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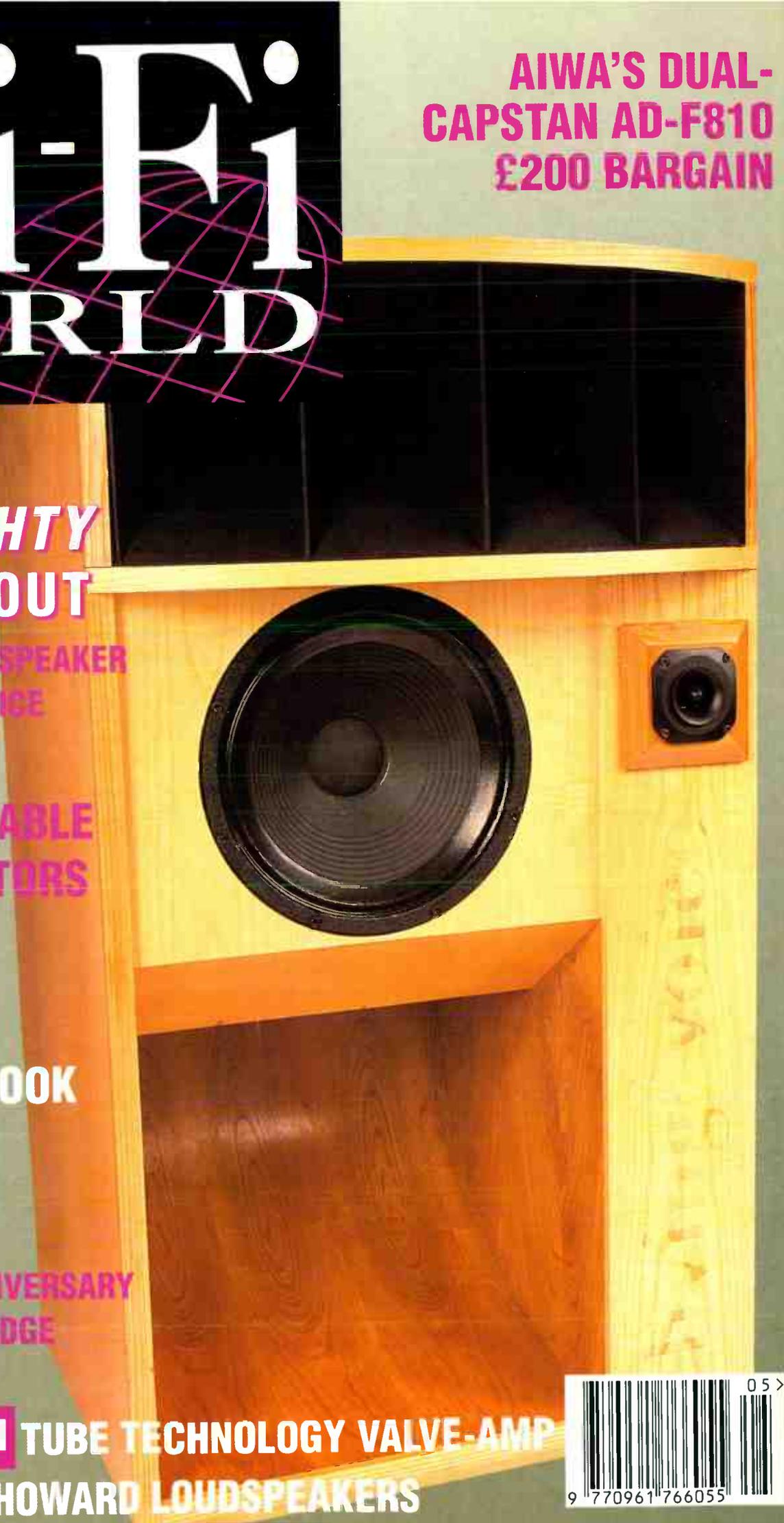
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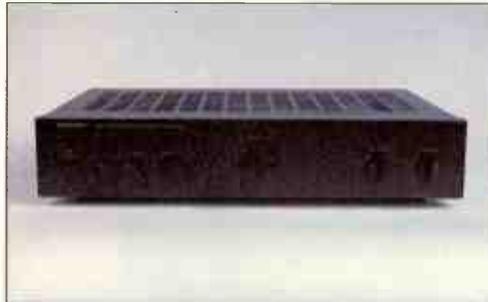
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SCALING NEW HEIGHTS.

There's a new tower on the block – the Studio 200.

And it's going to make you think again about how much loudspeaker you should get for your money.

Innovative cabinet construction, critical driver offset placement and state-of-the-art componentry combine to bring you a new sophistication in high-end listening experience.

The Studio 200 can now be auditioned at selected dealers. Contact us for details.

