification". The writer was basing his views on the technology as it was thirty years ago, but that's not the way it is today. Many other reasons are put forward to explain the unexpected revival of valve amps, but few are very accurate. So what do valve amps have to offer, and what are their drawbacks?

The transistor made computers and, should I say, the modern world possible. It also made cheap, powerful amplifiers a reality. In light of this and the apparent impracticality of the valve, a lot of people understandably feel that blind nostalgia, or even plain ignorance are at play.

The writer I quoted thought that it was the inadequate frequency response of valves, their inability to reproduce really high audio frequencies, that caused people to like their sound. Fair enough. Old radios had audio amplifiers that didn't go too high, mainly because radio speakers of the day didn't either, nor did A.M. radio. But there's no intrinsic difficulty in getting a valve to reproduce right up to 20kHz, the upper frequency limit of the human ear. Had the writer enquired further the fact that modern valve amplifiers reach up to 30kHz or more might have changed his view.

Another hoary old reason for "the valve sound" comes from the music world where valve guitar amplifiers still reign supreme, purely because of their sound. Here, the reason valves sound the way they do is commonly put down to the presence of second harmonic distortion. This is an odd view, since the few guitar amps I've measured were stuffed with distortion (3% or so) - and not a lot was second harmonic. However,

it strikes me that since distortion analysers are complex, slow and difficult to use, and expensive, not so many people actually know this is the case, so it's a contention that tends to pass unchallenged. Which is of course convenient, when you are trying to argue a point. As a hi-fi reviewer though, I was long ago forced to buy a high speed distortion analyser and this has shown me that valves don't necessarily produce just second harmonic, transistors that do don't sound like valves and, in any case, that second



theory - for a valve power amplifier seems able to breathe life even into the product of a solid state recording chain, where the amount of signal processing is horrendous. Yet at the same time, even if the depth dimension they generate is artificial, their smoothness and lack of graininess is not.

What is certain is that there are no simple explanations. Modern valve amplifiers, providing they are well engineered, meet today's technical requirements for hi-fi reproduction. They easily

# Reflections from Noel Keywood kaleidoscope

harmonic (in large quantities of 10% or more) lightens timbre, it doesn't add warmth or smoothness.

There are other views, some less technical. Nostalgia is an oft quoted reason for people going "back to valves", in the same way they hanker after old blower Bentley's and a time, I suppose, when Britain's byways were quiet two-laners whose tranquillity was broken only by the screech of crows and the rasping croak of the odd pheasant. Nothing as horrible as motorways existed then; Britain managed to prosper without them. And valves were plenty good enough, thank you, to bring together the reasonably far flung reaches of the Empire. It sounds idyllic and there is an historical thread of interest to valves, but again that is not the reason for their reappearance.

That valves might do something transistors don't do is a more difficult idea to come to terms with, especially since there's little evidence to support such a contention. They seem archaic and, except in a few respects, inferior to transistors in all measurable ways. Valves like the EF86 can be very quiet, but the best FETs are quieter. Big valves can handle lots of power, up to 100watts apiece, but paralleled transistors strapped to heat sinks take up less room and can handle more. Valves are, of course, cumbersome, fragile and difficult to support in their power requirements, needing heater and H.T. lines, one drawing heavy current, the other demanding high voltage - double trouble.

So what's the truth? Why do some people like valves so much? What is it they offer? Quite simply, they do have a different sound to transistors, one that is usually acknowledged to be easier on the ear, less hard and fatiguing, sweeter and more open and especially - considerably less flat and paperv in sound stage construction. They put a sense of depth into music, a curious effect that is difficult to explain. Explanations are on offer of course, some quite plausible, but usually on investigation they are inadequate. It does seem possible that valves actually enhance what we hear - that certainly is an attractive

reproduce all audio frequencies, from the lowest to the highest - and distortion can be reduced to a very low level of around 0.02%. So technical performance is not a limitation.

Knowing how subtle yet complex phenomena affect our perceptions, I do suspect that some interesting processes are responsible for the sound quality of valve amplifiers. Chessky have demonstrated on a CD how stereo can be given height information, depth and apparent extension beyond the lateral boundaries of the loudspeakers. Now Sensaura breathtakingly extends the trick. Is it that valve amplifiers manage to affect reproduction in the same manner, perhaps by introducing interchannel phase changes? We don't know at present. It is the case, however, that valve amplifiers offer an enormously pleasurable listening experience, one that offers an interesting alternative to the norm. No matter what the reasons are, if they improve our enjoyment of music, then that in itself is good enough

opinion

# SOUNDS DISCRETE

Dominic Todd listens to Rotel's new RCD 965 Discrete CD

player, latest guise of their popular RCD 965 player.

audiophiles on a tight budget by offering a machine with a specification that wouldn't disgrace rivals costing twice as much. Indeed, Rotel proudly boast that Micromega offer similar specifications on their equivalent machines. This is all very well, but if Rotel are to stand a chance of making up for lost time, then this player has to sound conclusively better than the already fine, standard 965.

As soon as I started to listen to the Discrete, memories of my own 865 came flooding back. Now whether this is a good thing or not depends hugely upon one's personal tastes in music and, indeed, hi-fi. The Irish harp on Danny Thompson's 'Fair Isle Friends' showed a characteristic rich texture that has been Rotel's trademark for some time now. Quiet solo



R otel have always had a good name for budget or mid priced CD players. The RCD 855 (at £249.95) was highly acclaimed in its day, even though it was part of a multi-bit battalion about to face a one-bit onslaught. Its own blood brother, the RCD 865, was one such machine and also proved immensely popular as one of the first bitstream players. I had one myself, which replaced a rather unloved Denon DCD920, and found it an easy-going partner for an otherwise vinyl dominated system.

Then came the new range of players' the nine series. Surprise, surprise, the RCD 965 won every award going even if its sibling, the RCD 955, was less well received. This is where the story becomes rather complicated. After a spell at the top the 965 began to lose its edge and Rotel had to do something. Various price rises were followed closely by price cuts. A bewildered public were then faced with the RCD 965 Limited Edition at £379.95. Strangely this didn't sound as good as the standard player once the players were on equal terms, i.e. using the same interconnects rather than the L.E. using £40 Monsters and standard 965 using 40p freebies. Not surprisingly the L.E lasted a matter of months and became a favourite amongst the discounters.

Now Rotel's back with another model, the RCD 965 Discrete. In terms of price, at £349.95, it falls neatly between the RCD 965 and RCD 965 Discrete Limited Edition (I think you've managed to collect all the go faster stripes there, Rotel). It's based on the standard 965, which means a Philips transport and SAA7323 PDM DAC. There's also the usual high standard of build quality and understated styling, although Rotel do spoil this with a rather tacky "Discrete" badge. The Discrete differs in offering a discrete output board, strapped to the inside rear panel of the machine. This replaces several cheap op-amps which aren't particularly well known for their noise and distortion free characteristics. The Rotel sets out to attract

performances also benefited from the Rotel's superior output stage. Although the standard 965 is quite a clear and clean sounding machine, one could hear an inky blackness surrounding individual performers. Unfortunately, a slight veiling of strings and high frequency brass, together with an average sound stage, led the performance to be rather too laid back and ultimately uninvolving. I put this down to a lack of articulation against speedier rivals, yet couldn't help admiring the creamy smooth way in which the music simply poured out of the speakers.

Wendy James' "Basement kiss" was perhaps a little unfair for the refined Rotel. Rotels tend to be set for a "classical" balance, and therefore playing Wendy James on one is a bit like taking a Roller rallying! Still, the Rotel put up a good show despite its obvious displeasure. Close microphone techniques were handled well, with the Discrete keeping a tight grip on the mid/upper range and sibilance rarely became a problem. However, there was a definite lack of

World Radio History

review

what can only be termed "grittiness". Not to be confused with "graininess", the Rotel was too polite with this type of music and lacked the sheer grunt needed to carry this particular song with conviction. This wasn't a surprise. What

did come as a surprise, though, was that fine detail from background percussion seemed to be masked and the bass didn't go as low as some competing players. No problems with depth or projection though. The Discrete is amongst the top players here.

"Nothing to do Blues" proved to be more the Rotel's style. The convincing piano sounded a touch blue itself, just as it should, and avoided the 'splashy' antics of competing Marantz players. Yet once again this was tempered by a lack of involvement culminating from the smothering of fine detail that ultimately lead the foot to start tapping and, if it's really good, the head to start nodding!

A lack of 'drive' tainted Suzanne Vega's 'Blood makes noise'. The Rotel's mellow tones had suited earlier more delicate tracks, but when it came to this particular one, which is supposed to sound as gruesome as the name implies, it couldn't quite hack it. Percussion which is meant to be grating was rounded off and the bass, whilst being well integrated, didn't take the lead like it should.

The 965 Discrete was at its best with light orchestral pieces, which were free from graininess often afflicted by the digital medium, and progressive folk in particular. I couldn't think of another

"I couldn't think of another player at the price which could make a better stab at Capercaillie's "Delirium" album."

> player at the price which could make a better stab at Capercaillie's "Delirium" album. Vocals were well separated from the rest of the mix and the Discrete made good use of the involving rhythm throughout the album. More to the point, one actually felt the player was at ease with the music.

> Rotel have got it right. The Discrete is a fine player in its own right, and expands the Rotel sound further. Unlike the 965 Limited Edition whose claim to a  $\pounds 50 \cdot \pounds 70$ price premium over the standard was rather dubious, the extra  $\pounds 50$  for the Discrete is money well spent. The best part of all is that Rotel offer a dealer-fit Discrete upgrade for only  $\pounds 59.95$  to owners of non-Discrete 965s. So if you've become attached to your standard 965 or

feel a bit cheesed off that a manufacturer has gone and upgraded your machine before you've even had it five minutes, then you can bring it up to present spec. It's good to see manufacturers offering decent after-sales service.

> However, the 965 Discrete isn't perfect. But then no C.D. player of this price can hope to be. Drawing the listener's attention away from possible flaws is the trick. Here the player is partly successful. With lighter classical pieces, folk and 'easy listening' (excuse the

term) music the Rotel is in its element. If it were a radio station it would be a cross between Radio 2 and Classic FM. Yet if your musical tastes are more Guns n' Roses than Gloria Hunniford you could find the Discrete a little lack-lustre and too refined. Still, it's a fine product and deserves an audition against such hopefuls as the Marantz CD52SEII ●

Rotel RCD 965 Discrete Gamepath Ltd 25 Heathfield Staceys Bushes Milton Keynes MK12 6HG Tel. 0908 317707



£349.95

#### **MEASURED PERFORMANCE**

The RCD965 Discrete is basically a standard '965 with a discrete analogue filter fitted, rather than an integrated circuit chip (IC). This should, in theory give a better quality sound. Rotel first delivered a tandard '965 which I measured along with a few other players. Fortunately, a second player arrived shortly after, the correct 'Discrete' model this time.

I measured both the standard and Discrete players, to reveal some interesting results. At high I vels the Discrete player had Iower distortion, but by -30dB distortion was double that of the standard player. At -60dB the figures were very similar, giving a dynamic range of 102.5dB for the discrete and only 0.5dB more for the other. What was interesting was that all through the distortion analysis at every level, and with both players, there was a strong non-harmonic distortion product at 7.35kHz

At -30dB distortion was a high 0.05%. The distortion plot clearly shows strong 2nd and 3rd harmonics which contribute most to this high figure, but higher up in frequency the distortion spread is mainly odd order. I would expect some sharpness to the sound and possibly a sting in the treble due to this distribution.

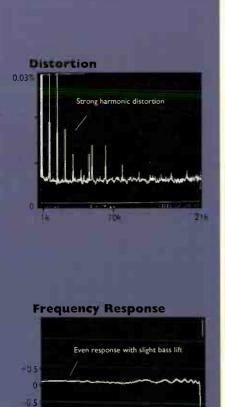
The frequency response shows the characteristic h.f. ripple of Philips' 7320

series of PDM Bitstream convertors. The QED Digit and Micromega Duo Pro both use DACs from this series to great effect, so with a discrete analogue filter the Rotel may be something special to listen to.

The Discrete player we measured had a slightly higher output than the standard version, so if you do an A/B comparison volume levels may have to be adjusted for valid comparisons. One area where the discrete measured very well was stereo separation. This was an average 98dB at 1kHz, but had not fallen at all by 20kHz, which suggests intelligent circuit layout. **DB** 

## TEST RESULTS

Frequency response Distortion %	4Hz-20.7kHz	
-6dB	0.004	0.003
-30dB	0.051	0.050
-60dB	0.78	0.74
-90	57.7	57.4
-90dB dithered	54.3	52.3
Separation dB	left	right
1kHz	98	98
20kHz	98	97
Noise		-97dB
with emphasis		-98.5dB
Dynamic range		102.5dB
Output		2.32∨



# SENSAURA.

Noel Keywood finds a train in his listening room, courtesy of Thorn EMI's Sensaura surround-sound recording.

S urround-sound is back. Don't groan at the back of the class! This time it's fiendishly clever and better still, it is free (we hope). Called Sensaura, the system has been developed by a company that I thought had long ago given up on hi-fi - E.M.L "Not so", I was told by Dr Alastair Sibbald, "the Central Research Laboratories (situated at

Hayes, Middlesex, where E.M.I. once had its LP pressing plants) employs 180 people on original research''. They've had a team of scientists working for years on Sensaura, headed by Dr Sibbald.

Yes, it should cost you nothing, because Sensaura is an ingenious and complex recording trick that relies on a comprehensive understanding of psychoacoustics to work properly. It processes position cues into a recording, in order to make the ear/brain hear sounds from all around the room. You don't have to go out and buy new hardware, since all the special information lies within the music; a conventional stereo system is fine.

Sensaura comes on CDs or cassettes (no special format needed either) and, providing the music biz doesn't decide to hike the price of Sensaura discs in the way that they've upped DCC tapes to £14.99, it should move into widespread use within a very short time.

> Unlike so many other developments in hi-fi, Sensaura looks both effective as a technology and fully acceptable in commercial terms. We've heard it on a demo disc and have interviewed E.M.I. at length about its background and its future. There's no doubt that Sensaura works well; it isn't just another nutty scheme founded on a set of misunderstandings, something that is common in hi-fi.

Sensaura requires investment by recording studios and this, I fear, may be used as an excuse to increase CD prices; we'll have to see. But its effect is so great that I really cannot see it becoming anything other than a success. I've personally heard just about every audio enhancement system invented over the last twenty years, including the best four-channel encoding systems and, whilst Sensaura isn't quite as powerful as full sound field encoding, neither is it so impractical or expensive for end users.

when her you can's

wine Cutter

22.1:53

# SENSATION

You don't even have to wait to hear it. E.M.I. told me that a new release from Frank Sinatra, entitled 'Duets' is ''lightly encoded". Dr Sibbald says "listen to the intro to track I I". In a long explanation of the complex way in which we positionlocate sounds, using time and amplitude differences, I was fascinated to be told that one of the earliest examples of this was, believe it or not, the use by Jimi Hendrix of 'flanging' to make his guitar take on weird effects. Whilst Electric Ladyland is heavily pan-potted and phased, to give the impression of movement, it is the previous album -Hendrix's last recording in Britain - that holds the best example of flanging used to make an image wander, Listen to 'Bold as Love' on the album Axis Bold as Love; headphones bring out the effect best. Hendrix makes his guitar fly.

Whilst Hendrix and others have used phasing to achieve interesting effects, and whilst numerous researchers have, since the thirties, carefully experimented to find out just how we are able to place sounds around us, few have managed to construct a comprehensive sound processing system that relied upon such effects. "The reason is you need a lot of high speed digital processing power to do what we do", Dr Sibbald told me. "Equipment like this would not have been available even a few years ago".

So how is it done? E.M.I. use a dummy head at the centre of the recording system. This is a full sized replica of the human head, complete in all major detail, especially with regard to the ears, each of which contain a high quality Bruel and Kjaër microphone. A recording made through a dummy head dramatically reveals the position of sounds, but only to a listener using headphones. Through loudspeakers strange effects occur, due to the sound passing through the dummy head and, effectively, through the listeners head, or two heads. It is this problem that E,M.I. have overcome.

Dr Sibbald explained that the major cavity of the outer ear, known as the concha, resonates around 3kHz, producing a peak. Passed through two heads, this peak doubles in amplitude, sounding unnatural. This effect, plus others, such is inter-aural crosstalk, must be corrected back to single-head state and it is this that Sensaura uniquely manages to achieve using complex digital processing.

Other commercially available systems exist, as Richard Brice explains in his column on page 53 this month, but as a music company with studios, CD pressing plants and retail outlets, E.M.I. look to have a head start of their competitors. Sensaura does,

of course, make multi-speaker systems redundant; four channel may never again raise its head and perhaps in future, even televisions will be able to project sound effects right around the living room.

How well does it work? The current test disc possesses a fairly ad hoc selection of

programme material, much like the tennis matches and trains E.M.I. used in the fifties to demonstrate stereo on LP. It kicks off with many minutes of road traffic driving around one end of the room, which for a Londoner is not exactly a novelty, but we judged E.M.I.'s traffic a faithful replica of that outside. The disc has got a train too and this is where Sensaura started to show what it could do. The train pulls in across one end of the listening room (neighbours will love this!) and amongst the clatter of the doors opening and closing a woman alights, distinguished by the sound of her heels on the hard platform. She walks from far left, passing quickly across the front of the sound stage and then disappearing up a flight of stairs at the side of the room.

After the train comes a military band walking across the stage, which was a little less engaging, then finally a recording of an orchestra to show that Sensaura processing adds considerable depth to the sound stage but does not upset basic sound quality. Dr Sibbald told me they had decided to leave out the sound of a helicopter lifting off vertically through the ceiling.

As a way of capturing information about the sound field Sensaura was seen to be in harmony with higher specification digital recording equipment and improved recording quality, I was told, rather than data removal ('compression'), as practised by DCC and MD - a technique that has raised howls of anguish amongst music lovers everywhere.



Talking about E.M.I.'s sudden retum to audio, heralded by Sensaura, I asked whether there was any likelihood the company would be taking up hi-fi manufacture again. Some of the subtle psycho-acoustic cues exploited by Sensaura already exist in ad hoc form within certain products and could possibly be better exploited, especially in loudspeakers. At this Dr Sibbald would only say that E.M.I were interested in audio, but at this stage he could comment no further. Which, reading the smoke signs, means E.M.I. may have more interesting developments up their sleeves.

In 1957, E.M.I. released the SDDI stereo demonstration LP, complete with traffic noises, trains and an orchestra. Perhaps the new Sensaura test CD marks their return to innovation in High Fidelity

## For further information contact:

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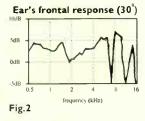
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he launch of the Thorn EMI Sensaura surround-sound system raised wry smiles in the offices of Select Systems, since we have been marketing a similar system for some years now. It is based on the same principles as Sensaura, but does not use a dummy head. Almost the moment that EMI's press releases hit the streets, our fax machine started spewing paper and it hasn't stopped since. The messages come from amazed customers, puzzled agents and indignant artistes, and every fax finishes with the same question: isn't this what you guys have been doing for two years? The truth is, yes!

Not that I'm complaining, the enthusiasm has which greeted Sensaura will help raise public awareness of three-dimensional stereo systems (i.e. surround sound from two loudspeakers) and, I believe, because such systems represent the most exciting development in sound recording since the invention of stereo, there is room for all of us at the new frontier.