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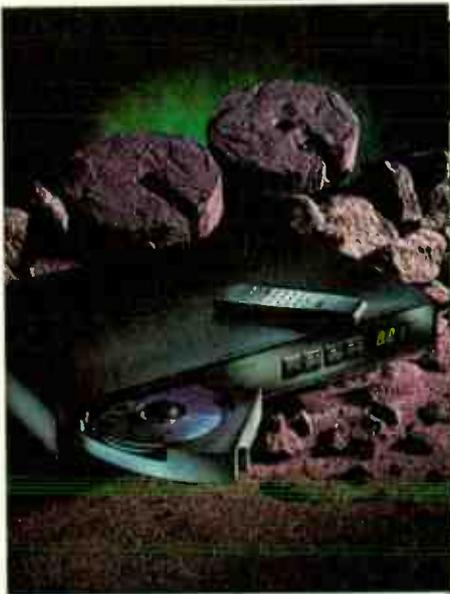
NAIM THAT TUNE

With the intention of making their highly desirable products available to a wider audience, Naim have introduced a new entry level CD player. This will sell alongside the recent Nait amplifier and NAT 03 tuner.

The £899 NA CD3 is presented in Naim's new slimline style and features a very novel, possibly unique, drawer mechanism which rotates through 90 degrees to permit disc changing.

Although the case is slim, Naim have still managed to find room for eleven regulated power supplies coupled to a large toroidal transformer. As with other Naim CD players, careful consideration has been given to the effects of vibration and microphony by isolating the transport section.

NAIM AUDIO
Southampton Road,
Salisbury,
Wilts, SP1 2LN.
Tel: 0722 332266.



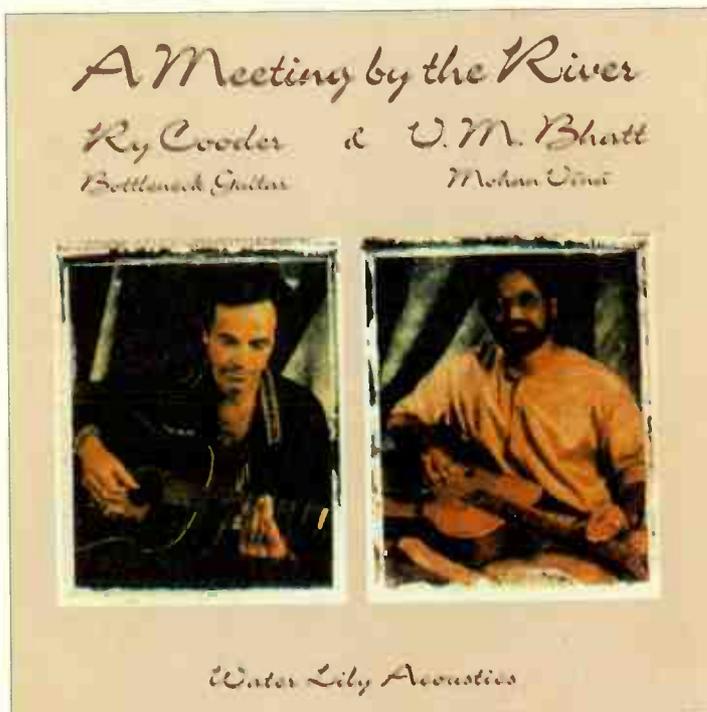
VALVES GET A GRAMMY

Valves are slowly infiltrating the professional recording business. America's prestigious Grammy awards, presented in recognition of musical achievement by the National Academy of Recording Arts and Sciences, were announced in a gala ceremony at Radio City Hall, New York, on 1st March 1994. In the category Best World Music Album, the winner was Ry Cooder and V.M. Bhatt's 'A Meeting by the River' album.

In their acceptance speech Walter Lily Acoustics acknowledged the contribution made by the fine engineering that lies behind this album, for its support of the skills and efforts of the musicians. The microphone, preamplifier and 15ips tape recorder were all valve powered analogue units, designed by valve designer extraordinaire, Tim de Paravicini of EAR, Huntingdon, England. Tim was in the audience to view the ceremony, even though tickets for everyone, apart from the award winners themselves, cost a mere £300!

Few engineers in the world (if any) know how to re-engineer a 1960's Studer C37 open-reel professional studio recorder in the way Tim does it. His revitalised Studers come fitted with improved valve amplifiers, uprated tape guidance mechanics and new glass crystal ferrite heads (made in America) to Tim's specifications.

The Grammy award focuses attention on the fact that top professional musicians are nowadays recognising the superb sound available from modern valve recording equipment. Others to follow Ry Cooder and V.M. Bhatt are Inspiral Carpets and Erasure, with their latest singles; both used one of Tim's Studer C37s in the recording process.





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The Cornflake Shop
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NORTHERN IRELAND
Lyric Hi-Fi
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may '94 trade winds

CASTLE'S 900th BIRTHDAY?

Designed to coincide with the 900th anniversary of the foundation of Durham cathedral, Castle's new Durham 900 loudspeaker has just been launched.

With a claimed sensitivity of 90dB, this compact, two-way reflex design utilises a new double ring magnet system to drive a 5inch polypropylene woofer.

Supplied in mirror-image pairs with the tweeter mounted below the bass driver to preserve optimum phase relationships, the Durham 900s are available in seven real wood veneer finishes, priced at £279 per pair.



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LTD

Park Mill,
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Skipton,
North Yorkshire, BD23 2TT
Tel: 0756 795333

RIAA NEWS

Latest statistics from the Recording Industry Association of America show the music industry in the USA to be in a healthy state, unlike that in the UK.

Compiled by KPMG Peat Marwick, the accounting firm responsible for six major recording companies, figures show a 6.7% rise in the total number of units shipped, to 956 million, with CD accounting for nearly 500 million of the sales.

Unfortunately, British involvement in the US music scene appears to be at an all time low, unlike during those heady days of Beatlemania. Britain's once dominant role in producing 25% of the world's recorded music, has now dropped by nearly 50%. Record company executives, especially A&R personnel, must be getting very worried.

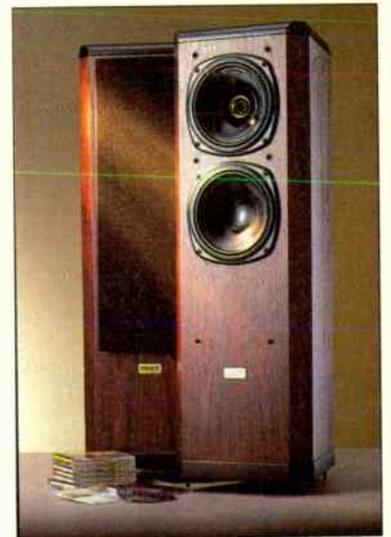
Finally, could Rock and Roll music have been killed off by CD? As the major record companies continue to pillage their back catalogues at the expense of promoting new talent,

the youth of the USA seem to be turning away, with a drop in total consumption by the 15-24 age group from 43% to 31%. No wonder Sega and Nintendo are laughing!

MORE DEFINITION FROM TANNOY

A small floorstanding loudspeaker has just been launched by Tannoy under the Definition banner. The D500 is a cut down version of the impressive D700, using the same complement of drive units, but in 8 inch form rather than the 10inch variety used by big brother.

Having a price of £1470, the D500 uses a complex cabinet construction employing the double-chamber reflex system in a multi-faceted cabinet made from 18mm MDF and finished in a selection of real wood veneers.



The drive units utilise Tannoy's Differential Material Technology and experience with dual-concentric designs to produce a phase coherent point source speaker.

Sensitivity is rated at 91dB, with a minimum impedance of 4 ohms, so suitably loud levels of sound should be easily produced.

TANNOY LTD
Rosehall Industrial Est,
Coatbridge,
Stathclyde, ML5 4TF.
Tel: 0236 420199

NEWS FROM NEWS

We couldn't resist including this little snippet. Spotted in Saturday's Guardian, 12th March 1994, was an advertisement by Hi-Fi News; they are looking for three editorial staff. But does its peculiar wording posses a hidden meaning we wondered?

Firstly, they want an Assistant Editor "to do the Editor's job when he's not there". They also want a Production Editor to "do some of the Editor's job even when he is there" and, finally, they also want an Art Editor with so much "commitment" that "the Editor doesn't even try to do his/her job" (the editor is a 'he' actually, but Link House Publishing probably haven't realised this yet).

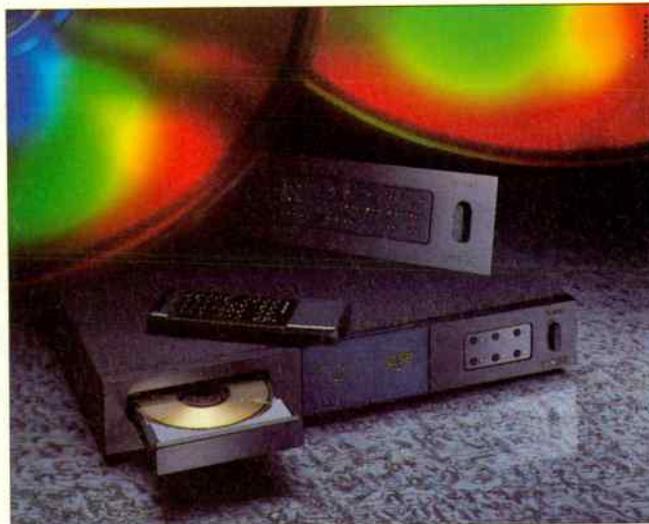
Applicants should contact the Editor - if he's there!