Like Sensaura, our own OM 3D system, which I



initiated, works with any standard two-loudspeaker system, so no extra equipment is required by the end-user. The system uses psychoacoustic cues to position sounds within a 360 degree arc anywhere about the listening position, as shown in Fig.1. The system has been successfully used on CDs, tapes, and radio broadcasts, and has been employed by musicians and engineers to enhance musical styles as diverse as experimental jazz, and children's educational tapes!

Like Sensaura and Roland's RSS system, OM 3D uses left-right channel time delays to make low frequency sounds appear to come from beyond the boundary of the loudspeakers. For example, on one of our experimental demo CDs we created a 3D storm sound-effect with a roll of thunder which appears directly behind you. It's enough to make you turn around when you hear it, yet there's no loudspeaker there - it's all a psychoacoustic 'illusion'. OM 3D can place sounds behind listeners; we wonder whether this is possible with Sensaura. In fact, low-frequency

3D stereo is relatively easy to create. It's at high



this research.

As a member of the team which developed the OM system, I was invited by the Institute of Sound and Vibration Research at Southampton University to deliver a seminar on our system earlier this year. I was pleased when the demonstration worked so well in a lecture theatre not noted for its acoustics!

So whilst this form of surround sound is relatively new, Sensaura is not unique. That doesn't mean it won't become hugely popular of course; if we believed

# recorded message

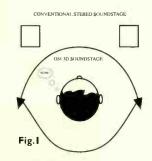
## Left by Richard Brice

frequencies that a 3D system has to be really clever, because the ear and brain determine acoustic directions at high frequencies by analysing the tonal spectrum of a sound as it enters the auditory canal. The brain is able to do this incredible real-time processing because the external ear has an incredibly non-linear frequency response (if Noel or Dominic measured an amplifier with a response like the ear, you would hear the howls of derision in Knightsbridge!).

What's more amazing still is that the frequency response of the ear is different for every position about the head, due to the multiple reflections from the pinnae (the pinnae are the bits of skin and cartilage we hang our sunglasses on). Fig.2 shows a typical frequency response of the external ear at one position around the head. Our own OM 3D system mimics these complex frequency response changes using electronic filters.

The practical realisation of 3D system is an achievement for any company. Thorn EMI have apparently spent three years developing their Sensaura system and I believe Roland's Japanese engineers spent at least that much time developing the RSS system.

We openly demonstrated our system to EMI in June of this year. Like Sensaura, our OM system was developed in the UK. I studied human perceptual psychology at Bradford University (home of Professor Bailey, transmission lines and long haired wool!). Strong on audiology, my studies at Bradford stimulated me to develop this form of surround sound when I left.



The final OM 3D system represents the culmination of many thousands of hours of carefully prepared listening tests and electronic development by a team at Select Systems. My columns in Hi-Fi World and Francinstein, the stereo enhancer, both exploit knowledge gathered from otherwise, then OM 3D would not have been developed. However, whilst our system costs around \$1,800, Roland's costs around \$18,000! What E.M.I. hope to charge studios we have yet to learn. That is likely to affect its popularity. Whoever comes to dominate in this field though, it does look like the technology is here to stay, because it is so consumer friendly ●

EXAMPLES OF RECORDINGS MADE USING THE OM 3D SYSTEM Roy Ayers, Hot, Jazz House Records; JHR021, JHMC021, JHCD021 - watch out for super-wide synth stabs on track 6.

Ian Shaw, Ghostsongs, Jazz House Records; JHR025, JHMC025, JHCD025 - general stereo enhancement.

Keith Tippett, The Dartington Concert, EG Records; EEG2106-2 all formats.

Village People (DMC/Brian Butler remix). YMCA; forthcoming.

Brian May, Live at the Brixton Academy, video album and CD released Feb '94 - note £D guitar work on Love of My Life.

Jim Lampi, TV Weather, Zok Records no LP, no Cassette; ZCD001 - rear panned percussion in The River and rear power chords in TV Weather.

Big Audio Dynamite - forthcoming album, all formats.

Simon Boswell, Second Best - staring John Hurt (film soundtrack).

Nursery Rhymes and Lullabies, CYP Lid no LP; PT246, CD246 - general stereo enhancement.

A Traditional Christmas, CYP Ltd no LP; PT251D, CD251 - stereo enhancement and rear panned sound effects.

Vlad Nastas, Funk Ouitar Sample CD, Time and Space 442870681.

J. Gross, Let's Do it Together (3D Club Mix) Rec002 (12 inch 45RPM).

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from one stage to the next, and are bound to be popular, together with the T-drive and T-Dacs. With Pink Triangle Ordinal and Da Capo and AVI DAC and Wadia there should be a combination to delight your ears. So why not ring for a demonstration? he strength of the Japanese Yen is not necessarily bad news to the British hi-fi industry. In fact, the stronger the Yen gets, the more competitive British hifi becomes. Because of the high value of the Yen, it is becoming increasingly difficult for Japanese hi-fi to compete in the way it has over the last decade or so.

A good example of this is Furukawa cables. As the Yen has become stronger and stronger, more and more Sterling are needed to buy the cables in from Japan. Eventually the time came when Quantum Audio, the UK distributors, would have had to double the UK retail price to make the same profit. Obviously, trying to sell a cable that cost £80 last month for £160 in the following month is not easy, especially in such price sensitive times. Furukawa cables are now no longer being imported, which is a shame - they were very good.

The same is happening with hi-fi equipment. If you apply what happened to Furukawa to an amplifier. say, it now has to be built for considerably less money in Japan in order for it to have the same retail price in the UK. So cheaper components are used, thinner chassis, etc and the result is a lower quality product, for the same price. So whereas British manufacturers have found it near impossible to match the Japanese products in the past, at least in terms of features per pound, they are now in a much stronger position.

But the Japanese aren't slow. They have foreseen this potential loss of competitiveness and have set about finding solutions. One is to add additional value or appeal to their products. Several of the larger manufacturers now use British designers or listening panels to tune the sound of their products to suit the market. What the consumer gets, at the end of the day, is a Japanese product that is economical to produce, but one that contains a sprinkling of specialist audiophile grade parts. This approach has

worked very well: just ask Denon, Pioneer or Sony.

In some ways, though, I'm surprised they even bother. The separates market must represent only a small fraction of the business they conduct, compared to personal stereos and midi-systems, two areas where they are free to trade unopposed. Years of careful and powerful marketing have convinced the British general public that a midisystem is hi-fi. When you go out to buy "a new hi-fi" and a salesman in the local Dixons shows you the latest



directly. Their approach, in many cases, has been to broaden the range of services that they can offer their customers. So whereas once they would have stocked just specialist hi-fi equipment, they are now turning to upmarket midisystems, stereo TVs, videos and other AV products. They quickly learnt that the same customer who bought a better than average hi-fi system was also likely to be in the market for a better than average television and video. But they remembered that hi-fi was still the core of their

uoinido

# Dominic Baker db on the level

Sony with intelligent graphic equaliser etc, you could be forgiven for thinking that you had found the very latest and most technically advanced system available, and all for \$800 or less.

I used to work in a shop where midi-systems were used to lure the average person in. They're cheap and, these days, they represent hi-fi to Mr Average. Once inside we would explain that a British separates system need cost little more and would in fact offer considerably better performance than a midi. Nine out of ten customers left the shop with a budget separates system - usually a Japanese CD player with a British amp and 'speakers. So the majority of music lovers are willing to compromise a little convenience for greatly improved sound quality, if only someone tells them that an alternative exists in the first place and is willing to prove it by demonstration.

This was clearly evident at Live '93 where for the first time in years British manufacturers got the chance to show their products to a general audience, rather than one consisting of hi-fi enthusiasts, as found at the Penta and Bristol shows. Many found that the general public were in fact very interested in having a good sound in the home, but never knew that such a wide and varied range of quality equipment was available.

And it's not surprising. Hi-fi has been treated as a specialist club for too long. It was okay in the 70s and later 80s, because the club was still quite large and could support the industry, but the overall market is falling in the U.K., although only very slowly at the moment.

Britain's retailers have been the first to recognise this because they experience the effects business, that customers would come back a year or so later to upgrade their hifi, but until the television/video they had bought broke down, they would not be looking to replace it.

Manufacturers need to consider this if they are to prosper as the recession lifts. Better marketing will introduce their hi-fi products to a broader, and in most cases, receptive audience. Once the concept of quality, rather than useless features, has been conveyed to the general public, everyone will see better value for money - and it won't be from a cheap Oriental midi-system ●

### EDITORIAL ASSISTANT

Getting busier and busier daily, we are looking for another editorial assistant. A good background of experience in hi-fi is needed, plus respectable educational qualifications, particularly in English. We want someone who can listen and write, as well as organise. If you can handle a professional camera, so much the better.

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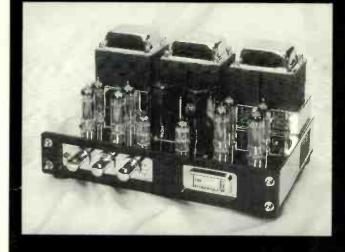
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## IN THE FEBRUARY ISSUE !

### THE BEST OF BRITISH

One year on from our report highlighting the best of British hi-fi we take another look at some special - but perhaps unrecognised - products and manufacturers. The line up of new products so far is -

Townshend Rock 3 turntable DPA PDM Ten-Twenty Four DAC TDL RTL3 floorstanding speakers Quad and SME in a unique interview

- plus others we are still trying to winkle out of their clamshells!

## **TECHNICS SL-PG340A**

The latest budget CD player from Technics comes to these shores. How does it measure up against the competition?

### **DENON TU-580RD**

The latest RDS tuner from Denon is put through its paces. Will it be good enough to ward off those post-Christmas blues?

#### **IS THAT ALL?**

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# CHRISTMAS KARDON

Like the fairy on a Christmas tree, the HD7725 sits at the top of Harman/Kardon's CD player range. Dominic Todd asks "is it just there for show?"

ook at those feet! Apart from sheer weight, the first thing to impress the purchaser of an HD7725 CD player are four, apparently solid, metal feet. The fact that they are really just metal-skinned plastic ones marks this player down as being from the Japanese school of 'supermodel' CD players. Heavy weight build, plenty of features, but often this is no more than skin-deep gloss.

This is Harman/Kardon's first real attempt at a high-end CD player, and at £799.99 it needs to be good if it is to succeed against established heavyweights. First impressions are favourable, apart from the silly feet. The styling follows H/K's usual form with a double curvature on the facia. It's interesting to see other manufactures are now discarding sharp edges and flat sides in favour of more aesthetically pleasing 'organic' curves. The front panel is finished in matt black with tasteful white-gold graphics (H/K have sensibly resisted scrolled script). The controls work smoothly and are easy to locate. Combine these with the fact that the 7725 isn't over-burdened with gimmicks, and you have one very classy looking CD player.

No one could accuse Harman of skimping on facilities either. There's a 32key remote control echoing the style of the player, a motorised variable output and headphone socket, switchable digital output (coax and optical), display off key, direct access keypad, intro scan and a comprehensive 30 track programing system, a sensible blend of features that many players of this price neglect.

Good looks, solid build and useful facilities are all very well, but if the player is bog standard inside then it's likely to flounder when it comes to sound quality. The 7725 is a mixture of good and bad inside. The cheap transport system is a disappointment and clearly lifted straight out of the cheaper models. On the other hand there's much to praise. A mass damped lid, discrete output stage, six separate power supplies and grounding for digital, analogue, transport and display sections, Elna capacitors in the power stage and, most interesting of all, a unique D/A conversion process. The Harman uses two selected Burr-Brown PCM61P-K converters per channel with their own Real time Linear Smoothing (RLS) integration process. Briefly, this is designed to reduce high frequency quantisation noise, which should have the effect of smoothing the sound a little.

When it comes to sound quality there's actually little wrong with the 7725 overall. It rarely offends, with a smooth, controlled, sound free of digital nasties. The problem with this type of balance though is that such refinement and control doesn't suit all types of music. For example with lively pop, such as Matt Bianco, I felt slightly hard done by. There were no complaints to be levelled at the smooth and natural vocals or the powerful and

NUM 36.24

solid bass line (no doubt partly due to the heavyweight construction), yet the sound was two-dimensional compared with other multi-bit players in this price range. Bass notes could also suffer an occasional thickening, which could have the effect of making the bass line seem slightly detached from the rest of the music.

The Harman's rich balance came into its own with female, and indeed male, vocalists. It did an excellent job of taming the sibilance and disguising the thinness of Suzanne Vega's first album. What can be a particularly tiring album on some CD players turned out to be involving and enjoyable to listen to on the 7725. Vocalists of a richer nature with less sparse backing were handled equally well. Sinead O'Connor's 'Am I not your girl?' (a vocalist not usually renowned for her richness) had better depth than shown with Matt Bianco and a lushness that should be present in this type of music. My only concern is that, used with bass heavy 'speakers or a loose sounding amplifier, the sound could become a little too rich and detached in the bass region.

However, the same smoothing quality that lent itself to vocalists proved to be something of a thom in the side when it came to jazz. Brass instruments found themselves strangely muted, with any vibrancy rounded off. This was one area where I found the Harman's coloured balance to be out of place, unless one had a particularly bright and penetrating system which needed a little warmth adding. One positive effect of this was that it became possible to listen to the music at high levels for sustained periods without the fatigue that can sometimes accompany more explicit sounding CD players.

With classical music, the performance was once again mixed. Brass sections suffered from the same 'rounding off' that had affected jazz. Yet in this case it was more tolerable as classical brass tends to be slightly less raw and effervescent (although I realise this isn't the case with all pieces). To some extent, the disappointing brass sections of Brahms' Symphony No. I were offset by the string sections. Violins, in particular, were given a rich yet articulate balance, and the whole symphony jelled well with a pleasing lack of muddle in the crucial mid-range, despite an overall balance which was slightly too eager to gloss over fine detail. Nevertheless, once again the music was enjoyable and relaxing to listen to, with no hint of edginess to jar the listener.

This rather sums up the sound of the 7725 over all. Those who find some CD players on the market today a little too explicit or grainy will warm to the refined and mellow character of the Harman. It is well suited to simple vocal pieces and similarly sparse quartets. The clarity and control shown through the mid-band also assists piano recitals; it's refreshing to hear



a CD player which doesn't make a grand piano sound like one of the "honky tonk" variety. However, a slightly detached bass and rounded treble take their toll on other types of music. Don't get me wrong, these are not serious flaws, simply the character of the player. There are other players that offer a slightly more coherent sound, but possibly at the cost of some of the Harman's warmth. Again, other players may offer a more detailed and revealing treble, but sometimes at the expense of sharpness. Where the Harman does score is in its heavy build quality (especially compared with some from British and American cottage industries), a sensible balance of facilities and smart

American cottage industries), a sensible balance of facilities and smart aesthetics. Yet at the £800 price point these factors alone are not enough. The main problem the 7725 faces is strong competition from the likes of Quad and Micromega, to name but two. There are also very special players for only a couple of hundred pounds more, such as the Conrad Johnson Sonagraphe. Despite these reservations, I feel Harman can be proud of their first attempt at entering what is, after all, a fiercely competitive high end market ●

Harman Kardon HD7725 £799.99 Harman Audio, Harman International Industries Ltd. Unit 2, 5 Rowley Lane, Borehamwood, Herts WD6 5PZ Tel. 081 207 5050

#### MEASURED PERFORMANCE

The HD7725 uses Harman Kardon's Realtime Linear Smoothing (RLS) DAC circuitry. A pair of Burr-Brown PCM61P-K DACs per channel are used to give a smoother waveform and reduce quantisation noise. The HD7725 also has a discrete output stage, six separate power supplies and separate grounds for digital, analogue, transport and display circuits. Obviously a lot of thought has gone into the design and components used in this player.

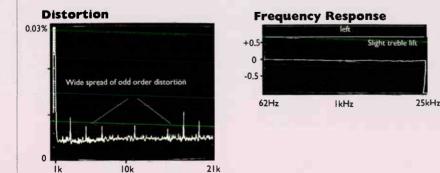
One problem with using two DACs per channel is that they have to be very carefully matched to each other to give satisfactory results. Distortion figures for the HD7725 are average at all levels, 0.022% at -30dB being about twice as high as the very best players. Looking at the distortion plot there are quite strong 3rd, 5th and 7th order harmonics which will tend to lend a sharpness to the sound. In practice these odd-order distortions may be low enough to add just a little sparkle to the treble, without going too far and becoming harsh.

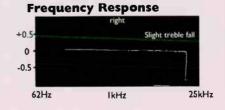
As with the Monarchy Model 22A DAC, reviewed in our August issue, which used a similar DAC process, there was some channel imbalance. The right channel gradually slides downwards towards 21kHz which will prevent any sharpness being exaggerated. However, on the left channel the treble peaks up a little which will give a slightly sharper sound. As these deviations are above 10kHz and very small, this may not be much of a problem.

Elsewhere the HD7725 measured well. Output was a little higher than the Philips standard and channel separation was good. The HD7725 is a well engineered and highly specified player, only listening will tell if the effort was worthwhile. **DB** 

#### TEST RESULTS

Frequency response	3Hz-21kHz		
Distortion %			
-6dB	0.0044	0.0059	
-30dB	0.023	0.021	
-60dB	0.787	0.632	
-90dB	35.7	26.4	
-90dB dithered	11	4.4	
Separation dB	left	right	
lkHz	100	101	
20kHz	88	88	
Noise		-104dB	
with emphasis		-104dB	
Dynamic range		I04dB	
Output		2.35V	





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've just gone and done something I rarely do. I've made an impulse purchase. The Scottish blood in me dictates that I'm usually careful with money, but this was different. It wasn't an essential purchase for something I actually need, like shoes or clothes, but for an old Revox B760 tuner. Until now I've never even had a proper tuner, and had very little desire for one. But as soon as I saw this immaculate "one old lady owner" B760 I new I just had to have it. At £175 it wasn't particularly cheap being only about £25-£75 below book price. I also realise that many of todays' tuners could better its technical and sonic performance. It was a combination of factors that tempted me.

The fantastic 'battleship' construction (twelve kilos puts the 'Vox firmly in the heavyweight tuner category), the well thought out symmetrical design, the beautifully engineered controls and the hordes of useful facilities (something I object to in other components) all make the Revox a joy to use. I'll probably never use the mast motor rotator controller or the output for an oscilloscope, but it all adds to the 'feel good factor' of owning such a piece of equipment.

This, I feel, is the reason many of us have become bitten by the hi-fi bug. Music is of course the prime consideration, but it's the equipment itself that holds such a large responsibility for converting people like me and you from being consumers who simply desire a high quality system on which to play music, to hi-fi enthusiasts. Some may say that this attitude masks what the original purpose of the hi-fi is for, namely music.

I disagree. A comparison can be made with motor enthusiasts. It could be argued that a car is simply a device to take you from A to B. Yet for many the car itself actually plays a large part in the enjoyment of a particular journey, as much as the journey itself. So whilst motor enthusiasts would shy away from a Proton, so too does the hi-fi enthusiast from a midi or mini system which will, after all, do the same basic job.

As with a cherished car, it doesn't matter how much it's worth, how rare it is, or whether it was built by the owner or a manufacturer, a collection of separates has the potential to bewitch an enthusiast just as much. It may do so by its technical ability, style, build quality and a host of other attributes that go to make for desirability.

though is that such was the success of Live '93 for those hi-fi manufacturers that attended, most are booked for Live '94 (at the larger Earls Court venue) and many have taken stands twice the size of this year's. Likewise, many of those who missed out this year have made firm reservations. You won't find many specialist valve or vinyl companies there, but they'll still thrive at Penta as enthusiasm filters through from increased interest in bread and butter hi-fi, now being shown to a far wider sector of the

## Dominic Todd

## Reverberations from a Revox tuner classic

Furthermore, it's fun to tweak equipment in order to improve sound quality (although this can be taken to such an extreme that it completely overshadows the enjoyment of listening to music).