AUDIOLAB TRANSPORT

At last, Audiolab have introduced their long awaited CD transport, which joins their 8000DAC to make a two box package costing £2000.

The £1250, 8000CDM features a great deal of Audiolab's own technology and custom manufactured parts, built around a computer grade CD ROM drive.

The transport also features a balanced AES/EBU digital output for connection to Audiolab's 8000DAC.



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Soundcraft Hi-Fi

Your Place or Ours?

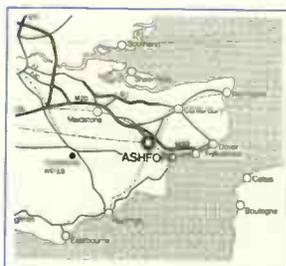


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6 HOTEL STREET, LEICESTER
TEL: 0533 623754

MOREL'S SECOND SYMPHONY

Hot on the heels of the Music First 705 comes the second loudspeaker in the range, the new 704.

This is a smaller floorstanding speaker using four drive units. The 704 retails for £999 with integral stands. High quality, close tolerance componentry is used within the crossover and internal wiring is van den Hul silver plated copper.



MOREL UK LTD
11 Foxtail Road,
Nacton Industrial Est,
Ipswich, IP3 9RT.
Tel: 0473 719212

DENON CONTINUE TO DROP NAMES

Since January this year, the BBC has implemented radio text onto stations 2, 3, and 4. With this in mind the new TU-380 RD tuner from Denon will bring these enhanced RDS facilities to the listener at a competitive price of £189.99.

Radio text allows the listener to access useful information relating to the transmission to which they are tuned.

With AM and FM reception capabilities, RDS, Radio text and full RDS EON facilities, as well as 40 preset memories the Denon comes equipped to handle the ever more crowded airwaves.

HAYDEN LABORATORIES LTD
Chiltern Hill,
Chalfont St. Peter,
Gerrards Cross,
Bucks, SL9 9UG.
Tel: 0753 888447.

NATIONAL VINTAGE COMMUNICATIONS FAIR '94

Now into its third year, this event promises to offer a wide range of vintage audio and video collectables. Held at the Birmingham NEC on Sunday 15th May between 10.30am and 5pm there will be over 250 stands and plenty of experts on hand to value equipment or give advice, as well as clubs and societies. The admission fee is £3.

For further information, contact:

NVCF'94
2-4 Brook Street,
Bampton,
Devon,
EX16 9LY.
Tel: 0398 331532

PANASONIC SPONSORSHIP DEAL

Panasonic Europe has extended, by a further three years, its sponsorship of the European Community Baroque orchestra.

The deal, worth more than £335,000, will continue Panasonic's involvement with the orchestra which was founded in 1985, and uses a completely new line up of talented young musicians every year.

Since Panasonic began to sponsor the orchestra, over five years ago, nearly 500 musicians have had the opportunity to play in venues all over the world.

PANASONIC UK
Panasonic House,
Willoughby Road,
Bracknell,
Berks, RG12 8FP.
Tel: 0344 853157.

QED DIGIT UPGRADE

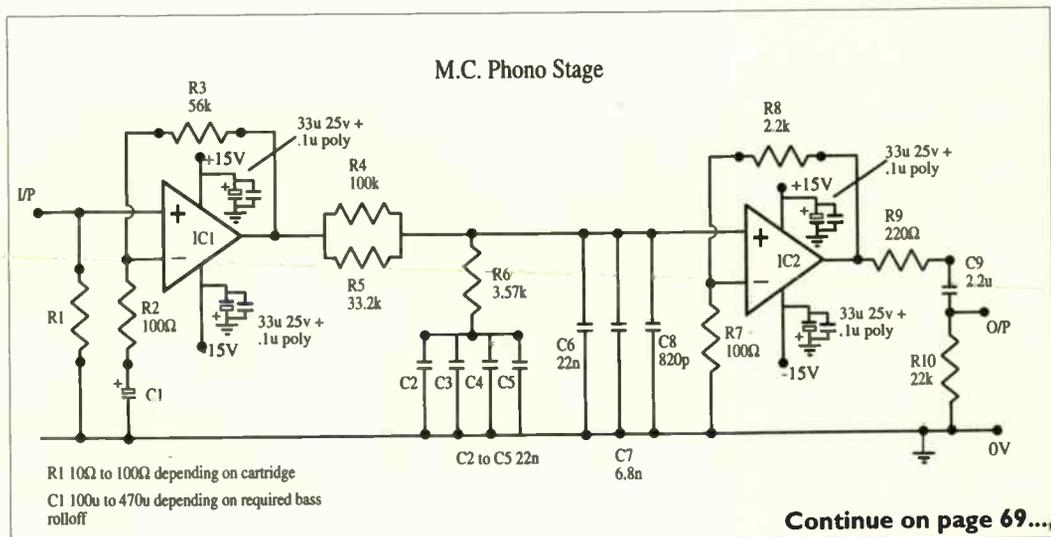
Having recently introduced the Digit Reference at £450, QED are now allowing a unique upgrade path for existing owners of the Digit and Positron.