There's been a lot of talk in the hi-fi trade of the impending doom of the quality hi-fi market as we know it, namely separates. Audio visual, 'lifestyle' and to a lesser extent Nintendo are cited as the grim reapers of separates. What has become more obvious with recent shows is that, whilst these formats have their appeal, it is more limited than many marketers would have you believe. There will always be strong demand for decent systems on which to play music, and I can't see these other formats being much of a threat to the separates market.

One of the main problems that many of us still face, though, is persuading the general public that a separates system really is better than spending money on the latest 'lifestyle' system or whatever is hip in audio visual at the time.

Enter Live '93. Many in the hi-fi industry saw this

show as a threat to Penta's future and ultimately a threat to the hi-fi industry as future shows become swamped with audio visual, 'lifestyle' and computer equipment.

This couldn't be further from the truth. What Live '93 has done is enable Penta to concentrate on high end and equipment for enthusiasts, whilst mainstream manufacturers attend future 'Lives'. Yet, stalwart names of the hi-fi industry, that attended Live '93, were far from outdone by rival technologies. NAD, Rotel, Arcam and Ouad, to name but four, were inundated with interested punters. Furthermorc, one of them has reported a 60% increase in demand for its hi-fi separates in the South East. So is hi-fi dead?

Live '93 proved a great 'public educator' in the benefits of separates, and also proved that there is still demand for what is, after all, the backbone of the hi-fi industry - separates.

Whether this will lead to a reversal of the steady decline in hi-fi separate sales, and have a knock-on affect in enlightening more people to the world of 'real' hi-fi, remains to be seen. One thing that is for certain public at shows such as the Live event.

The hi-fi industry is fighting back, and I believe that in the long term it will see out 'lifestyle', mini, micro and all other niche products that the marketers can throw at it. Audio-visual has a limited market in separates form (for many, having speakers at the rear and sides of the room is unacceptable). It may not simply be a fad, but in the mass market we'll probably see more T.V.s with such a system built in. I can't see full A.V. systems having the penetration that separates systems have now. There can be no doubt of the impact of video/computer games. Younger people are building up games collections, perhaps at the expense of record/CD. collections. However, it is not really a competing market because as one matures, a music collection of some sort becomes an important a part of life (how many students that you may know don't have any form of music whatsoever? Not many).

All that leaves us to do is sit and wait. In the mean time does anyone have a secondhand Revox B77 or Nak ZX-9 out there?

# readers'

FERRETING AROUND

Since reading your magazine I have been inspired to go around and ferret out old equipment from local car boot sales and such like. So far I've managed to acquire Leak, Quad, Garrard, SME and Armstrong equipment to name a few makes, and am finding it very rewarding to service it and bring it back to life (it's a pity my wife doesn't!).

I would like to ask some questions about my 'every day' system which I have been slowly upgrading over the last three years (I also have three children!). Currently I'm using a Rogers T75 S2 tuner, a Hitachi D980 3 head cassette deck and Thorens TD160B MKII with mods and SME Series 2 fitted with an Ortofon VMS20E (in need of replacement). My recent purchases being a Marantz CD60SE, the excellent Audiolab 8000 C/P and a pair of Ruark Talisman Mk1s biwired using Monitor power cable studio line 4.0 QMM.

Overall, I'm pleased with the sound quality (all equipment was carefully auditioned) but I do find that the odd CD can sound overharsh.

I do have immediate plans to up-grade the tuner possibly with an Audiolab 8000T and, if funds permit, improve upon the turntable set up.

My first question is with

problems to Hi-Fi World, 64 Castellain Road, Maida Vale London W9 IEX. Our panel of experts will endeavour to solve them or at least offer some

Write in with your

## practical advice

regard to my Talismans. Now with the arrival of the MKIIs I understand that Ruark are offering tweeter and crossover upgrade kits which replace the metal dome tweeter and capacitor types of the original. Have you plans to audition this modification and, if so, is it worth it? Also, would it sweeten those odd CDs?

My second question, in several parts I fear, is with regard to my turntable. First I've heard many a bad word spoken of the old 160, so should I pension it off or could I replace my VMS20E and give it a new lease of life, a Roksan Corus Blue or Black perhaps?

I also have (dismantled) a Garrard 401, an SME Series 2 I 2'' (9'' on the I 60) and a Decca C4E possibly in need of a new stylus. Is it worth remounting all this on MDF or a piece of stone (your recent article referring to an SME Series III)? Possibly with a new cartridge. Alternatively, should I forget it and buy myself a Rega Planar 3 with a suitable cartridge?

HI-FI MORE HIFI Yetmore hi-Fi JUADS'A HI-FI

By the way, my choice of music is varied, depending on mood, from Classical to Rock.

I hope my letter is not too long, keep up the excellent work. Thanking you in anticipation. **B. Clift** 

As you are into vintage equipment, and already have one of the best turntables around, the 401, I would suggest you make the most of it. There are various people who can give good advice on restoring and servicing the Garrard 401. Try Technical & General on 0892 654534 for starters. You could use either your 9" or 12" SME arm if you build a new plinth, depending on where you mount the arm. Alternatively, a Rega RB300 should work very well, but a spacer will need to be used to raise the arm to the correct height. If, after all this, money is tight, the Goldring 1022GX is an excellent cartridge, but the Garrard really is worth a good moving coil.

As you suggest, some older designs do take some beating, the 401 being one example. The Leak Troughline another. For the price of the very nicely engineered and put together Audiolab 8000T you could pick up a Troughline, have it serviced and re-aligned, add a good decoder from either Tim de Paravicini or GT Audio, buy a large multielement aerial and still have change to spare towards the rest of the system. This is no criticism of the 8000T; it is a fine solid state tuner, one of the best in fact. But nothing betters a good Troughline.

ueries

I have not heard the new Talismans, but I did make a quick 'phone call to Ruark to find out what the changes were. The crossover is replaced, new wadding fitted and the metal dome tweeter is replaced with a high quality SEAS fabric dome. This will almost certainly bring a sweeter balance to the treble. **DB** 

### **HI-FI HOME**

I am writing to you for advice on my next step in system building. As it will probably be my last upgrade for some time (I'm going for the ultimate upgrade - a new house).

My system now consists of: LP 12/Valhalla/Ittok/Audio Technica OC5/Naim 62/140/ Hi-Cap/Ariston Maxim 3/Micromega Microdac/Yamaha 330 cassette and Sony 370 tuner/bi-wired Epos ES11s and stands (quality interconnects and Naim speaker cable), turntable on a Soundcraft wall shelf, rest of kit in and on a pine hi-fi unit (a bit overcrowded).

My questions are:

Power supply for the Linn
 Better cartridge for the

Linn

(3) Better transport for the DAC

(4) Replace equipment tables for all the other kit (Tri-pod?)
(5) New Naim Tuner £499?
(6) Can the Naim be bi-amped with 2 x 140s or does it have to be 2 x 135/250. I know you have to have a separate crossover (don't know its name though).

As I have said, it will have to be my last upgrade for some time, so I would like it to be a really worthwhile one. Budget approx. £600, present room dimensions approx. 15 by 12 ft., new room approx. 20 by 15 ft. Musical tastes varied from folk, blues, soul to rock, with a bit of popular classical thrown in for good measure.

I know the only way to audition is to listen for yourself, but your advice has helped me very much in the past, so 1 would be much obliged for any advice given. Is there a possibility of a compatibility list being printed as an article in your magazine showing as a 'family tree', future upgrades, the benefits and improvements etc. My kit has taken a long time to put together and I've made costly mistakes on the way. Something of this description would assist both novices and audiophiles alike. **Bob Walker** 

## Gravesend, Kent.

You don't actually say what you feel is wrong with your system, which makes it hard to offer advice. I will have to assume that you are happy with your system and are looking for an overall general improvement, in which case I will concentrate on its weakest areas.

l suspect that you are suffering a rather bright sound from your vinyl source; the OC5 is well known for its, shall we say, vibrant treble. Try the Goldring Elite at £200. This has a smooth and detailed sound that will suit the system well.

This leaves only £400 left, you would need at least £600 for a new transport, so that cuts off that route. The £400 you have left could be spent in two ways, 1) look for a second-hand NAP140 and biamp the ES11s, 2) buy some good equipment stands. Also try Townshend's Seismic Sink under your Maxim CD player and at the same time and upgrade your interconnects.DB

## BOOM BOOM

My system consists of a Meridian 200 transport (latest version), Meridian 203 DAC-7, Meridian 201 pre-amplifier, Linn LK280 power amplifier with a Linn Spark power supply, and Tannoy 609 loudspeakers on Tannoy stands (sand filled). For interconnect I use Audioquest Digital Pro (0.5 metre) between the CD transport and DAC, Linn interconnect (I metre each) for all analogue connections and Audioquest type 4 speaker cable (3 metre runs) bi-wired. The speakers are placed 12 inches from the rear wall and 24 inches from each corner in a 12 foot by 18 foot room, slightly angled inwards. I listen to as wide a range of music imaginable from rock to soul, country and western to jazz, classical to reggae (if it sounds good I will listen to it!).

I am happy with the sound that my system produces, but the bass can be slightly boomy, especially with 60s recordings where the sound of the bass guitar tended to be quite deep and loose (i.e. 'Lady D'Arbanville' by Cat Stevens). The obvious area to blame, taking into account that I tried Meridian monoblocks, but preferred the Linn/Meridian combination, is the Tannoys, which I have been told are a little rich and coloured in the bass department.

I decided to look at floor standing speakers which should retain the depth of bass that I currently enjoy, but with more control. I have been considering my options which are initially Linn Keilidhs, Mission 753s and Ruark Talisman 2s. However, would I be better off waiting a while until I can afford a higher spec. of speaker such as the Heybrook Sextets or Linn Kans?

I have also been informed that using solid core 'speaker cable may be accentuating the problem and it was suggested I change to multicore cable. All very well, but as there is little facility to audition this option, do you agree, and if so, have you any suggestions as to which cable may be better suited to my system?

I have also read that isolating devices such as the Seismic Sink will improve the sound of a system. Would such a device be relevant to my problem?

Lastly, could the problem be with the room? Unfortunately, I have little option with the layout, and after experimentation, have settled for the best compromise. If the room is the cause, are there any methods of acoustically dampening it which will not unduly affect the aesthetics?

## Alan D'Alvarez Bromley, Kent.

Linn Kanns! With the greatest respect for Linn I hardly think that these will improve upon, or even match the bass depth of your Tannoy 609s. The simple answer is that, given the calibre of the rest of your equipment, Heybrook Sextets would be the minimum needed to get the best from the system. I strongly suggest you audition a pair of Sextets. They take a little while to get used to, so a home demo is best, but they really do sing with a good system in front of them.

For speaker cable runs the best is usually silver plated

copper. The higher frequencies of the audio signal travel down the skin of a cable so the silver gives a smooth and detailed sound, and the copper adds bulk to take the current. There are several silver plated copper cables on the market, I believe that DPA Digital and van den Hul can both supply these. It is usually agreed amongst users that multicore is best for good bass.

Townshend's Seismic Sink is something that I have yet to try, although several people within the industry that I would trust have claimed excellent results. Try it and see, you should be able to find a dealer who can demonstrate the Seismic Sink, or even let you borrow one for a little while.

Lastly your room. The acoustic of a room can be controlled by the furniture and carpets. If the room sounds bright and hard, drawing the curtains over large glass windows, covering bare concrete walls with something soft, laying thick carpets and using big sofas will help to absorb rather than reflect the sound. The presentation will become warmer and more amenable, but go too far and it will start to sound dead. This is a simple way of changing the acoustic of a room without great expense.

In addition, if you find the bass too heavy, try moving your listening chair forwards a little. If you are too close to a rear wall you are in a high pressure area and a cleaner sound can be found by moving forwards. For the same reasons, pull the speakers forward as much as possible. The Tannoys do have heavy bass and ideally should be 24-36 inches away from the walls. DB

### KICK THE K9

It's time to upgrade! At the moment, my system consists of an LP12/Akito/K9 connected to the Moth Series 30 phono/passive control/30 watt

# queries

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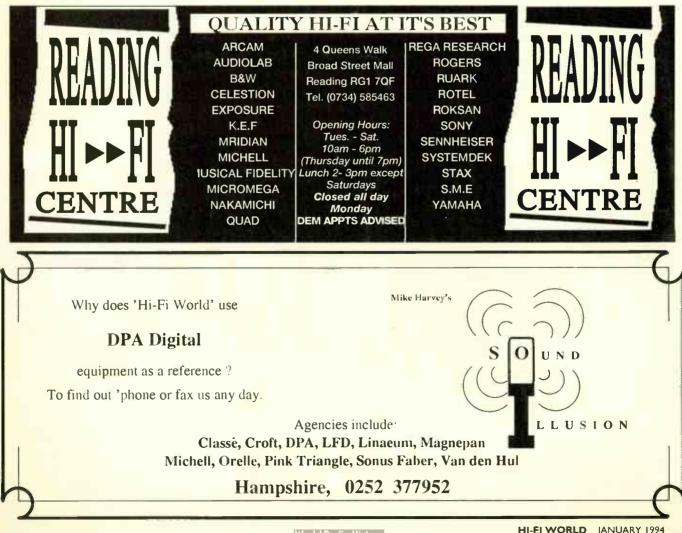


"It is a rare experience to play a track that you have known for the better part of, say, twenty years and suddenly, to hear new details and information." (Hi-Fi World - Dec '93 on CT77 loudspeaker kit) With the increased popularity of "do it yourself" hi-fi, Tabula Rasa are offering an extensive range of quality loudspeaker kits and car audio kits from top German manufacturer Mainhattan Akustik.

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World Radio History

queries

I have always had a desire to try valves and reading the article on your 300B amp has got me thinking again! Would valves work well with the ES I 4s? What pre-amp? Should I change the 'speakers anyway? What upgrades have appeared for the LP12 over the years? I have enjoyed the sound of my system overall, but it can sound a little, well,'exposed' at times, what should I do? Please help before I start throwing money at it and making matters worse.

off its mortal coil. The pre-amp

imminent demise for some time

now and I need to replace it.

has also been indicating it's

## Mike Homar Middlesborough, Cleveland.

The ESI4s are very sensitive, 89dB, and have an impedance curve that sits above 70hms so they shouldn't take much current to drive them either. From these measured figures it would suggest that a valve amplifier should have no problem driving them very nicely. All the same, I would tread carefully. Try auditioning a good push-pull design such as Audio Innovations' Series 800 against some of the better solid state alternatives, such as Michell's Stereo Alecto or DPA Digital's 2005. To assess how well each power amplifier is driving the ES14s I would suggest using the same preamplifier with each. Because your primary source is vinyl I'd suggest trying Michell's Iso MC head amp and the matching Argo pre-amplifier. These are very revealing and should extract the very best from your front end.

You should also consider upgrading the cartridge if you want to get the very best from your record collection. Linn's MCs have always been excellent so I would try and search out the new £449 Klyde for an audition. If you feel this is a little expensive there are still a few Asakas around. These retail for £373, but since they have been effectively replaced by the Klyde, a bargain may be had. **DB** 

stereo amp with Musicable interconnects. This is bi-wired with Linn X-400 to Linn Kan IIs on the Kan stands. I want to upgrade the LP-12 with either an Ittok tonearm or a Lingo power supply. Which would provide the biggest improvement for the money?

If I buy a tonearm, is it necessary to upgrade the cartridge? I read the article in the March issue about upgrading the K9. This mentioned cartridges at the bottom end of the spectrum. Could you suggest some in the middle and upper end of the spectrum that would match my system? Is the Ittok good enough to handle cartridges of, say, the Linn Asaka calibre? This may eventually be what I will aim for (at a much later date).

Speaking of amplification (or not), one would think that I would have gone for a Naim Nait II instead of the Moth system. But, since my wife had a 50% choice in the decision, we got the Moth system. Although she heard the bounce and liveliness in the Naim, she preferred the clarity and richness of the sound provided by the Moth. Aren't there any products out there that offer both? Our musical tastes vary widely. Mine tend toward rock and hers toward soul and easy listening which probably explains our taste in amplification.

Finally, I bought a Tandy sound pressure meter and, using the test tones provided on Stereophile's Test CD 2, I measured my system's response at my listening chair. I was really surprised by how ragged it looked in comparison with the charts shown in various Hi-Fi magazines (please see the accompanying graph). I would hope it is my room that is responsible for this and not the system. If it is my room, how do I go about fixing it? If it is my system, what could possibly be wrong?

## Mike Cole Munchen Germany

The K9 is the item you should seek to upgrade first. It's merely a budget Audio Technica AT-5E variant, with a remorselessly hard upper midrange that gives a forward sound. The common replacement is a Roksan Corus Black, as you are aware, but an Ittok will certainly take an Asaka; the two were all but made for each other. However, this cartridge has been discontinued, replaced by the Klyde. I haven't heard the Klyde on its own, since Linn have insisted that it be reviewed only in a Linn system, a condition that is not acceptable to us. I have, however, used Asakas in the past in preference to all else, Linn moving coils being amongst the best in my view. I would suggest you try and audition their latest MCs, which have understandably received little coverage generally. They should be good, if expensive.

The trade off between smoothness and snappiness is common enough. Dare I say it, the best way of getting both is to go for a modern valve amplifier. In truth, valve amps can offer much more than this, they provide a dimensionality to the sound too, delivering a bigger and more believable sound stage. An EAR 834 is something to hear, but being built only during certain phases of the moon, when Tim is at his - er - liveliest, they are rare. You'll need a head amp too, since 834s are line-level only.

Don't worry about the frequency response of your room. The Alpine range you've plotted is just what's expected at the listening position. It includes room reflections at low frequencies, which add peaks and dips, according to their arrival phase, plus high-treble roll-off, caused by attenuation over distance. Loudspeaker response has to be measured close to the speaker itself, around Im or less in a reflective room, and then the contribution of the individual drive units won't integrate as it would when listening at a distance unless their output is averaged together carefully. You can't do this with a Tandy microphone though; something like £8542.80 more is needed for a Fast Fourier Transform analyser of

the sort we use - and then you'll need a better mic!

With a small speaker like a Kan, however, close-up measurement should give a fairly accurate picture of what the loudspeaker is doing, since the drivers are small and close together.

You won't get such a thing as a 'flat listening room' unless it is made anechoic - and having listened to music in an anechoic chamber I can assure you it is a most unnatural experience. Of course, the Japanese, who take everything very seriously - and to the limit - have put whole orchestras into anechoic chambers, just so that you don't have to suffer concert hall ambience. The execrable results are available on Denon Test CD PG-6006, plus all sorts of other room testing sounds, recording techniques and such like.

Specially treated listening rooms invariably don't work; they're so unnatural sounding as to be unnerving. So the apparent imperfection you see in your graph is in fact what the brain needs to hear in order to know it is in a room. You can get rid of those peaks by using headphones or by putting the speakers in the middle of the room and sitting 12 inches in front of them. Have fun! **NK** 

## **OFF THE COIL**

About five years ago I purchased the following system;

LP12 (Basic Plus replaced two years ago with second-hand lttok LVII and new ATF-5) Exposure VII pre-amp 2 x Exposure VI supplies Exposure VIII power amp Epos ES 14 speakers

The tumtable and speakers stand on Origin Live stands and the speakers are connected via ten metres (each) of Exposure cable, all mains plugs, phonos, bananas, etc. are gold plated jobs from Hi-Fi Review.