This involves credit for the full retail price of the Digit (£139) and, if already purchased, a Positron (£85). If you already own these, then the conversion to a reference DAC in the full width case using the original boards plus the twin Positron operation, costs £226 inclusive of VAT.

QED Audio Products Ltd.
Ridgeway House,
Ridgeway Close,
Lightwater,
Surrey, GU18 5XU.
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RIAA PHONO STAGE CORRECTION FROM THE APRIL SUPPLEMENT.

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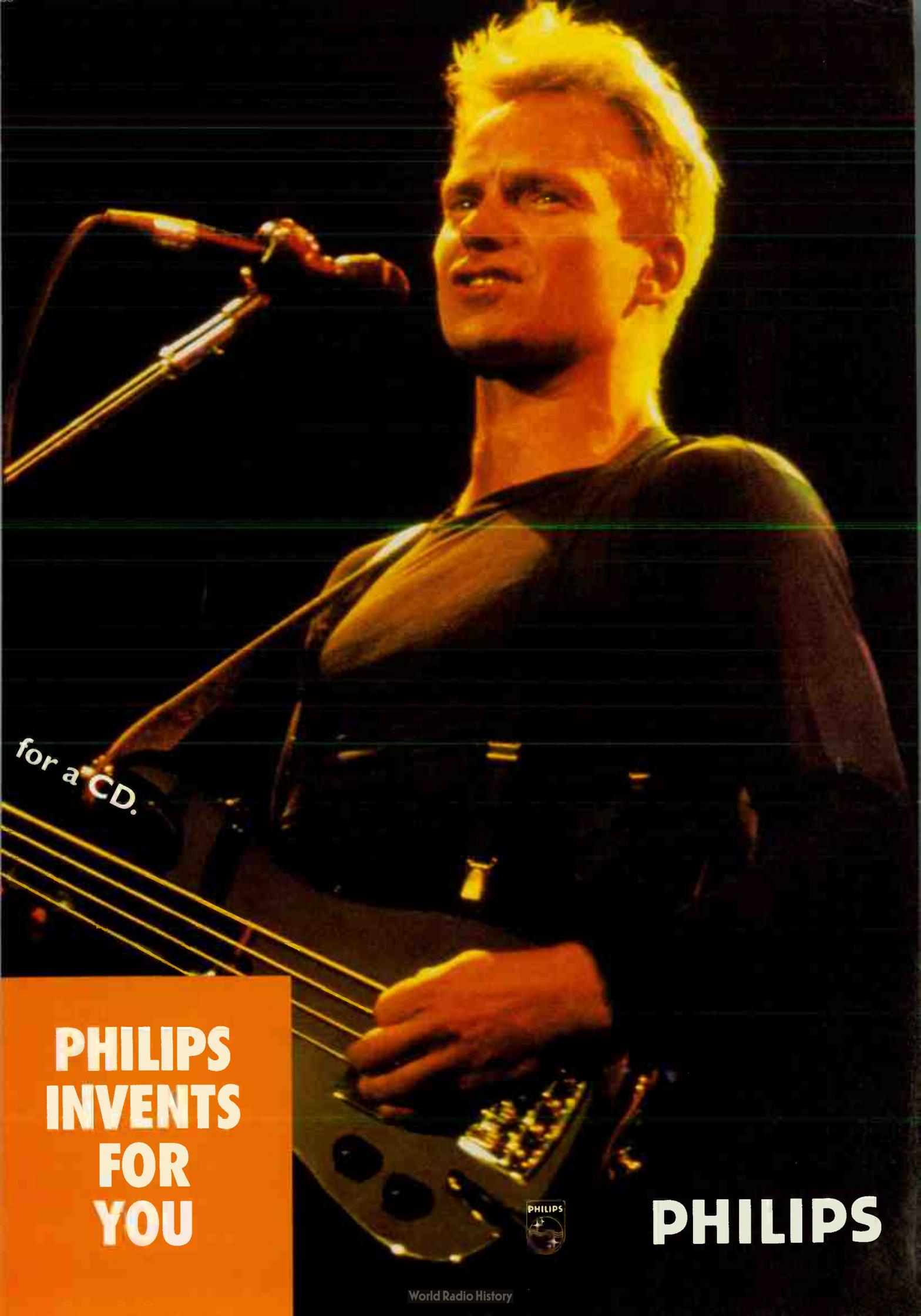


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Scout Master

**Dominic Baker visits a pair of Horn loudspeakers in Nottingham -
the Living Voice Tone Scouts.**



"I had a customer drive down from Scotland last week. He'd arranged to borrow the Tone Scouts for a while and came down in a van - but we could only get one of them in! So it'd be best if you came up here to listen to them", said Kevin Scott on the telephone. I was angling to get a pair of Living Voice Tone Scout horn loudspeakers for review, but like all true horns, they are massive.

I arrived in Nottingham on a bright Tuesday morning and found Definitive Audio tucked away down a quiet residential street. Kevin runs his business from home, the front room set out like a normal living room, with the exception of 7ft high horn loudspeakers, and spare rooms used to hold stock. Kevin stocks a small range of high quality equipment from which he builds up systems for customers. This includes Pink Triangle and Voyd turntables, SME arms, Micromega and Wadia CD players, Audio Innovations valve amplifiers and loudspeakers from Høring. He's also one of the men behind Living Voice, whose first product was the £14,500 Air Partner horn loudspeakers. They've recently added a new, smaller model, the Tone Scout, domestically an easier proposition to accommodate than the Air Partners.

Kevin's approach to hi-fi retailing is quite different to that of a High Street shop. Demonstrations are by appointment only and the atmosphere is very relaxed. Kevin makes conversation while brewing some especially wicked fresh coffee - just what I needed after a hectic drive from London.

Sitting back in a high armed sofa with sunlight sprinkling through the window and silence all around, I started to remember what it's like outside of



Kevin's system sits at the back behind the 'speakers. Note the two massive Solartron SRS 152 power supplies used to supply the HT voltage to the First Audio power amplifiers.

London's bustle!

Kevin looked for a record to play whilst I quizzed him about Secomak-Vitavox, military equipment suppliers who manufacture the high quality drive units for Living Voice loudspeakers, including the Tone Scout.

Kevin Scott is the front man to Living Voice, but it is Vitavox who carry out design of the drive unit and the horn geometry. A cabinet maker in London builds the enclosures and an engineer in Birmingham tests and measures the final product. But Kevin co-ordinates the whole process, performs the listening and marketing, whilst also running Definitive Audio.

Kevin's system, as you'd expect, is a little out of the ordinary. His primary source is vinyl, and he has around 1000 albums to testify to his love of music. The CD collection is only just beginning, a few hundred or so played by a Wadia 6 which Kevin chose for its open and crisp sound. The vinyl is played by an EMT HST15 moving coil cartridge, with an exposed generator assembly. It is mounted in a silver wired SME V tonearm that sits on a Voyd 0.5 turntable. Kevin imports the EMT range of cartridges, but the one he uses has been modified.

The pre-amplifier is a standard Audio Innovations L2 with P2 phono stage, connected to a pair of First Audio power amplifiers. These take their HT supplies from two, not insubstantial, Solartron SRS 152 power supply units. These are about twice the size of the actual amplifiers, having brightly glowing neons and large voltage meters to reinforce their military appearance. Sitting to one side is a custom built 3.5W single-ended PX4 power amplifier, unfortunately not in operation whilst I was there.

The new Tone Scouts were set up and ready when I arrived, although they'd only been back from loan for a day, so Kevin was still adjusting the midrange and treble levels for the best balance.

Towering behind them sat the Air Partners, "you must have a quick listen to those before you go", grinned Kevin "I keep forgetting how good they are myself."

The Tone Scouts are considerably smaller than the Air Partners, although still appreciably larger than most domestic floorstanders. Each one weighs around 20stone (127kgs), so moving them isn't particularly easy. This weight is a combination of two things, the massively built drive units, which can actually be disassembled for repair or cleaning, and the cabinet. This is made using 18mm thick, high density birch plywood, with 36mm sections for strengthening, and then veneered using top grade, real wood veneers. This gives them enormous

rigidity, which helps to produce a clean sound, free from colouration.

The Tone Scout is a three way system, using a 12 inch, un-doped paper unit for the bass. This is coupled to a compound horn which was initially designed using computer modelling and then fine tuned subjectively to give consistent results in a wide range of listening environments. The mid-range is handled by one of Vitavox's units, the S5 motor unit, nicknamed the 'Landmine' by Kevin (see picture). This unit uses a specially made 2inch aluminium dome diaphragm with a very compliant surround, all mounted within the casting to form the pressure chamber. This has a threaded hole in one end to allow it to be screwed into Vitavox's cast aluminium, four-cell mid range horn. Because of this, other units can be used by simply screwing them in. Kevin speaks highly of Beyma, a Spanish drive unit manufacturer. But, the Vitavox is the best; each one is tested for 100 hours with a 100watt programme to ensure quality and reliability.