After getting this lot together I gave up buying magazines and listened to some music for a while! The problem now is that after five years I don't know what's what any more and the ageing power amp has shuffled

# WIN ONE OF FOUR

COMPETITION ENTRY FORM
<ul> <li>I) Which of our reviewers recommended the £1500 vinyl system?</li> <li>Dominic Baker</li> <li>Simon Cooke</li> <li>Noel Keywood</li> <li>Dominic Todd</li> </ul>
<ul> <li>2) Which amplifier did Dominic Todd choose for his system?</li> <li>NAD 306</li> <li>Rotel RA935-BX</li> <li>NAD 304</li> <li>Denon PMA350 Mkll</li> <li>AMC CVT3030</li> </ul>
<ul> <li>3) What kind of amplifier is the AMC CVT3030 used by Dominic Baker in his system?</li> <li>Push-pull valve</li> <li>Transistor/valve hybrid</li> <li>Class A/B transistor</li> </ul>
<ul> <li>4) Which system was reviewed by Dominic Todd?</li> <li>☐ £1500 vinyl</li> <li>☐ £700 vinyl</li> <li>☐ £700 CD</li> </ul>
THE TIE BREAKER (Obligatory) If you'd like to win one of the CD systems, please complete the following tiebreaker
The birth of CD was a joy to us all, Its super sound had the power to enthral, No more clicks and pops, no more hiss, I couldn't believe music could sound like this.
If you'd like to win one of the LP systems, complete the following -
Silky and smooth, my records sound great, music's produced in a wonderful state, Who cares about crackles; pops are short lived
Please complete one tie-breaker ONLY

es it's Christmas! You can tell by the way your favourite hi-fi magazine is being so generous, giving away not one, but four - yes, four prizes this month.

You'll find a full description of all four systems in the group test on page 27, but to save you the trouble of looking for them now, here's a quick description.

We put together two systems valued at around £700, aiming for the very best sound quality at the price - not the best looks, ease of use, or the most flashing lights - simply the best sound. One is a CD system and one a vinyl system.

The CD system, reviewed by Simon Cooke, comprises a Yamaha CD-X570 player, Rotel RA-935BX amplifier, and a pair of Mission 760iSE loudspeakers.

The vinyl system, Dominic Todd's



recommendation, comprises an Ortofon Pro-ject 2 turntable, NAD 304 amplifier and Celestion 3 MkII loudspeakers.

So that's two systems - and only half of the total prize! There are two more systems, each worth  $\pm 1500$ , so you have another two chances of winning.

The £1500 CD system, recommended by Dominic Baker, is sourced from a Philips CD930 CD player, but using the QED DAC PAC as a digital to analogue converter. The amplifier is an AMC CVT3030 and the loudspeakers are Harman Kardon LS 0500s.

The £1500 vinyl system auditioned by Noel Keywood has the respected Michell Mycro turntable, the amplifier is a Denon PMA350 MkII and the loudspeakers are Spendor S20s.

These were the systems which we thought best for the money at each price point. If you want to know how well each

# competition

# TOP VALUE SYSTEMS

correct answers, the winner will be selected by the Editor from the tiebreaker. We will endeavour to publish the results in the March 1994 issue.

No correspondence about this competition will be entered into and the Editor's decision is final.

No employees of Audio Publishing Ltd, or any of the companies associated with production or distribution of the prizes may enter •

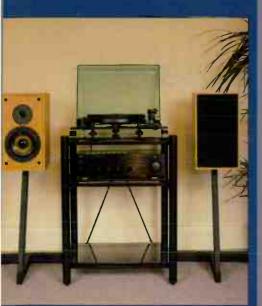
system performs, sit back, relax, and turn to the group test on page 27, where they are reviewed, together with a lifestyle system from Denon. But if you just want to go ahead and get struck in, the questions are on the opposite page.

Please send your entry on a postcard, on the back of a sealed envelope, or in an envelope. Complete your entry in block capitals. It must arrive no later than Friday 14th January 1994. Address it to:

## CHRISTMAS

COMPETITION Hi-Fi World Magazine, 64 Castellain Road, Maida Vale, London. W9 IEX.

In the event of more than one entrant submitting all the



PHILIPS DIGITAL LOUDSPEAKER WINNER OCTOBER ISSUE COMPETITION

One of our Licky readers, Simon Alper of Linton, Cambridge, to be precise, is going to have hit system enlivened by the prize-from our October 193 issue compatition, the Philips D55930 digital buildpeaker system. Well doma. Mr Alber.

## MOREL

BASSMASTER DELIVERY SEPTEMBER ISSUE COMPETITION

The winner of our September wave competition, Mr.J. Clarke of Million, Keynes, thak delivery of the proving pair of Morel Backweiter 403 load peakers this month. We haven't brand from him since, maybe he based from him since, maybe he based from him since, maybe he based from him since, maybe he

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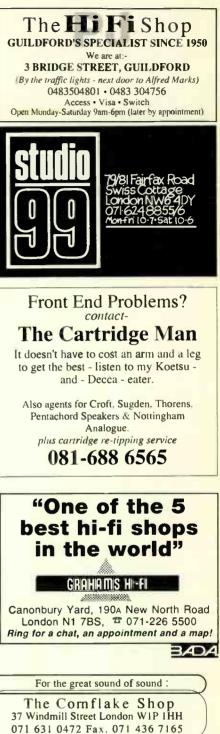
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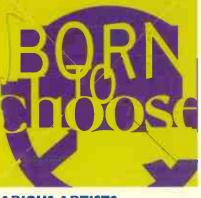
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#### **RECORD REVIEWS**

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#### VARIOUS ARTISTS Born to Choose RYKO RCD 10256

 If anything ought to be an inalienable right - in this humble scribbler's opinion it ought to be a woman's option whether or not she bears children, be that before or after conception.

America's Right To Life lobby has its barmy elements, like everything in the USA seems to require, so the other side needs all the help it can get. Hence this admittedly mixed-bag compilation in support of the latter. It includes such disparate ingredients as Tom Waits (The typically angular 'Box Spring Hog'), a middling live cut from Bob Mould's 'Sugar', flavours-of-the-month The Levellers with the righteous title cut, and a powerful Cowboy Junkies rendition of the classic 'Lost my driving wheel'. There's the odd dud then, the occasional wellintentioned cut that adds nothing to its source, like Matthew Sweet giving the Beatles' 'He Said She Said' a flawless, if

uninspired, live run-through. But there are unique elements too, witness REM and Natalie Merchant coming together beatifically on the opening 'Photograph'. A good cause if ever there was, and an interesting if quirky collection of songs made in its support.



#### P J HARVEY 4-Track Demos ISLAND MCD 170/518 450-2

• I've made my feelings about this lady perfectly clear in these pages before. In case you missed the issue in question, I firmly believe 'Rid Of Me' to be a landmark recording, and Harvey herself to be one of the most important singerwriters of the current (at least) decade. Harvey's music is bare-bones rock'n'roll at its most powerful, all judderingly

### **RECORD OF THE MONTH**

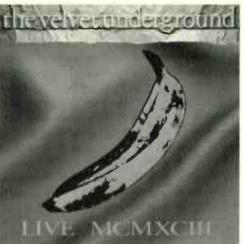
#### THE VELVET UNDERGROUND Live MCMXCIII SIRE/WB 9362-45464-2

• All but totally ignored during their brief (four studio LP) lifetime, the Velvets, since their dissolution in 1970, have gone on to become one of the most influential bands of the past thirty years; certainly David Bowie would have sounded very different without their lead, and as for punk - both in look and sound - that could hardly have existed. The list goes on; even now hardly a record review goes by that doesn't make some reference to the VU's influence, and the cover versions are legion.

The original line-up waited until this year to meet up again, sadly minus the presence of their German chanteuse Nico, who died in a cycling accident a few years back. The result was the tour commemorated by this double recording, made in Paris this summer. Apt that the French, with their long-standing love of all perverse Americana, from Mickey Spillane and John Waters to such neglected rock acts as The Flamin' Groovies and Richard Hell, should play hosts to the Velvet's reunion, just as they did when Lou Reed, John Cale and Nico got back for a one-off gig a few years back.

Despite original friendliness all round, Reed's already fallen out with Cale (again) so it would seem as if the experiment will never be repeated. So, the real question that has to be answered by this set of 23 songs - all oldies bar the one new composition 'Coyote' - has to be 'was it worth it?' And is this collection worth owning if you have, and already revere, the original recordings?

Like the Rolling Stones, The Velvets were never technically brilliant musicians, but they were daring and original in an age of predominantly safe, sometimes laboriously twee, pop and



rock, and the collision of Reed's dangerous lyrics and ear for strong melodies with Cale's anarchic experimentation made them something special and unique. Plus there were drummer Mo Tucker's bin-bashing simplicity of approach and Nico's bizarre vocal style - Marlene Dietrich in a psycho ward - together with the solid backbone of second guitarist Sterling Morrison, and heaven knows what mysterious alchemies. The group produced a dazzling selection of songs and a series of LP's that never re-trod the same ground.

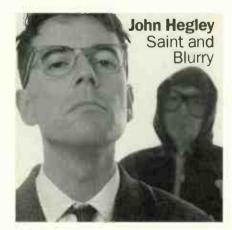
Needless to say, line-up changes had something to do with this: Nico left after the first LP, and Cale after 'White Light White Heat', easily their most dangerous and experimental disc. The gentle, achingly poetic sound of the third LP was replaced by hard jangling pop of 'Loaded' (which Reed didn't mix and was subsequently to disown). But for all the amputations, the Velvets were predominantly makers of great songs: songs that stand the test of time even if, occasionally, their own prime composer is himself their worst enemy. The middle-eight of 'Venus In Furs' for example, loses all its kick here and on 'After Hours' the band's traded vocals are let down by Reed's somewhat flat rendition. That said, there's plenty to treasure here too: Cale's chilling piano-led take on 'Waiting For My Man', ditto his viola additions to 'Pale Blue Eyes', or the whole band's work on the driven version of the little-feted 'Guess I'm Falling In Love'

If the recording as a whole doesn't have the power and cohesion of the double set 'Live 1969' or even if it sounds at times a mite too polished to be as charming as 'Live At Max's Kansas City' (a pocket-tape recording of Reed's last gig with the band), plenty of people will want this unique, but somewhat erratic document, to keep, if not to play, forever.

minimal guitar, bloodsoaked lyrics and the most engaged, emotional vocal work heard in yonks. It's no surprise therefore that Island have decided to release PJ's 4track demos for the 'Rid Of Me' set before they're bootlegged. Plus, they're at budget price and include six previously unreleased compositions.

This is warts-and-all documentation, from the spluttering cough at the false start of 'Legs' to the Doc Marten stomp that provides a rhythm track for the final 'Goodnight', and at times, as on 'Rid Of Me', these are as good takes as the studio versions, while the new songs, a mite rough around the edges, include some typically stylish Harvey conceits. 'Hardly Wait' has marvellously soaring vocals and a Snow White reference ("In my glass coffin/I win'') that continues Pl's fascination with female iconography, Angela Carter-style, while 'Easy' is a brilliantly punchy item on date rape, and 'M Bike', about a menage-a-trois where

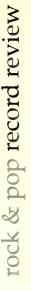
the other 'woman' is a boyfriend's motor-bike. This woman has so much talent she's throwing away songs to die for. Hear 'Dry' and 'Rid Of Me' first, by all means, but the odds are that you'll find even these, admittedly secondary, works essential in the extreme. I do.

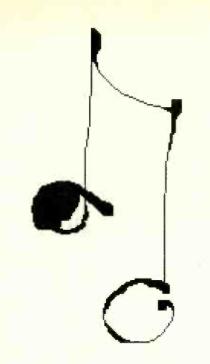


#### JOHN HEGLEY Saint and Blurry HANNIBAL HNCD 1376

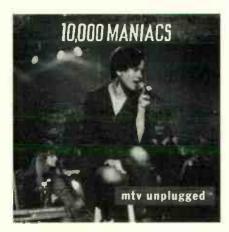
• He's one of the funniest performers in Britain today, celebrating such typically cute and decidedly British obsessions as dogs, the wearing of glasses, and - above all - that disappearing cult, the train spotter.

In poetry and song, his tongue always at least partially in his cheek, Hegley moves from wry observation, to out and out belly laughter, as we hear tell of why it's wrong to bow to the conceit of contact lenses, bemoan various canine tragedies (one dog dies, one looks like a loaf of bread etc.) and meet such eccentrics as Eddie ("He don't like fumiture, if you give him some for Christmas, he'll return it to ya") or the pleasingly plump Pat. Elsewhere, and to





unerringly witty accompaniment, Hegley introduces us to the bullying Colin, slags off the Edinburgh Tattoo, celebrates Jimmy Greaves and the delights of Sumo. This is one very funny man, and no one who cares for classic British comedy, from Ealing and Hancock to Fawlty Towers should be without his works. Nice one, John.



#### IO,000 MANIACS MTV Unplugged ELEKTRA 7559-61569-2

 Latest in MTV's live concert series is this swansong from the much admired Maniacs, cut shortly before the departure of singerlynchpin Natalie Merchant. Shame they never got beyond the accolade stage, because this was a band that really ought to have gone all the way with their stronglymelodied contemporary countryrock, centring as they did on such fairly atypical themes as having babies (the sublime 'Eat For Two'), the gentle beauty of 'Noah's Dove', or 'Trouble Me' with its folksy use of pizzicato strings. They could

boogie along with the best of 'em, as on the chugging 'Like The Weather', or be heftily subtle as on the five minute-plus 'Don't Talk', and even take a leaf from the Soul Book on the charming 'Candy Everybody Wants'. Ms Merchant deserves to go on to greater things. In the meantime this is a fitting tribute to a group that could, but never quite did, if only as far as sales were concerned.

But then maybe having such a weird name didn't help (borrowed from a cheap horror flick from the doolally Herschell Gordon Lewis). Careful next time kiddoes!



#### SPOONFED HYBRID Spoonfed Hybrid GUERNICA GUS CD

 Spoonfed Hybrid are the intriguing offspring of former Pale Saint, Ian Masters and Chris Trout from AC Temple. Together they make a series of subtle, albeit quite frequently muscular, variations on what could, for want of a better word, be called 'ambient music with gonads'. Hence the catchy instrumental 'Lynched'. or 'Tiny Planes', whose odd title hides a primarily instrumental item topped off by wistfully angelic vocal touches. If tending towards pretension at times (I thought I'd heard the last of lines about "rivers of the mind", thank you very much) this is primarily a work of subtlety, delicacy and enormous charm.

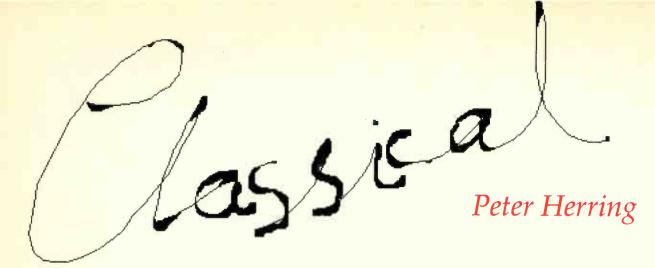
#### MOOSE Honey Bee PLAY IT AGAIN SAM BIAS 260 CD

• A year or so ago, Moose were gamering music paper covers like they were going out of style, visiting America, etc. In other words, getting the full music biz brouhaha. Then, inexplicably, their label - Hut - dropped them back into the wildemess from whence they came.

Since their two prime movers met at London's Music & Video Exchange (a bunch of shops where you listen to hundreds of records ten hours a day for paltry wages) Moose are nothing if not Catholic in their musical tastes, carrying the bones of everyone from Arthur Lee's seminal Love (West Coast folk-rock, '66-'68) to the late lamented British folkie Nick Drake, and no doubt a hundred more besides. But it doesn't really matter if all this background stuff's a total mystery to you, because Moose make a gentle, subtle-as-a-tracing and, above all, most seductive noise. The vocals, true, can be a little weak or even lacklustre at times, but the music features various canny blends of past, present and future, and when - as on 'Stop Laughing' - the voices are lushly arranged and the whole thing leavened by smart wah-wah guitar, clever harmonica fills and God knows what other quiet sound-tapestries, then Moose are a rare treat for the ears and soul. A breath of summer for the wicked months ahead.







In seasonal mood, choral music predominates this month, with pride of place going to George Lloyd's magnificent Symphonic Mass, in a recording conducted by the composer. The only purely Christmas offering comes from Vienna - normally better-known for its New Year's Day Concerts - and features Domingo, Carreras and, no, not Pavarotti this time, but the sylph-like Diana **Ross. Musical contrasts don't** come much greater.

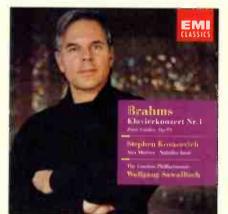


CHRISTMAS IN VIENNA Music by Brahms, Schubert, Mascagni, Irving Berlin and others. Diana Ross, José Carreras, Placido Domingo; Gumpoldskirchner Children's Choir; Vienna Symphony Orchestra; conductor, Vjekoslav Sutej SONY CLASSICAL SK53358 (DDD/63.10)

 Superficially, this appears to be a replay of the 1990 World Cup gig in Rome with a sleek American superstar replacing portly midfield supremo Pavarotti, and I daresay it will enjoy similar success. Straightaway, it must be said that this live recording of a concert given in Vienna, December 1992, is beautifully produced, with startling presence and transparency and with the principal voices magically captured. Sony certainly seem to have something special with their 'Super Bit Mapping' and 20-bit recording technique, if the smoothness and accuracy of the sound here is anything to go by.

At first, Schubert's 'Ave Maria' would seem to sit uneasily alongside Irving Berlin's 'White Christmas', but the juxtapositions actually work well, perhaps due to the fact that no less than Lalo Schifrin was the musical arranger for all but two of the items. There is more Schubert ('Mille cherubini in coro') and Brahms' 'Cradle Song', Mascagni's setting of 'Ave Maria', John Newton's 'Amazing Grace', Katherine Davis' 'Carol of the Drum' and the concert ends with - what else? - that best-known of German carols, 'Stille Nacht' (Silent Night). I could have lived without the opening rendition of 'lingle Bells', which is oddly out of character with the gently lyrical nature of the rest of the programme, and I rather wish Placido Domingo had left 'White Christmas' solely to the light. pure, unadorned voice of Diana Ross. Elsewhere, though, he is on terrific form, as is Carreras (superb in Schubert's 'Ave Maria').

An undemanding, enjoyable slice of seasonal sentimentality and, as already mentioned, a recording of demonstration class.



JOHANNES BRAHMS Piano Concerto Nol in D minor, Op I 5 and Two Songs for Alto with Viola and Piano, Op 91. Stephen Kovacevich, piano, Ann Murray, contralto; Nobuko Imai, viola; London Philharmonic Orchestra; conductor, Wolfgang Sawallisch EMI CLASSICS CDC 7 54578 2 (DDD/59.28)

• While signed to the Philips label, Stephen Kovacevich (or Stephen Bishop-Kovacevich as he was then known) made several recordings of Brahms' solo piano music which firmly established him in the front rank of Brahms interpreters. Yet, for whatever reason, he did not tackle the two concertos, perhaps because Philips already had fine versions of both by Alfred Brendel in the catalogue.

Last year, Kovacevich switched allegiance to EMI and has now followed up an excellent debut recording of Beethoven with this magisterial account of Brahms' often turbulent first piano concerto. He is joined by a conductor for whom Brahms is in the blood, the German maestro Wolfgang Sawallisch, and the combination, as you might expect, produces a performance that is deeply considered and attentive to detail. It is not as overtly exciting as some, but the stormy side of this work can be overplayed. A certain restraint is infinitely preferable.

#### **RECORD OF THE MONTH**

In a refreshingly honest and straightforward introduction to his Symphonic Mass, utterly devoid of the pseudomysticism which grips some composers when they approach a religious subject, George Lloyd describes the moment that convinced him that he should tackle a major choral work with what he calls "religious overtones". It was a summer evening in 1990 and he was due to conduct his Twelfth Symphony in a Three Choirs Festival concert in Worcester Cathedral. While waiting in the garden at the east end of the Cathedral, he heard the choir within singing some Delius. It was a magical experience: "The sounds seemed to float from nowhere and blended with a most perfect summer evening."

The outcome was a setting of the

Mass, but a non-liturgical one, hence the title 'A Symphonic Mass'. Lloyd goes on to say, ''l enjoy setting Latin; it is useful for a composer not only because of the fine sounds but because the words can be repeated a dozen times without anyone noticing.'' See what I mean about honesty!

The work was commissioned by the Brighton International Festival and first performed at The Dome in Brighton in May 1993, the year of its composer's eightieth birthday. Hearing it shows the years have brought, if anything, a strengthening of Lloyd's musical gifts, rather than a lessening, and the sheer vitality of the work is astonishing. For this recording, the Albany team wisely eschewed the unhelpfully dry acoustic of The Dome and opted for the more sympathetic sound of the Guildhall in Southampton. The recording was made just five weeks after the work's premiere and much of the excitement of that occasion clearly carried over to the sessions.

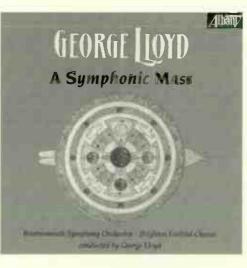
'A Symphonic Mass' has all the individuality and integrity encountered in the finest of George Lloyd's symphonies and concertos, and again displays his unequalled mastery of orchestration. It will surely come to rank as one of his finest achievements and deserves to be counted as a major contribution to the repertoire of English choral music. Yet, as with much of his output, its arrival has been overlooked in many areas of the musical establishment. Still, after all these years, I daresay George Lloyd has grown used to that.

#### GEORGE LLOYD A Symphonic Mass Brighton Festival Chorus, Bournemouth Symphony Orchestra; conductor, George Lloyd ALBANY RECORDS TROY 100 (DDD/60.50)

 From the explosive opening to the Kyrie, this is a work of colossal power and driving energy. The mood of the Kyrie is very different from the usual treatment of the text: no reverential act of supplication here, rather music of almost barbaric intensity and anguished urgency. I venture that it is some of the finest music to come from George Lloyd's pen. His sure touch with orchestration is nowhere better heard than in the opening of the Gloria, where the women's voices glide above a brilliant ostinato figure played by woodwinds, harp, and celesta. Lloyd continues to weave a splendid tapestry of sound then, at the plaintive 'Qui tollis peccata mundi (Who takes away the sins of the world), introduces a passage of ethereal, spellbinding beauty. It is just one example of how sensitively and imaginatively he treats the texts; it also demonstrates the undiminished capacity of the Mass to

inspire composers to the heights, even after ten centuries.

The Credo is the longest of the six movements of the Mass (Lloyd includes



an orchestral 'interlude' as the fourth movement, titling it Offertorium) and contains some glorious choral writing that would not be out of place in Verdi (one of the composers George Lloyd most admires).

After the intensity of the Credo, the deliberately

lightweight Offertorium, with its delightful dialogue between solo violin

and solo cello, makes a welcome contrast. Yet, again, the music is of the highest quality. The same is true of the setting of the Sanctus and Benedictus, where Lloyd once more eschews the traditional musical treatment of the words and places his own interpretation on the context and the resonance of what is being sung. It is stunningly effective and wholly convincing.

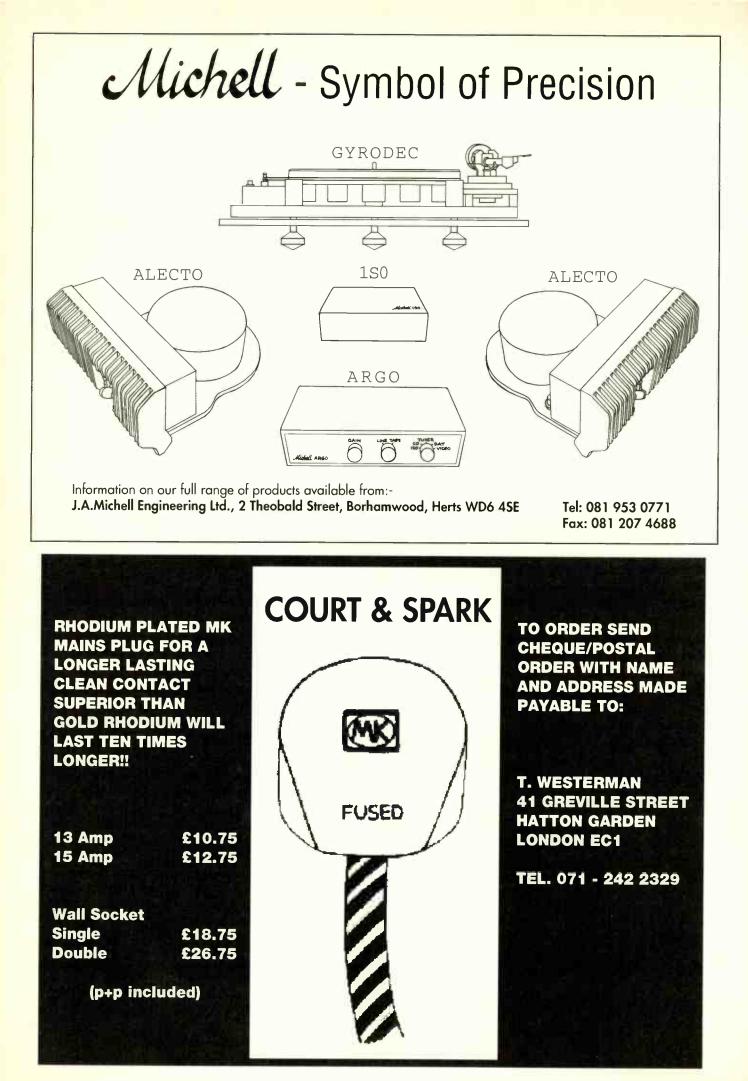
After the shattering climax to the Benedictus, the Agnus Dei has a light, almost pastoral, quality and brings the work to a quiet, noble conclusion. In his accompanying note, Lloyd comments that the words 'Dona nobis pacem' ('Grant us peace') became "the most unbearably poignant and relevent of any." Not, perhaps, unexpectedly for someone who served - and suffered - on the Arctic convoys during the Second World War.

George Lloyd conducts this recording of his Symphonic Mass superbly and obtains total commitment from his orchestral and choral forces. The Boumemouth Symphony Orchestra is on top form, as is the Brighton Festival Chorus, immaculately tutored by Laszlo Heltay. Artistically and technically, it is a triumph; musically, it simply bowled me over!

Brahms composed the concerto during a time of great personal anguish; his close friend, Robert Schumann, had suffered a nervous breakdown, had been committed to an asylum after a failed suicide bid, and was to die within two years. Meanwhile, Brahms was struggling to come to terms with the giant shadow cast across German music by Beethoven, and to write a symphony worthy of the Beethovenian tradition. It was a struggle which was to occupy him for another two decades.

The First Piano Concerto started life as a sonata for two pianos, but Brahms quickly saw in it the potential for a symphonic work. It may well have become his first symphony, were it not for the way the piano writing had become so complementary to the orchestral texture. Brahms decided to opt for the concerto form in 1856, the year of Schumann's death. but the reworking occupied him for another two years. Even then, he continued to amend the score right up to the first public performance in January 1859.

#### HI-FI WORLD JANUARY 1994



The only section of the intended symphony which Brahms retained was the first movement, which he marked 'maestoso', an instruction which Kovecevich and Sawallisch take to heart. After the commanding orchestral opening, Kovacevich adopts a measured, thoughtful and unmannered approach to the solo part. Nothing is glossed over; the impression is of a player who has thought about every note and the empathy between soloist and conductor is evident throughout, not least in the adagio which is hauntingly and tenderly played. Wolfgang Sawallisch, seventy this year, brings his wealth of experience to the interpretation, eloquently pointing the orchestral detail, and the LPO responds enthusiastically.

The recording - made in Studio One at Abbey Road and engineered by Mark Vigars - is truthfully balanced, and the fillup, the two 'Songs for Alto with Viola and Piano', is highly appropriate since it, too, like the concerto, has a link with one of Brahms's closest friends, the violinist Joseph Joachim. The songs are exquisitely sung by Ann Murray, and the playing of Nobuko Imai is a delight. Could we hope for more substantial collaborations between these artists and Stephen Kovacevich in Brahms' songs and chamber works?



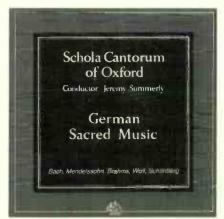
**HEINRICH SCHUETZ** 10 Motets: Hodie, Christus natus est/Fili mi Absalon/Heu mihi Domine/Ich danke Dir Herr/Der Engel sprach/Auf dem Gebirge/O quam tu pulchra es/Die Seele Christi, heilige mich/Exultavit cor meum/Selig sind die Todten **Pro Cantione Antiqua; Conductor, Edgar Fleet;** London Cornett and Sackbut **Ensemble; Restoration** Academy ASV QUICKSILVA CD QS 6105 (ADD/51.28)

• Born one hundred years before J.S. Bach, Heinrich Schuetz ranks as one of the great transitional figures in music, a bridge between the earlier contrapuntal school of Palestrina, Victoria, Byrd and Tallis, and the glories of Renaissance unaccompanied choral repertoire, and the school of Bach and Handel, which laid the foundations of modern instrumental music.

Schuetz enjoyed a remarkably (for the time) long life, dying in 1672 aged eighty-seven. His career embraced positions with the court chapels at Cassel and Dresden and, between 1609 and 1612, he spent three fruitful years studying in Venice with Giovanni Gabrieli. Although his middle years saw the disruption of the Thirty Years War (1618-48), he continued to visit Italy regularly and absorbed many of its musical developments into his own work. There is firm evidence of this in the motets recorded here, yet the image of Schuetz, perhaps because of his stark settings of the Passion texts, remains that of an austere, colourless figure. This is quickly disproved by listening to his exquisite psalm settings, the Italian madrigals, the vibrant Christmas Oratorio, or the motets.

The ten motets contained in this John Boyden/Tony Faulkner production from 1978 are all of the first rank and include two undisputed masterpieces: 'Fili mi Absalon' and the magnificent 'Selig sind die Todten'.

The fine singing of 'Pro Cantione Antiqua' is augmented by richly colourful and characterful instrumental contributions from the London Cornett and Sackbut Ensemble and the violin, lute, violone and bass violone of the Restoration Academy. The performances are scrupulous and idiomatic, and full of expressive warmth and dignified splendour. I found them deeply moving. Given its first-rate recording, this valuable anthology makes a welcome return to the catalogue.



GERMAN SACRED MUSIC Works by J.S. Bach, Brahms, Mendelssohn, Schoenberg and Wolf. Schola Cantorum of Oxford; conductor, Jeremy Summerly. PROUDSOUND PROU CD131 (DDD/77.33)

Increasingly, the city of Oxford is

becoming the classical world's equivalent of Tin Pan Alley. Proudsound, a joint venture between Paul Proudman and anet Thorn, joins the Isis and Gimell labels in being based there. Of course, links with the University have much to do with this, as this recording demonstrates. The Schola Cantorum is Oxford University's longest-established chamber choir and, in 1990, appointed Jeremy Summerly as its conductor. He had graduated as a choral scholar at New College eight years earlier and, in the intervening period, gained a further degree at King's College, London, worked in BBC radio and was made a professor in the department of academic studies at the Royal Academy of Music. He is therefore eminently qualified to tackle the wide-ranging repertoire on this, the choir's second recording for Proudsound.

The generous programme opens with three of Bach's motets ('Der Geist hilft' BWV226, 'Furchte dich nicht' BWV228, and 'Komm, Jesu, komm' BVVV229) and continues with music by that great admirer of Bach, Felix Mendelssohn, his Sechs Spruche, six motets dating from the 1840s and intended for various occasions in the liturgical calendar. Brahms follows, with the setting of 'Warum ist das Licht gegeben?' Op74 No1 and three motets Op110, Hugo Wolf is represented by the 'Sechs geistliche lieder' (Six sacred songs) of 1881, which are principally settings of Eichendorff, and the disc concludes with Arnold Schoenberg's setting of Mayer's poem 'Friede auf Erden' (from 1907). The latter, as the accompanying notes point out, was composed just a few months before Schoenberg abandoned the tenets of tonality for the disciplines of serialism and represents an ecstatic last flowering of his gift for tonal composition. The performance here, with its enthusiastic commitment and atmosphere of rapt wonderment, does full justice to Schoenberg's score.

Musically, the transition from eighteenth to twentieth century is seamlessly accomplished, the works chosen complementing each other well, and not just in the sense of being stepping stones along the path of German choral music. Overall, the singing of the thirty-five-strong choir, which has women rather than boys taking the soprano and alto lines, is excellent, although its German diction occasionally lets it down. Along with the Schoenberg, I especially enjoyed the performances of the delightful Mendelssohn pieces, and the Wolf songs are movingly sung.

The recording was made in the resonant acoustic of the chapel of Hertford College and is convincingly atmospheric, even if a little hard-edged in the loudest passages. Full texts and translations are provided and - for once - in a legible type size!



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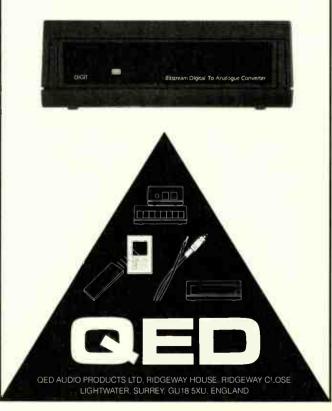
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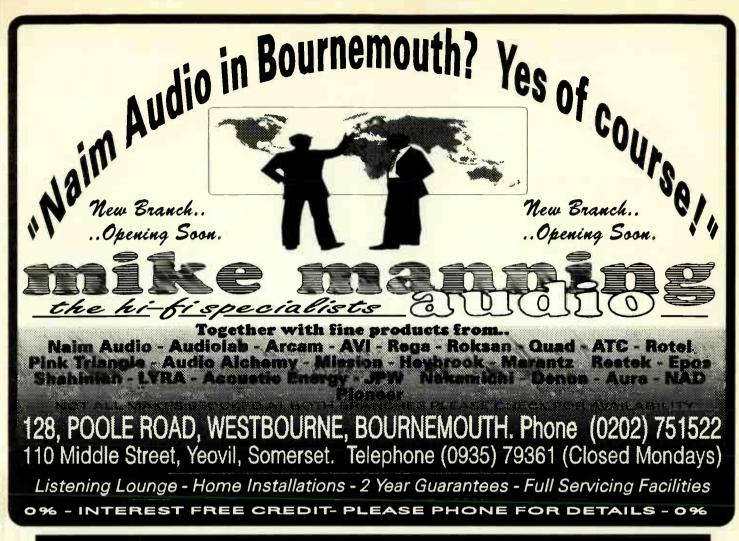
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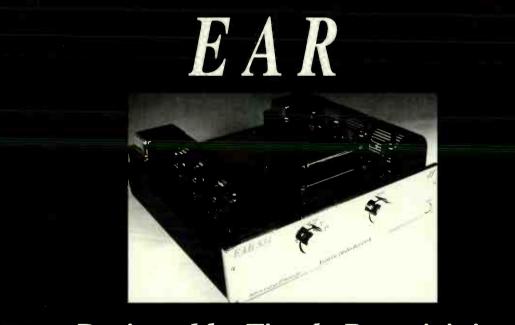
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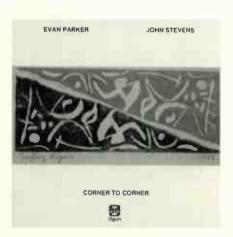
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• According to the standard history of jazz, the music started to lose impetus in the late '50s and early '60s. Rock music - in all its hybrids - took a whole generation of young people away from jazz, and hence stole its vitality and even its purpose.

That's one of the histories at any rate. Another is that in the 60s, partly through political motivation, the music exploded. The advances made by the music in that decade took it from being inextricably tied to tonal harmony - either the breakneck chord changes of bop or the statelier movement of cool jazz - to a regular rhythmic pulse.

The driving force behind this process of losing the need for regular pulse, harmony, and recognizable melody - those things which, for many listeners, really define music - was improvisation. Post-war jazz had drawn the centre of attention to improvised solos, and the great innovators of the '60s took this imperative into every part of the music, making improvisation the cutting edge of jazz. No other

development in the music's history has stayed at the forefront for this long. Perhaps it's as far as one can go, but on the evidence of the records reviewed here, there's a huge area to be mapped out once the last vestiges of preconception are discarded.

The Americans, midwives of jazz, did total improvisation, naturally, but so did the Europeans. So did the British, and how!

Groups like The Spontaneous Music Ensemble and the Music Improvisation Company brought a sort of intellectual rigour to Free Jazz, which gave it immense strength, even if it attracted flak from less rigourous critics and listeners.

Drummer John Stevens founded the SME; he'd come from a traditional working musician's background, having played in all kinds of swing, bop, trad and dance band situations. This might not have been apparent in his playing with the SME, but certainly the range of his vocabulary owed them something. In subsequent years he returned to more conventional settings, including time spent with musicians as diverse as singer-songwriter John Martyn and '80s jazz crossover star Courtney Pine, as well as leading more of his own groups, such as the John Stevens Dance Orchestra and Freebop.

Tenor and soprano saxophonist Evan Parker often played with the SME and has since developed into one of the greatest innovators on the instrument since John Coltrane. His extensive solo work has helped establish his reputation, and like Stevens, he has played in many surroundings over the last couple of decades, but his records as leader or coleader have always carried the torch for Free Jazz.

And it don't come much freer than 'Comer To Comer'. Recorded this summer, the album captures two master musicians spontaneously creating new worlds. Parker limits himself to the soprano, the instrument to which he's contributed perhaps more than any other living saxophonist. On more regular dates, Stevens will use a more regular kit, but here he too limits his choices, playing a kit of just two hi-hats and a child's snare drum.

This isn't music of the grand gesture, or of opulent sound. It's music of incident, driven by its own urgent need to invent, evaluate and re-invent, over and over. Like all Free Jazz, it's music of immense history yet with no desire to acknowledge it; music of huge skill, but with a hatred of virtuoso gestures. It's above all music of communication. For lovers of this music, 'Comer to Comer' is an essential gem. For newcomers, this record is a fine example of some of the most exciting music that exists on the planet.

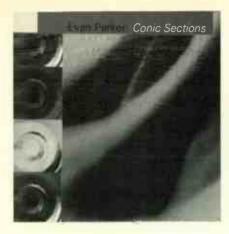


#### THE TONY OXLEY QUARTET The Tony Oxley Quartet INCUS CDI5

• Guitarist Derek Bailey was another SME stalwart, and in the years between then and now he's become this country's greatest advocate for Free Improvisation, developing a mesmerising, multi-technical style shom of a sense of history or precedent.