As with the midrange, several different tweeters are available. These come principally from either JBL or Beyma. "It's quite difficult to find a good tweeter that can keep up with the 104dB sensitivity of the bass and midrange", says Kevin. The pair of Tone Scouts I listened to had a Beyma tweeter fitted, coming in at around 13kHz, so the tweeter is only handling a

small amount of the frequency range.

Because of the extremely high sensitivity of these horns, running the drive units in takes a considerable amount of time. Even 1 watt of input power is enough to pin you to the wall, and the drive units hardly move. Kevin reckons that they continue to improve in performance over a year or so, depending upon the amount of use they get. The pair I was to hear took around half



Kevin in front of the Tone Scouts. Although half his height, they're nearly twice his weight!

an hour to warm up and soften out, but this warm up period decreases as they get closer to being properly run in.

The first thing that struck me about the Tone Scouts was the way they coupled to the room, driving it effortlessly with a sound larger than life. The jazz

Continue on page 17

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... Continue from page 15

pianist was playing a piano with keys the size of shoe boxes, and the saxophone

in speed. It may not be especially deep, but the timing and power of what's there is spectacular. A fiercely played tabla proved a suitable test, showing the lightning fast response of the 12 inch bass unit. The bass does have quite a hard, dry quality to it, which seems to be a character of horn loudspeakers, but it gives a powerful and lively presentation.

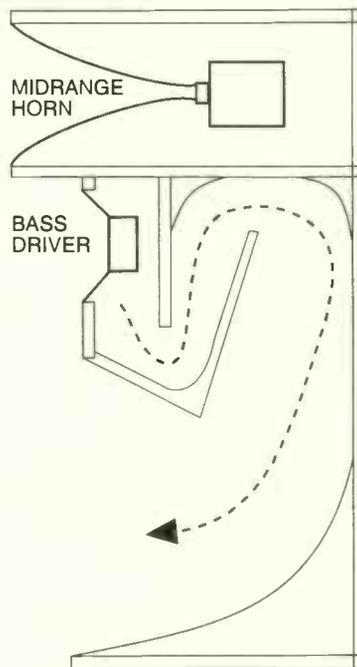
One thing that we've noticed with efficient loudspeakers is the extra detail and excitement you get from lighter, faster drive units, and the Tone Scouts take this to the limit. Most at home with fast, light acoustic music and classical pieces, the Tone Scouts

produce music with breathtaking realism and drama. With rock, they quickly show up the shortcomings of a recording, but their bass isn't really rich enough, or deep enough to be convincing. The powerful slam is amazing though; they must be heard to be believed.

The Tone Scouts are fascinating and nearly unique loudspeakers. They demand to be assessed by demonstration, so different is their approach to music. But, for £6000, what you get is a loudspeaker

that will last a lifetime. And they don't demand Krell power to sound their best. Kevin has recently sold a pair to an enthusiast who uses Quad IIs. "He loves them. He was going to upgrade his amps, but the sound was so good he decided to have them serviced and continue to use them" ●

Living Voice Tone Scout £6000
Definitive Audio
Tel: 0602 813562



Cross section of the Tone Scout. A combination of 18mm and 36mm high density birch ply is used throughout the cabinet.



A selection of the drive units used by Living Voice. From left to right: 1. Vitavox S2 motor with a 2 inch aluminium diaphragm. 2. The Gauss tweeter used in the Air Partner. 3. Beyma CP21F slot tweeter. 4. The aluminium diaphragm used with the S2 and S5 motor units. 5. The S5 motor unit used in the Tone Scout (nicknamed the "Landmine").

was powerful enough to hold you in your seat. Any conventional loudspeaker would sound Micky Mouse beside them, such was the scale of reproduction. The four-cell casting of the midrange certainly does its job well, throwing out a clear and spacious sound, with plenty of energy and detail. In some ways it's perhaps a little too good for the rest to keep up with, the tweeter just adds a little sparkle to the top and the bass wasn't especially deep.

Where the bass does score though, is

MEASURED PERFORMANCE

The Living Voice Tone Scouts were interesting to measure. It is very difficult to accurately measure a horn, so I used a number of different microphone positions to get an accurate idea of what each section was doing before completing an overall response.

The response is quite a lumpy one. The midrange output is formidable, but doesn't stretch quite high enough to reach the tweeter output and form a smooth response. I would expect the dip between mid and treble to constrain vocals, not allowing them to project as well as they should. But subjectively this is less noticeable than you'd expect, perhaps due to the wide dispersion of the four cell horn and the reflections it causes.

The lower midrange is raised by 3-4dB which produces a very forward balance, to piano and saxophone for example. The bass level is lower than the midrange, again preventing a flat response, but at the listening position, and with room reinforcement, bass level is probably slightly better aligned to the midband than

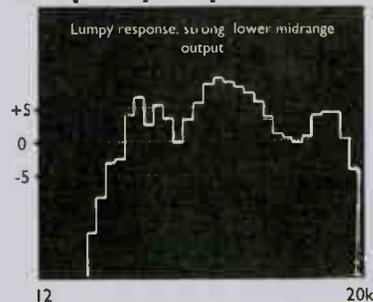
the plot shows.