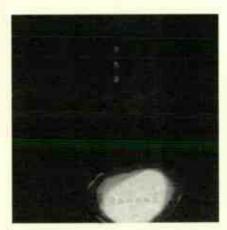
Another former session musician, he first came to Free Jazz while playing with the composer and bassist Gavin Bryars and drummer Tony Oxley. He joins the latter on this disc - another fine release from Incus, the label formed by Oxley, Bailey and Parker and now run by the guitarist - along with two electronics manipulators, Pat Thomas and Matt Wand.

If anything, this is even more daunting a listen for the Free neophyte than 'Comer'. Bailey's basic ability to play the guitar is often called into question, his style having moved so far beyond traditional techniques. The electronic tapestry woven around his - by turns delicate and blistering - creations is equally harsh. In a world where boffins serve up ever more advanced electronics, Thomas and Wand revel in the sheer shock of cheapo drum machines, tape loops, samples and synthesizers. Add into this lot Oxley's shifting, fragmented drumming, and you certainly don't get an 'easy' listen. But again, close listening will reveal this to be another corker.



#### EVAN PARKER Conic Sections AH UM AH UM015

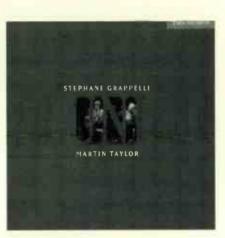
Meanwhile, Parker adds another gem to his body of work as a solo improvising soprano saxophonist. Like Bailey, Parker has developed techniques most instrumentalists could barely conceive of. His solo playing is a wall of sound, contrapuntal lines weaving in and out of a seamless, endless maelstrom, the usual monophonic qualities of the hom and the basic human need to breathe is apparently lost on Parker, who sounds like - at the very least - four great improvising saxists. Breathtaking stuff.



#### FUSHITSUSHA Allegorical Misunderstanding AVANT AVAN 008

Half a world away and coming to usby his own telling - via 70s hard rock and mediaeval plainsong, Japanese guitarist Haino Keiji brings us the inventions of his own improvising power trio Fushitsusha. I hope to have much more to say about this maniacal guitarist in future issues, but for now, a strong recommendation to buy this record will have to suffice. Essential, for serious guitar junkies.

# Simon Cooke



#### STEPHANE GRAPPELLI / MARTIN TAYLOR Reunion

LINN RECORDS AKD 022
 Before I start this review, I'd better say that I'm not exactly a fan of either

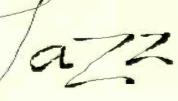
Grappelli or Taylor. I generally find their phrasing and tone, especially in Grappelli's case, lacking in content. It just doesn't say anything to me.

On the other hand, I am happy to accept that there are lot of people out there who like this kind of jazz, and for them, this album is pretty much an essential item.

Grappelli is rapidly acquiring 'elder' status in the mainstream jazz/easy listening world, while Taylor is still, by comparison, a mere infant on the knee of the older man, but a veritable Hercules between the twin serpents of timing and melody. He, like Grappelli, imposes his will on the tune in a light and easy manner which, for all that it makes me cringe with it's syrupy, cloying sweetness, is most admirable.

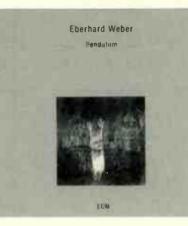
As you'd expect from a Linn recording, the mix is a lot better than average, and although it leans toward the slightly over-full and rounded sound provided by Linn hardware, it matches the feel-good, almost self-congratulatory tone of the recording very well.

If this is your kind of music, this is one of the most impressive recordings available of these two maestros at their best.





azz record review



# EBERHARD WEBER

• Despite appearing on a jazz label, and hence in jazz record stores, and also playing double bass, an instrument which vies with tenor sax as jazz mainstay, Eberhard Weber denies being a jazz musician, and remains almost impossible to classify within accepted stylistic frameworks.

As a bassist, Weber has supported, and been supported by, European jazz names such as Jan Garbarek and Rainer Brueninghaus on many recordings, but his style is far removed from mainstream jazz idiom, as he proved in concert on the South Bank in '90. If a solo bass concert sounds boring, don't be fooled: Weber has a gentility of humour often lacking in modem jazz music, and took the time to refute his jazz reputation during the concert by giving a sketch rendition of the history of jazz, crystallising each school into a few bars, and, incidentally, including a Stephane Grappelli impersonation of truly masterful proportion.

Weber may claim to have rejected the soulful meanderings which other European jazz musicians have drawn down to a fine art, but much of his work has the distant yeaming of whalesong, and on 'Pendulum' he combines this with strong rhythm to produce a sound that is at once happy and disturbing, joyful and serene.

'Pendulum' follows the ECM tradition of recording quality, and almost does justice to the ingenuity and skill of the musician. It's an education in musicianship, but if you really want to do him justice, go see him live. This is music-of an esoteric kind, I'll admit- of such depth and detail as to make you wonder why you're bothering with hi-fi at all.

World Radio History

87

# Peerless CC FORCE

s s

Wilmslow Audio's NEW range of speaker kits from *Peerless*.

This new range of four kits utilise CC technology drive units for optimum performance.

The kit contains all the cabinet components (accurately machined from smooth MDF for easy assembly).

Pictured here the Force 6, a large floor standing design.

Dimensions: 800 × 275 × 335 mm Response: 32 HZ-20 KHZ AMP Suitability: 30–120w Impedence: 8 ohms

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 Force 2
 £167
 £15 pr.

 Force 4
 £190
 £15 pr.

 Force 6
 £210
 £18 pr.

 Force 8
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 £18 pr.

All kits are available in Plus and Basic forms.



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Picture shows our 14 shelf 'V-max' adjustable shelf CD rack in Ash, which will hold 735 CDs

IAN EDWARDS The Old Chapel 282 Skipton Road, Harrogate, Yorks Tel: 0423 500442 Please send 3x2nd Class Stomps

\*\*\* Good news for home constructors \*\*\*

# XLO/PRO Series Audio Cable

XLO/PRO is the professional products brand from XLO Electric, which sound like...... nothing at all. These exceptional cables, which provide sonic and transmission qualities equal or superior to most high end cables are now available off the reel to the home constructor.

### XLO/PRO Type 100 Interconnecting cable £18 per meter

A shield "quad" conductor arrangement, designed for maximum flexibility of application, which may be terminated for single or as many as four unbalanced lines; single or double balance lines; or one balanced and up to two unbalanced lines. Most configurations can be shielded or unshielded.

### XLO/PRO Type 600 Loudspeaker cable £24 per meter

Multiple solid core speaker cable with an extremely low 62 pF/m line capacitance and very low line resistance. The signal conductors are of a diameter chosen to minimise skin effects, and are woven in a proprietary pattern to minimise frequency related phase shifts.

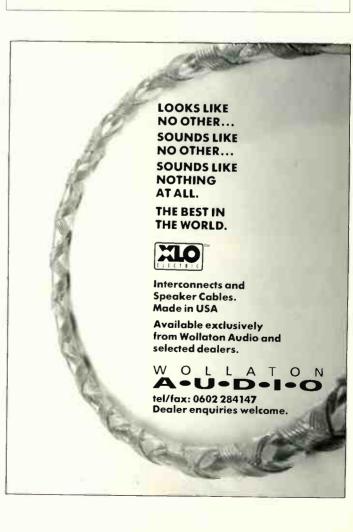
### XLO/PRO Type 1000 AC power cable £36 per meter

Heavy duty power cable, double shielded and double grounded US patented design actually improves sonic performance (I don't know why either, but it does and the difference is not subtle!)

### XLO Internal hook up wire

For amps and speakers. Also the new range

Read Alan Sircom's review in the December 1992 issue of Hi-Fi World and call Wollaton Audio 0602 284147 for more details.



# WORLD DESIGNS by Mail Order

K5881 KIT

£395 🔻



Here's a superb, Class A, 20watt stereo power amplifier that uses the inexpensive Russian 5881 output valve, a military version of the obsolete American 6L6, intended for low distortion audio work. It has super-quality output transformers (4/8/12 selected internally) to minimise distortion and the input stage uses triode working. A rugged, sixteen-gauge, all-

### VALVE LINE LEVEL PRE-AMPLIFIER £295 🕨

We now have finished the design of a super high quality chassis for the line level pre-amplifier. It is constructed from heavy gauge steel with an aluminium anodised and polished front panel. This new chassis comes with the complete kit of parts necessary to build the valve line level pre-amp.

The components are all high quality and include a special screened toroidal transformer, Military Spec. Russian valves, Alps potentiometer, metal film resistors, polypropylene signal capacitors, silver plated copper wire etc.

welded steel chassis is provided, together with protective bottom plate for safety; a protective top cover is an optional extra.

Designed for long life, low running costs and excellent sound quality, K5881 is sensitive enough to be used with a simple passive pre-amp. or our own line-drive pre-amp, and it matches modern loudspeakers well. There is a choke-regulated power supply, plus heavy 4mm 'speaker terminals that accept bi-wiring.

K5881 costs just £395 as a kit of parts, £495 for an easybuild version with made-up tag board and wired mains supply, and £595 fully built from an approved build service. The U.K./ Europe version has a 240/220V transformer but 120/110V can be supplied as an alternative - see Overseas details on Order Form, page 63.

#### SPECIFICATION

Power	20watts/ch.
Frequency response	I 6Hz-40kHz
Distortion	0.02%
Separation	60dB
Noise (CCIR)	-103dB
Sensitivity	240mV
Dimensions (mm)	400w,300d,180h
Supply	110/120V or 2 <mark>20/240V, 220W</mark>
Weight	l 6kgs(34lbs)





#### HIGH DEFINITION LOUDSPEAKER

#### £295

The High Definition loudspeaker is ideal for low power, high quality amplifiers, transistor or valve. It goes very loud with just I-5watts, having an enormous sensitivity of 94dB - that's 8dB more than most other speakers. It is also a very easy load for valve amps (8ohms) and it gives a terrifically dynamic and fast sound.

As well as being just about unmatched as a partner for esoteric amps, this speaker is also unusually suited to low powered vintage amplifiers, such as Quad IIs, Radfords, Pye Mozarts and such like.

The High Definition DIY loudspeaker is available as a complete kit, including flat pack cabinet, drivers modified and tested by us, all crossover components and hardware. The flatpack cabinet is finished in an attractive satin black and requires no further finish, but for those who prefer something a little more traditional a mahogany veneer is an option.

If you would like to build your own cabinets we are also offering a drive unit pack that comprises two tweeters and two woofers, modified and tested.

#### KLS2 LOUDSPEAKER

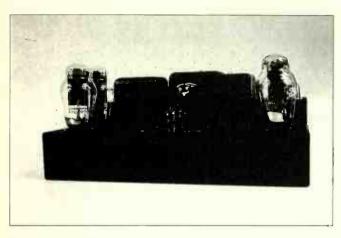
Satin Black/Mahogany Veneer Drive Unit Pack £295/£345 £145

HI-FI WORLD

# WORLD DESIGNS by Mail Order

**300B VALVE AMP KIT** 

£750 V



This is a specialised amplifier based on the highly linear 300B triode valve. Tim de Paravicini designed it - including the massive transformers - for minimum distortion without overall feedback. If you want feedback (tertiary or overall), it can be applied without difficulty.

Our 300B runs in Class A, giving one of the most sweet, open and neutral sounds possible today. Matched with good loudspeakers, it is unsurpassed.

The kit comprises a strong 16-gauge mild steel chassis, fully punched, welded and ground smooth. Finish is a durable 'powder coat' black. A protective bottom plate is provided for safety; a protective top cover is an optional extra. Output terminals (one pair) take 4mm plugs axially and radially for biwiring, or heavy gauge bare cable. Output options of  $4/8/16\Omega$  are selected internally at the transformer. A small circuit board carries most of the components. 240/220V and 110/120V versions available - see Overseas details and prices on Order Form.

All parts are included in the kit, except valves since different 300B makes are available.

A fully built version from an approved build service is also available for £1050 (valves extra). Availability - end of January 1994.

#### SPECIFICATION

Power	28watts
Frequency response	5Hz-36kHz
Distortion	0.2%
Separation	54dB
Noise (hiss/hum)	-100dB/-72dB
Sensitivity	240mV
Dimensions (mm)	405w,295d,175h
Supply	0/ 20∨ or 220 <mark>/240∨,</mark> 220₩
Weight	20kgs(44lbs)

# **DEMONSTRATIONS!!**

By the time you read this we hope to have our K5881 20W valve power amplifier and KLP-1 valve pre-amplifier on demonstration at Hi-Fi Confidential, 34 Buckingham Palace Road, Victoria, London. Phone the patient and understanding Luigi on 071-233-0774 to check availability. He's a valve afficianado, knows Tim de Paravicini and is still sane, and stocks plenty of good products - including World Audio Design. So hear us against the others - and don't you dare buy *them*!

#### HI-FI WORLD JANUARY 1994

### 4W SINGLE-ENDED TRANSFORMERS £190

A set of transformers (8kgs) for our single-ended amplifier (December '93. Supplement No 6).

1) Mains (1 off) Secondary: 0-210V a.c. at 150mA, 6.3V centre tapped. Primary: 220/240V or 110/120V - please state which on order form. Drop through fixing.

2) Output (2 off) High quality transformers with grain orientated silicon steel laminations. Secondary tapped  $4/8/16\Omega$ . Drop through fixing.

3) Choke (1off) Compact 1.2H/150mA choke for under-chassis fixing. Frame mount.

6080 valves - double-triode power valve for the single-ended amplifier - £15.00

### K5881 (20W CLASS A ) TRANSFORMERS £220

There are four transformers in all, weighing 12kgs. 1) Mains (1 off) Secondary: 0-360, 1 × 6.3V centre tapped. Primary 220/240 or 110/120 - please state which on order form. Drop through fixing.

2) Output (2 off) These transformers use high quality materials, laminations of thin and best quality grain orientated silicon steel. Output tapped  $4\Omega$ ,  $8\Omega$  and  $16\Omega$ . Drop through fixing.

3) Choke For smoothing of the H.T. line to provide best sound quality, a 5H choke that fixes under the chassis. Frame mounting.

### 300B (28W CLASS A) TRANSFORMERS £430

Seven transformers in all, weighing 16kgs (35lbs) 1) Mains (1 off) Secondary: 490V-0-490V, 6 x 5V, 1 x 6.3V. Primary 220/240 or 110/120 - please state which on order form. Drop through fixing.

2) Output (2 off) Designed for low distortion and broad load compatibility from the 300B. Cores with centre-hole fixing to avoid corner flux concentrations; laminations of grain orientated silicon steel. Output tapped  $4/8/16\Omega$ . Drop through fixing. 3) Intervalve/phase splitter (2 off) Special Tim de Paravicini design, potted in steel for secrecy. Drop through tags. 4) Chokes (2 off) For smoothing of the H.T. lines, two 5H chokes that fix under the chassis. Frame mounting.

### HIGH PERFORMANCE 3-WAY SPEAKER £729

Our high performance 3-way DIY loudspeaker featured in Supplement Nos. 3 & 4 is now available as a kit. The cabinet has been designed to be extremely easy to build (even though there are 36 panels for the pair) requiring only wood glue and stretchy carpet tape to clamp the panel in place. All drive units and hardware are supplied.

When built, the loudspeaker is comparable to those costing more than twice the price, with a transparency and openness in the midrange that is unmatched by most. The price for this entire kit, including VAT and p&p is  $\pounds$ 729.



WARNING

THESE ARE EXPERT KITS, NOT FOR THE INEXPERIENCED.

THE VALVE KITS CONTAIN LETHAL VOLTAGES. WE CANNOT BE HELD RESPONSIBLE FOR ANY ERRORS ARISING FROM THE CONSTRUCTION OF THE KITS.

#### **ORDER FORM**

Please send your completed order form to: WORLD AUDIO DESIGNS, 64 Castellain Road, Maida Vale, London W9 IEX Tel: 071 266 0461 Fax: 071 289 5620

240/120 option - delete the voltage NOT required.

Valves included except where stated.

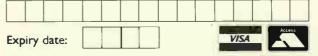
'BUILT' - we can supply the amplifiers built up and tested by an approved service, for safety and guaranteed performance to specification.

			PRICES			
DESCRIPTION	ORDER No.	QTY	UK (inc VAT & carriage)	OVERSEAS. (net)		
SINGLE-ENDED transformer set	SE-TR240/120		£190	£150		
K5881 20W budget valve amplifier						
KÍT	K5881-K240/120		£395	£350		
BUILT	K5881-B240/120		£595	£550		
transformer set	K5881-TR240/120		£220	£180		
300B 28W specialised valve amplifier						
(prices do not include valves)	2000 1/240/120		£750	£650		
KIT	300B-K240/120 300B-B240/120		£1050	£950		
BUILT	300B-6240/120 300B-C		£70	£60		
optional top cover transformer set	300B-TR240/120		£430	£370		
KLPI line preamplifier	5000-112-10/120		2150	2570		
KIT	KLP1-K240/120		£295	£250		
BUILT	KLP1-E240/120		£395	£335		
KLSI 3-way floorstanding loudspeaker						
KIT , S	KLS1-K		£729	£650		
Drive units and hardware	KLS-D		£429	£370		
KLS2 2-way, high definition, floorstanding speaker						
KIT (Satin Black)	KLS2-K		£295	£250		
Mahogany veneer	KLS2-KM		£345	£295		
Drive units	KLS2-D		£145	£120		
Loudspeaker measurement	22020	_	(110)	(200		
mic and preamp + test disc	3382B		£440	£390		

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for £ Designs Ltd.

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#### **OVERSEAS PRICES AND DETAILS**

All our kits can be supplied overseas excluding the European Community, free of UK tax (VAT). However, allow for your own local import taxes (customs duties) and for carriage charges, which must be added to our net price. Surface mail is slow (1-4 weeks) but inexpensive; airmail is fast (up to 7 days) but more expensive. Couriers like Amtrak we recommend for speed and door-to-door service. We package overseas orders strongly.

#### **METHODS OF PAYMENT**

International money order in Sterling, Visa, Mastercard/Access, Local Currency at agreed exchange rate by registered mail. Payment in advance. Contact us for details.

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London, England.	
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#### HI-FI WORLD JANUARY 1994

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Constructed from strands of solid core silver wire and silver soldered to the excellent Neutrik Profi phono plugs which are probably the best available. These line

level interconnects offer the ultimate in transparancy, openness and detail. The plugs are bonded to the cable with adhesive heatshrink to ensure that

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HIFI WORLD SOLID SILVER CABLE.....£139.95/1M PAIR.

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CABLE CONNECTORS ... £10.00

**ARCAM RCA PHONO** 

This heavy-duty phono plug,

Craftsmanship marks out Michell Engineering's rage of



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INTERCONNECTS

passed through the skin of a cable these can approach the quality of a silver cable with the cost of a normal high quality copper

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Designed to hold about a hundred LPs, with an internal width of 37cm, height of 32.5cm and depth of 32cm. The cubes can be stacked or placed alongside each other and are even strong enough to be used as seats! Made from 15mm MDF (Medium Density Fibreboard) with a smart durable black paint finish, the cube is supplied in flat-pack form ready for home 

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ma<mark>de i</mark>n Japan to Arcam's specification, will accept cable up to 7mm in diameter. The body is nickel-plated, the contacts plated in gold. Supplied in pairs marked with either one ring or

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two to allow directionality to be taken into account. RCA PHONO PLUGS (4).£15.50

#### GOLD PLATED 4MM BANANA PLUGS

We have a new style, heavyduty, gold-plated banana plug with a unique type of axial solderless connection for loudspeaker cables. The cable is stripped back and pushed into a clamping collar which is then screwed down tight, accepting cable up to 6mm external diameter and 4mm core diameter. Supplied in sets of four.

HI-FI WORLD JANUARY 1994

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Franslucent sleeves, treated to reduce static and dust attraction, supplied in packs of fifty. They will fit inside ordinary printed inners.

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#### KONTAK

An effective cleaning solution that removes contaminants from electrical connections. after application, a system regains its original life, sparkle and vigour.

KONTAK ......£19.00

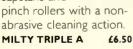
### HI-FI WORLD DRY **STYLUS CLEANER**

Keep your stylus sharp and bright for perfect tracking without using fluid. Cut a strip about the size of a matchbox striker off this sheet of card and draw it gently under the stylus from back to front. One sheet of this card, with its aluminiumoxide micro-abrasive coating. should be enough to clean your stylus at least forty times. DRY STYLUS CLEANER ... £1.95

## MILTY TRIPLE A

Suitable for all types of cassette

players including autoreverse, the Milty Triple A wipes clean single/dual capstans and



# **BUG AUDIO**

A fascinating little device no larger than a hand-held remote which allows the user to adjust bias on any cassette deck perfectly for any tape. You can check the state of your cables and connections with it, too! Supplied with a cassette test tape and full instructions. (See review, Nov. 1992 issue.) BUG AUDIO ......£59.99

## GOLDRING EXSTATIC MAT

For vinyl users, the Goldring Exstatic is a felt mat made with fine carbon fibre strands. This helps to reduce positively charged static electricity that builds up on the surface of records

GOLDRING EXSTATIC MAT

.....£7.50

dio technica



### SUPER EXSTATIC **CARBON FIBRE DISC CLEANER**

Effectively removes dust and grime from record grooves, this cleaner is a combination of one million carbon fibre filaments and a soft velvet cleaning pad.

**EXSTATIC CARBON FIBRE** 

fingerprints, oil and film, while a pad lifts off dust. Pad brush and fluid are supplied. AUDIO-TECHNICA RECORD

CLEANING SYSTEM £10.50

#### **AUDIO-TECHNICA** COMPACT DISC LENS CLEANER

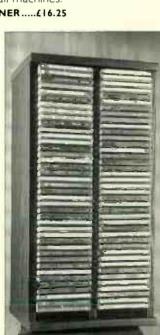
A disc the size of a CD, with fine brushes - one of which is

dampened with cleaning fluid. As the disc spins in the player, the brushes clean the laser lens. It may not suit all machines.

CD LENS CLEANER ..... £16.25

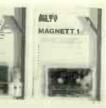
## SOUND SWIVEL

A rotating, upright, doublespace for up to 160 Compact Discs, including 8 double jewelcases. Mounted on an all-steel turntable, it swivels smoothly through 360 degrees giving easy access to the storage compartments either side. Manufactured in durable MDF with a Black Ash effect finish, the Sound swivel comes packed for self assembly with full instructions.



20141

TRIPLE



#### **MILTY MAGNET IX** The Milty Magnet IX comes

**CLEANING SYSTEM** 

complete with battery. It

requires approx one second to heads removing magnetic charge build up.

AUDIO-TECHNICA RECORD

cleaning agent in the handle removes

Removes both dirt and static; a tiny amount of

Recommended after every 30 hours of playing time

MILTY MAGNET IX

de-magnetise the

£10.50

# sided, storage cabinet with

**PIXALL MK II RECORD CLEANER** Made in the UK, this simple record cleaner uses a replaceable roll of sticky tape which lifts dust out of the groove. After use, the dirty length of tape can be peeled off, reducing the risk of any gritty particles picked up being ground back into the vinyl. When the tape runs out, a new roller is simply clipped in. 

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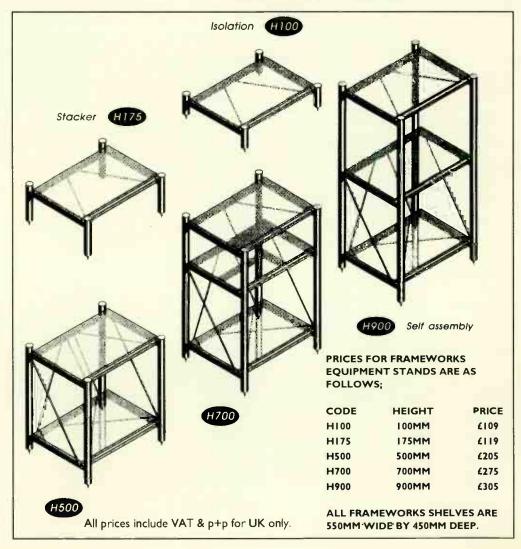
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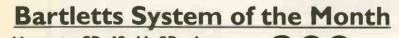
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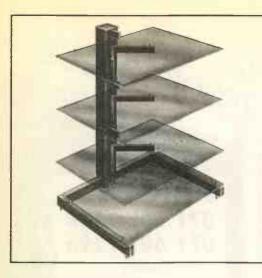


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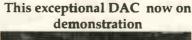
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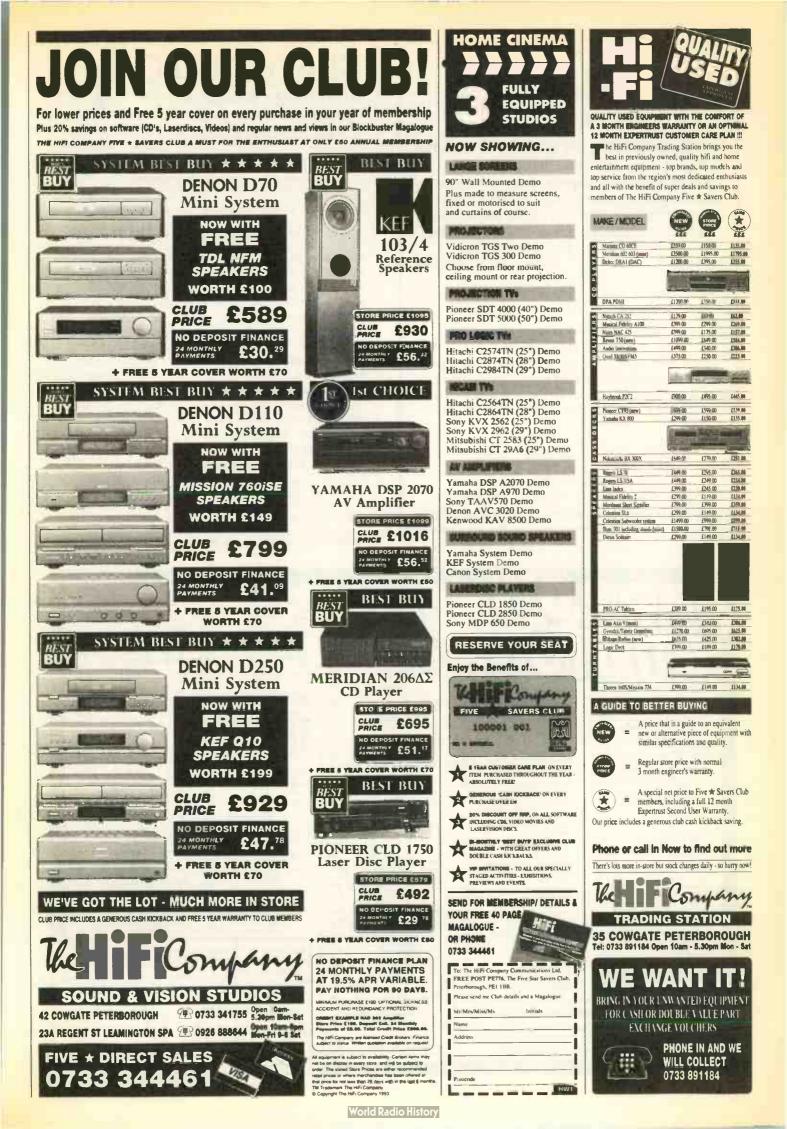
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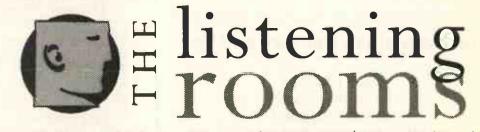
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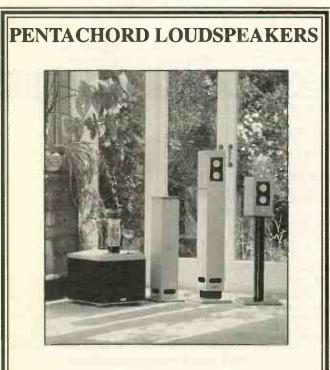
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MINI SYSTEMS         COMPACT DISC           SC-CH950         SC-CH950           SC-CH50         E49           SC-CH550         E549           SC-CH550         E549           SC-CH550         E549           SC-CH550         E569           SC-CH550         E669           SC-CH550         E659           SC-CH750         E659           SC-CH750         E659           SL-PS200         E769           SL-PS200         E769           SU-A200         E799           SU-A200         E199           SU-A200         E199           SU-A200         E199           SU-A200         E199           SU-A200         E199           SU-4200         E669           SU-4200         E669           SU-4200         E619           SU-4200         E619           SU-4200         E619           SU-4200 <th>£159         MHC-710CD           £159         MHC-70CD           £189         MHC-C50CD           £239         MHC-C70CD           £399         MIDL/MINI SEP           £339         SA-W90           £339         SA-W90           £239         MIDL/MINI SEP           £339         SA-W90           £219         HI-FI SYSTEM           £2285         Dolby Surround           £169         SA-VA3           £189         AMPLIFIERS           £249         TA-AV570           £360         TA-F211           £669         TA-F242           £209         TA-F542           £245         TAG 1000ES           £319         Diagram</th> <th>£715         159CD           £360         209CD'           £429         259CD           £475         359CD           £570         559CD           759CD         759CD           ARATE         CD P-AYERS           £95         CDP-411           £95         CDP-411           CDP-911         CDP-235M           £235         CDP-4025M           £935         CDP-4335           £750         CDP-M301           MDP-650         (CDV)           £145         CASSETTE DEC           £190         TC-FX211           £230         TC-FX211</th> <th>£335         £380         £429         £479         £570         £571         £1049         £165         £190         £239         £239         £219         £219         £165         £165         £165         £165         £165         £165         £199         £219         £219         £219         £165         £165         £165         £165         £165         £165         £165         £165         £165         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £269    <th>A cashback Offer Mini Compon SC-CH550 SC-1</th><th>r applies to these ent Hi-Fi Systems CH650 SC-CH</th><th>three s: <u>1655</u></th></th>	£159         MHC-710CD           £159         MHC-70CD           £189         MHC-C50CD           £239         MHC-C70CD           £399         MIDL/MINI SEP           £339         SA-W90           £339         SA-W90           £239         MIDL/MINI SEP           £339         SA-W90           £219         HI-FI SYSTEM           £2285         Dolby Surround           £169         SA-VA3           £189         AMPLIFIERS           £249         TA-AV570           £360         TA-F211           £669         TA-F242           £209         TA-F542           £245         TAG 1000ES           £319         Diagram	£715         159CD           £360         209CD'           £429         259CD           £475         359CD           £570         559CD           759CD         759CD           ARATE         CD P-AYERS           £95         CDP-411           £95         CDP-411           CDP-911         CDP-235M           £235         CDP-4025M           £935         CDP-4335           £750         CDP-M301           MDP-650         (CDV)           £145         CASSETTE DEC           £190         TC-FX211           £230         TC-FX211	£335         £380         £429         £479         £570         £571         £1049         £165         £190         £239         £239         £219         £219         £165         £165         £165         £165         £165         £165         £199         £219         £219         £219         £165         £165         £165         £165         £165         £165         £165         £165         £165         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £145         £269 <th>A cashback Offer Mini Compon SC-CH550 SC-1</th> <th>r applies to these ent Hi-Fi Systems CH650 SC-CH</th> <th>three s: <u>1655</u></th>	A cashback Offer Mini Compon SC-CH550 SC-1	r applies to these ent Hi-Fi Systems CH650 SC-CH	three s: <u>1655</u>
AIWA           NSX-360           MINI-SYSTEMS           LCX-07         5285           NSX-200         5249           NSX-5106         6419           NSX-5106         6419           NSX-500         6519           NSX-0707         6999           NSX-0707         6599           Z0-3000M         6565           Z0-3000M         6565           Z0-5000M         6565           Z0-7000M         6565           ZD-7000M         6565           ZD-7000M         6565           ZD-7000M         6565           ZD-7000M         6565           DVC         DENOOT           MINI-SYSTEMS         MOW IN STO	£139         MINI-SYSTEMS           £139         N-33/33M           £190         N-33/33M           £190         N-33/33M           £219         A-302           £519         A-400           £659         A-400           £219         A-202           £789         A-400           £219         A-202           £659         A-400           £219         A-202           £028         A-400           £219         A-202           £219         A-202           £219         A-202           £219         A-202           £219         A-202           £219         A-602           £210         A-602           £210         A-602           £210         A-602           £210         A-502           £210         A	£245/£389         J-10/10M           £450/£499         J-20/20M           £450/£499         J-20/20M           £659/£619         J-40/40M           £659/£619         J-40/40M           £659/£619         J-40/40M           £70/£619         J-60/50M           £125         PD-102           £15         PD-102           £160         PD-202           £190         PD-M802           £265         PD-M602           £285         PD-M701           £235         PD-502           £649         PD-5602           £649         PD-5602           £579         PD-5802           £579         PD-5802           £599         PD-S901           £699         PD-TM3           £199         Pckstar	£499/£540         MS-A7           £585/£630         CD-301           £679/£720         CD-351           £679/£720         CD-551           £679/£720         CD-551           £785/£900         CO-551           £785/£900         CO-551           £7679         CD-551           £169         CO-901           £169         CO-951           £269         CO-951           £229         AMPLH           £439         CO-951           £219         KA-102           £259         KA-302           £259         KA-302           £259         KA-502           £489         K-4502           £489         K-4502           £489         K-4502           £489         K-502           £6489         K-502           £756         CO-702 </td <td>XSTEMS 2379 XSTEMS 25379 XC409 M 2459 C599 M 2549 M 2549 M 2599 M 2599 M 25999 M 25999 M</td> <td>MIDI-SYSTEMS M27 M47 M47 M57MG M-57MG M-57MG M-97MG</td> <td>£749 £799 £799 £849 £998 £1149 £1149 £1199 £155 £209 £199 £269 £299 £359 £499 £155 £155 £155</td>	XSTEMS 2379 XSTEMS 25379 XC409 M 2459 C599 M 2549 M 2549 M 2599 M 2599 M 25999 M	MIDI-SYSTEMS M27 M47 M47 M57MG M-57MG M-57MG M-97MG	£749 £799 £799 £849 £998 £1149 £1149 £1199 £155 £209 £199 £269 £299 £359 £499 £155 £155 £155
ADAGIO G7.         £950         D250.           ADAGIO S2.         £350         D-70 (Award Winne           ADAGIO S3.         £380         AMPLIFIERS           ADAGIO S4.         £445         PMA-25011.           ADAGIO S6.         £570         PMA-35011.           MX-55M         £437         PMA-450.           MX-56         £380         PMA-450.           MX-77         £618         PMA-480R.           MX-90         £265         CD PLAYERS           UX-A3.         £285         0CD-1290.           UX-A3.         £285         DCD-595.           UX-A4.         £349         DCD-595.           UX-A5.         £350         DCM-348.           W-350D.         £340         CASSETTE DECKS           MDI-SYSTEMS         DRN-710.         DRS-610.           W-78CD.         £340         DRS-610.           DRS-610.         DRS-610.         DRS-610.           DRS-610.         DRS-610.         DRS-610.           DRS-7289 EDGWARE ROAD         DRW-760.         TU-2601.           UNERS         TU-580RDS         TU-560RDS           TU-1225 EDG         ETHORENS         SPEAKE           TD-166/AT-95E	Int 1989         CASSETTE DEC           1219         CASSETTE DEC           12219         KX-260           1229         KX-360           1229         KX-w362           1269         TX-350           1279         TX-470           1239         RECEIVERS           1249         RX-360           1229         RX-360           1229         RX-360           1299         RX-470           1299         RX-470           1299         RX-360           1219         DSP-A1000           DSP-A500         DSP-A500           DSP-A500         DSP-A500           DSP-A500         DSP-2000           Mordaunt         DSP-2000           Avc-1530         Avc-1530	YAMAHA           KS         AMPLIFIERS           £159         AX-470           £259         MX-630           £199         AX-570           £259         MX-630           £199         AX-630           £199         MX-630           £259         MX-630           £199         MX-630           £249         CD PLAYERS           CDX-1060         £129           £159         CDX-670           £239         CDX-670           £239         CDX-670           £239         Full range of           £1099         AVR 1000           £499         CENON           £199         AVR 1000           £699         KR-V00D           £699         KR-V050           £1099         AVR 1000           £69         KR-V050           £09         KR-V050           £109         KAV8500           £69         KR-V050           £100         KR-V050           £100         KR-V050	C239         DP-505           DP-525         DP-505           DP-505         DP-505           Station         DCCAS           E519         SANTO           E519         SANTO           E329         HTACH           E329         HTACH           E329         HTACH	IERS         WAS MDW           335(55/2)         E179         129           34/2         E169         93           d/A-4040R (60/2)         £249         159           A442 (75/2)         E199         149           ICESSORS         R337 (60/2)         £209         139           R437 (70/2)         £259         149           CP-2         E755         499           SG         301 (40/2)         £209         139           RS         S         S         S           SF-3         £409         269         159           ICPUS 2         E795         679         179           ICPUS 2         E795         549         299           IS         S         S         S         S           FA-5         £409         269         179           ICPUS 2         E795         549         299           ICPUS 2         E795         549         299	CE OFFEERS SONY UHC-500 COMPACT DISC ANYA XC-900 PHILIPS CO-910 PHILIPS CO-910 PHILIPS CO-910 PHILIPS CO-910 PHILIPS CO-910 TECHNICS SL-P65320 CASSFTTE DECKS KENWODO KC-5030 YAMAHA KC-W232 VIC TD-X32 TUNERS AXAI AT-55 PIONEER F-676 SONY ST-5170 JVC FX-347	£135 £165 £269
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#### COMPACT DISC PLAYERS

recommended products

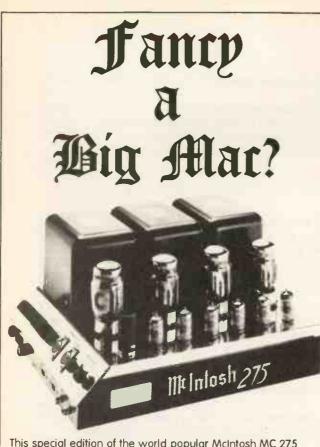
SONY CDP-497 DENON DCD 890 CREEK CD60 QUAD 67	£160 £270 £500 £790	Superb starter CD Player, packed with facilities. Exciting and forceful sounding player, but slightly characterful I 6-bit player. Excellent rhythmic properties and a superb bass performance. A new breed of Quad. Remarkable solidity and lacking nothing in verve or	Aug'92 Nov'92 Apr'92
SUGDEN SDT I NAIM CDI	£850 £1598	excitement. Airy and spacious with a rare quality of ambience. Single box, 16 bit player. Close to the two box CDS, has vital 'tingle factor'.	May'93 Mar'93 Apr'92
COMPACT DISC TR		S	
DPA DIGITAL T-I	£795	Superbly clean and detailed sounding transport when sync-locked to	1 100
M'MEGA DUO CD.2	£1850	DPA's converters. Seriously priced, serious CD using Philips' CDM-9 PRO mechanism. Exemplary.	Jan'93 Apr'93
DIGITAL TO ANAL	OGUE CO	NVERTERS	
QED DIGIT/OPTO	£39/169	Philips Bitstream. Excellent value, with no rough edges. Now with optical	
DPA LITTLE BIT II DPA DACS SUGDEN SDA-I	£450 £450-2K £650	input (Opto). Building on the qualities of the original Little Bit, the 'II' is clear and open. The current masters of DAC-7, their DACs offer superb performance at a range of 16-bit Philips based. A wide, open window for the transport to flow through.	
P. T. ORDINAL	£695	V. neutral. Pure sound, smooth and free from hardness. One of the best at any price.	Jun'92 Jul'93
M'MEGA DUO PRO DPA PDM ONE III P. T. DA CAPO	£1050 £1280 £1350	Spacious and dynamic presentation, with a detailed and informative manner. Less ruthless than, but staggeringly close to, the PDM 2. Two box, DAC-7 affair. Pink Triangle's own one bit DAC reaches new standards in digital. One of the	Apr'93 Mar'92
		very best.	Jan'93
TURNTABLES			
PROJEKT 2 THORENS TD I 66 MICHELL MYCRO	£245 £270 £397	Czech built turntable with much to offer. Very coherent. Fitted with Rega RB 250 arm. Good basic deck, with tweakability. Inbetween the Synchro and Gyrodeck, the Mycro has superb midband	May'92 Jun'92
ROKSAN XERXES P. T. ANNIVERSARY SME MODEL 20	£785 £1200 £2495	clarity and poise. Highly analytical and exciting turntable. Can be almost CD like in its presentation. Very neutral turntable. Excellent imagery and detail. A natural partner for the SME V The last great turntable, bettered only by the $\pm 11,000$ Model 30.	Apr'92 May'92 /.May'92 Oct'92
TONEARMS			
REGA RB 300	£139	For Pink Triangles, Michells, Roksans, and Systemdeks. Simple and superb; dynamic with solid bass.	
MORCH DP-6	£665	' Unipivot plus ' tonearm. Silken and rich quality. Perfect match for the Da Capo	1 1100
SME 309	£568	cartnidge. Based on IV and V: Aluminium armtube and detachable headshell. High end value	Jul'92
SME SERIES V	£1232	for money. A masterpiece of precision engineering, with a cohesive sound.	Jan'93 May'92
CARTRIDGES			
GOLDRING 1012 GX GOLDRING 1022GX SUMIKO BLUE POINT ORTOFON MC15 GOLDRING 1042 SHURE VST-V GOLDRING ELITE	£80 £100	Rounded bass, slightly forward midband, clean transients. A bargain. Extra degree of dynamic range and speed over the 1012GX The blue point casts a romantic charm over all types of music. Robust too. Moving coil cartridge at a moving magnet price. Has a tight grip on rhythm. A reference to all other MMs regardless of price One of the finest moving magnets currently available. Excellent tracker. British made moving coil. Good value, smooth and detailed, but can sound	Jul'93 Jul'93 Oct'92 Jun'92 May'92 Jul'92
MORCH DA CAPO	£500	brittle at times. Scan-Tech designed moving coil cartridge. Musical and accurate, without any flaw.	Apr'92 May'92
CASSETTE RECORD	DERS		
NAKAMICHI DR2	£500	Worth every penny, pushes recordings to the limit and remains unflustered.	Mar'93
PIONEER D-500 TEAC V8000S	£600 £699	Very smooth sounding DAT deck, but still slightly coarser than the original source. Dolby 'S' deck. Easy to use, very stable sound, with instrumental textures close to	Apr'92
NAKAMICHI DRI NAKAMICHI CR-7	£780 £1500	perfect. 'Domestic' deck with Nakamichi sound quality, and manual head azimuth adjustmen No Dolby 'S', but auto tape tuning and motorised head. Astonishing complexity; The Best!	Jun'92 it. Jun'93 Aug'92

# recommended products

## World favourites

#### TUNERS

AURA TU-50 YAMAHA TX-950 H/K TU9400	£230 £2 <b>6</b> 0 £300	Superb FM-only tuner. Produces a delightful, three-dimensional sound. A cracker. Fine all-rounder, with good AM section. Fairly basic facilities, but sound which beats anything at the price.	May'92 Jul'92 Jul'93
QUAD 66FM NAIM NAT 03	£490 £500	Among the very best in terms of tonal colour and imagery. Remote controllable. Warm and easy sound with a good sense of atmosphere, Excellent value.	Nov'92 Sep'93
NAIM NAT 01	£1377	The best solid state tuner currently available. If you want better radio, live in the studio!	Mar'92
INTEGRATED AMPL	IFIERS		
Н/К НК6150	£159	Good sounding starter amplifier. Great dynamic range, excellent bass.	Jun 92
NAD 302 PIONEER A-300X	£160 £200	Lots of insight and detail, but could sound a little rough in the wrong system. Exceptionally sweet mid and treble, plus the superb dynamic range of the A400.	Jan 93 Dec'92
DENON PMA-350II		Powerful and with deep rhythmic bass drive.	Sep'93
H/K HK6550 AUDIOLAB 8000A	£349	Thoroughly refreshing, tonally neutral amplifier with a realistic price tag Very neutral and superbly built. Good bass, great imagery, but can be sterile.	Nov'92 Apr'92
SUGDEN A48B	£460	Gentle performer, but never masks the music with warmth. Tonally very even.	Apr 92
AUDIONOTE OTO	£1250	I 2w Valve amplifier. More in tune with music than hi-fi. Superb dynamic range.	Jun'92
EAR 834	£1295	Valve integrated amplifier with a sweet, open and detailed sound.	Feb'93
PRE-AMPLIFIERS			
A. I.SERIES 200	£350	Valve preamplifier.Rather coloured but very dynamic. Best with Innovations	
		equipment.	May'92
A. SYNTH. PASSION DPA DSP 2005	£495	$\pounds$ 475Or $\pounds$ 275 for the kit version. Unrivalled transparancy from a passive pre-amp. Not quite the 50S, but there's still nothing to match it at the price, use with 2005	Aug 93
MICHELL ISO HR	<u>£850</u>	power. Impossible not to recommend. What more does your vinyl want?	Jun'93 May'93
POWER AMPLIFIERS	5		
SUGDEN AU41P	£530	100 Watts of smooth, detailed, full bodied sound. And at a bargain price.	Apr'93
QUAD 606	£675	140W powerhouse. Smooth and civilized, with the legendary Quad back-up.	Aug'93
DPA DPA 2005 MICHELL ALECTO (S)	£750	Not as cold as the 50S. Better than anything else at the price. Valve like transparancy, big warm easy going sound.	July'93 Sep'93.
A. I. SER. 1000	£1500	50W valve monoblocks. Powerful sound.	May'92
MICHELL ALECTOS		The Alectos have a lucidity and three dimensional realism that is rarely attained.	Dec'92
CHORD SPM 1200 E.A.R. YOSHINO	£2995 £25,000	Massively powerful, dynamic and detailed sound. Among the best of solid state. Single-ended valve design. Noel is still suffering withdrawal from this product.	Mar'93 Jul'93
LOUDSPEAKERS			
CELESTION I	£99	Low price, compact size, big sound. An exciting all round performer.	Oct'92.
R' ALLAN MINETTEII	£120	Fast and lively sounding, competent bass.	Sep'93
GLL MAXIM	£120	Replacing the Maxim 3; not as tight in the bass but still one of the best at the price.	
MISSION 760i TANNOY 603	£120 £125	Detailed, fast, and have bags of rhythm. Ear bashing pleasure. A rich and smooth blend that offer their best when bi-wired.	Nov'93 Sep'92
ROGERS LS2a2	£209	So far the most correct speaker we have discovered at the price. Sweet and even	
TRIANGLE COMETE	£375	natured. Highly efficient small-box loudspeaker with a superb mid band. Great for	May'92
	6400	valve amps.	Apr'92
HARBETH HL-P3 H'BROOK QUARTETS	£400	There probably isn't a more neutral sounding design anywhere near the price. Sensitive enough to work with low power valve amps. Fast and detailed sound.	Feb'93 Jul'93
IPW RUBY I	£500	Metal driver 'speaker with an exciting and lively presentation.	Aug'93
A. E. AEGIS	£620	Depth and transparency. Fast and lively metal driver loudspeaker	Apr'93
REL STADIUM SUB.		Mono, self-powered subwoofer that works! Very flat frequency response.	Jun'92
PROAC RES I S APOGEE CENTAUF	£918 8£1200	Small box design. Can convey the spirit, drive, and passion of music in a small room. Hybrid ribbon design. Great imaging and detail. Good value for panel fans.	. Jul'92 Jul'92
TANNOY D700s	£1970	Dynamic and powerful. Needs a good clean power amplifier for best results.	Sep'93
TANNOY GRFM	£3500	Giant loudspeakers. Capable of awesome sound. Need good valve amplification.	Jul'92
MISCELLANEOUS			
BEYER DT411	£54	Excellent ' studio quality' headphones. Deep bass. powerful sound, if a bit splashy at times.	Jun'92
CELESTION DLP 600	£349	Digital signal processor for the Celestion 600 loudspeakers. Sounds like a	
		£400 upgrade.	Jun'92



This special edition of the world popular McIntosh MC 275 power amplifier is being produced to commemorate the late Gordon J. Gow who was firstly Vice President and later President of Mc Intosh Laboratory from 1949 until 1989. The UK has been allocated just 25 units and these are offered on a first come first served basis.

So if you fancy a Big Mac don't leave it too long, its quite a tasty morsel. If you want to spice things up a bit then why not add a **Audia Research LS3 Pre-amp** or, if you really want to spoil yourself, the redoubtable **LS5**.

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Some of the more significant additions to our range recently are the ORELLE CDIOT CD Transport / DAC and the CD160.2 CD Player, the ROKSAN Attessa CD Transport and CD Player and the new MERIDIAN 500 series of amps, tuners and CD Players.

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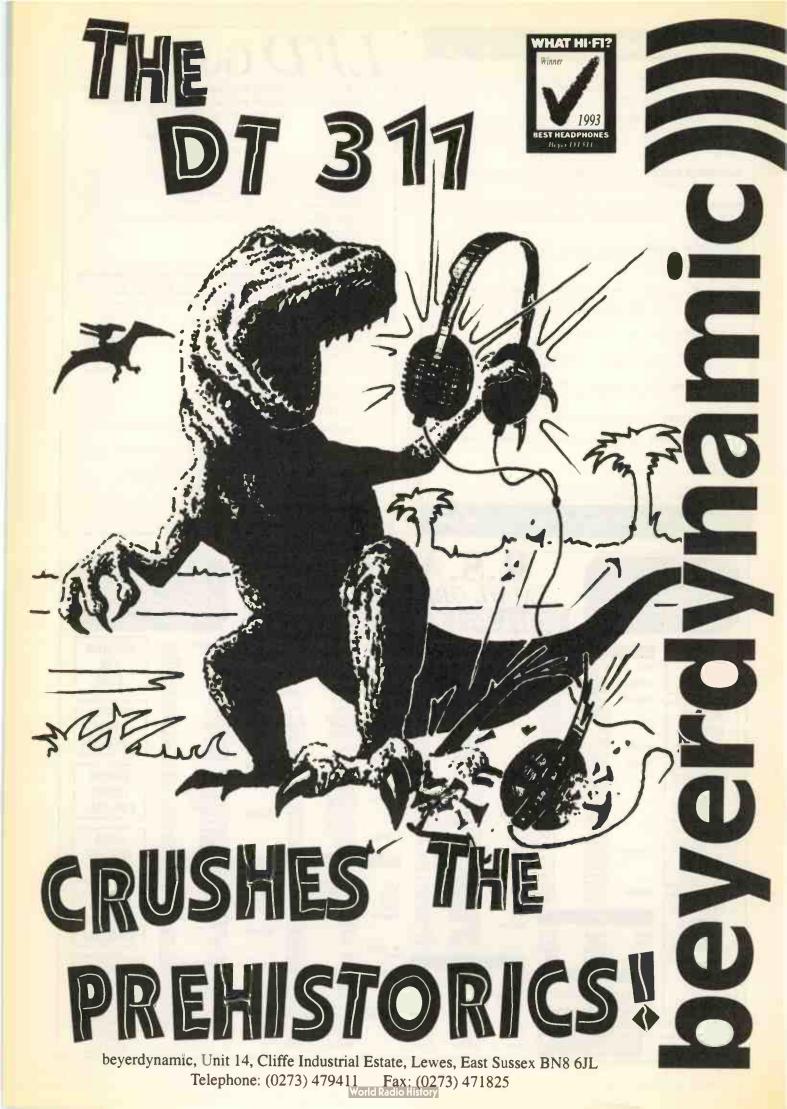
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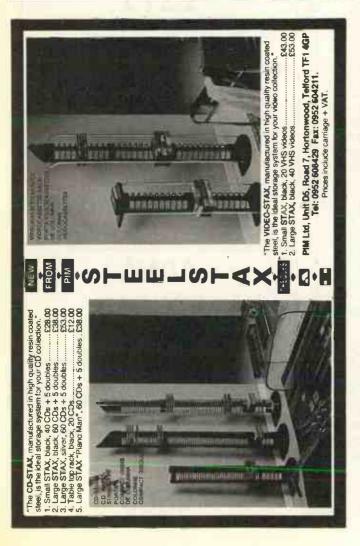
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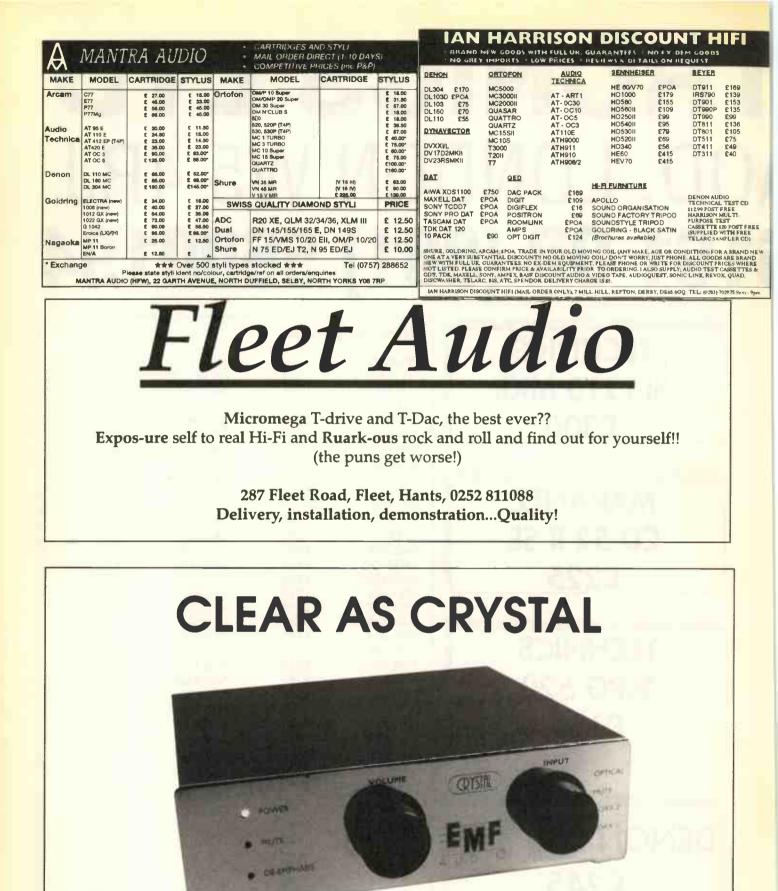
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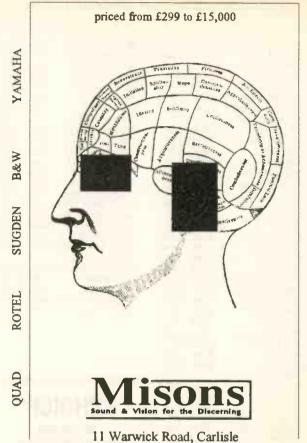
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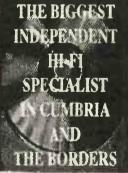




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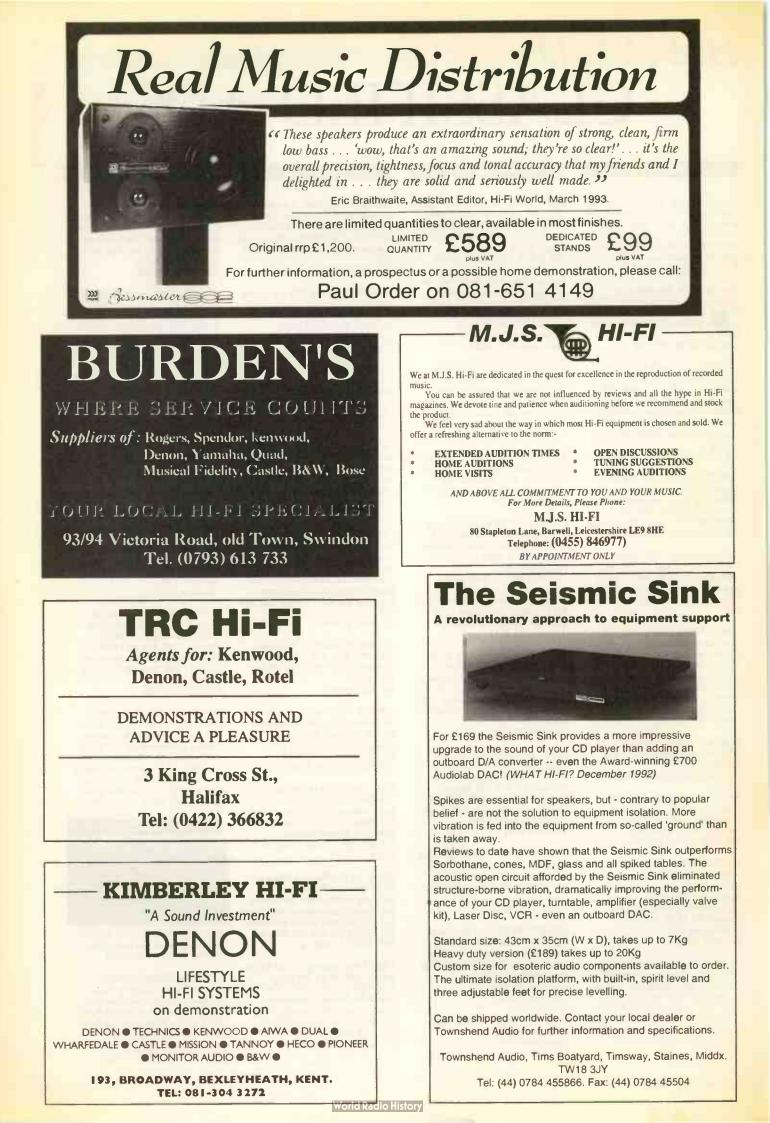
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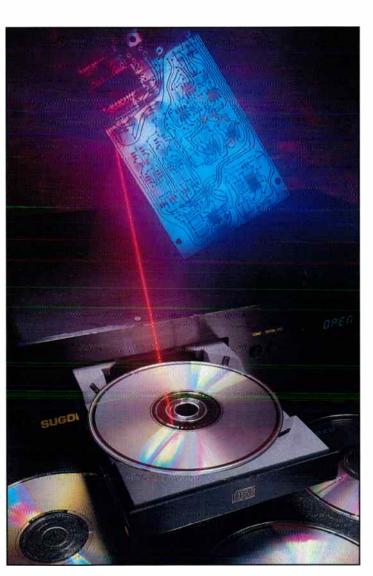
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