Measurement started to get interesting when I tried to push 1 watt of pink noise through the Tone Scouts to get a sensitivity measurement. Luckily, the neighbours were understanding and I managed to bear the sound for long enough to measure 102dB at 1m. Even on transients, the Tone Scouts aren't going to need more than a couple of watts to drive them.

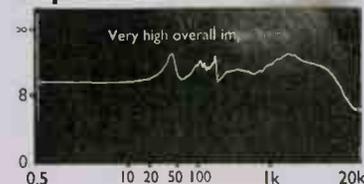
The Impedance curve also suggests that the Tone Scouts aren't going to be a problem to drive. The high overall impedance of 15.5Ω means that they need around two thirds of the current of a typical British loudspeaker. It's a smooth impedance curve as well, but the dive in the treble will effect feedbackless amplifiers, perhaps resulting in a duller sound.

Overall the Tone Scouts are a little odd, but that's what you'd expect from such a different and unique loudspeaker. At the end of the day it comes down to personal taste. For £6000 you will obviously listen very carefully before a decision is made. **DB**

Frequency Response



Impedance



MADE TO

MEASURE

The new 500 Series from Meridian takes another step forwards in hi-fi style. Robert Wilson takes a listen to their latest CD player and pre/power amplifiers.

Can serious hi-fi be good looking? In certain respects I believe it can. Take, for instance, SME's stunning tonearms or the beautiful Michell Gyrodec. But these are examples of elegant, high precision mechanical engineering. What about the black box brigade? Can CD players, amps and the like, look good and be ergonomically correct, allowing form to compliment function?

Meridian believe that it can be, and have proved so with the attractive new 500 series components. A full system was supplied for review here, comprising an integrated CD player, a pre-amp, a stereo power amp and a system remote control.

All the products are beautifully finished, and are packaged in similar cases (321mm wide) finished in black textured enamel with a shiny glass top panel. The 506 CD player follows in the Meridian tradition: the disc drawer contains the entire disc

mechanism - platter, motor and swing-arm laser. You load a disc by placing it direct onto the motor hub. It's neat system that eliminates the usual wobbly drawer, for to carry the entire mechanism Meridian have had to engineer an

altogether more substantial instrument.

The function controls available on the player cover basic operations only. More complex ones are situated on the system remote controller.

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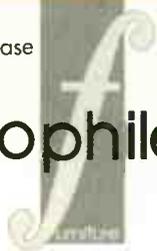
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standard analogue stereo pair, with additionally an electrical and an optical digital output. Also present on the back panel are two 5 pin DIN sockets which facilitate the use of Meridian's Comms. Link. This allows the entire system to be controlled from one unit, designated the master, in a multi-room system.

Internally, the player uses the Crystal high definition Delta-Sigma convertor (also used by Quad and EMF), consistent with the latest Meridian practice, coupled to a discrete Class A output stage.

The 501 control unit (a pre-amp) has six inputs for analogue sources that can be adjusted for sensitivity and identified using the amp's four-character Alpha-numeric display. A high quality MM/MC phono board is available as an option for the dedicated LP input.

The display is useful when operating the system from the comfort of your favourite armchair. Adjusting volume switches the display automatically to identify the source component and attenuation in dBs. It allows level to be adjusted in single dB steps from 1 to 99. The balance control works in a similar fashion, a small arrow pointing either left or right and a number showing the alteration in signal level in dBs on that specific channel. True electrical balance occurs when a zero is displayed, flanked by both arrows. The control unit can be customised for use in specific systems; directions for this are provided in the comprehensive instruction booklet.

Although the basic controls for either component are present on their respective facias, the system really comes into its own when used with the full-function remote control. This looks stunning. It's shaped with a gentle curve that allows it to sit comfortably in your hand. Separate functions are laid out in a sensible manner and I soon became familiar with its operational procedures. Colour coding of the primary functions was a nice touch, allowing quick identification of primary and secondary functions.

Finally, we come to the 555 power amplifier. A brushed aluminium fascia and heat sinking fins of the same material let this little beauty run cool, showing off the piano-finish top plate to great effect. I think it's the most stylish component of all, looking like a junior Mark Levinson power amplifier. A solitary green diode, centre-front enhances the symmetry of the design, residing just below the manufacturer's logo. It indicates when 65 watts of power per channel is available.

Bi-wiring is aided by the inclusion of two sets of output terminals.

Did the system live up to its appearance, or was Meridian's pretty packaging and fancy remote control just for show, leaving the system without any musical get up and go?

The sound of this system was speaker dependant, which could be construed as saying that the Meridians are a neutral combination. When listening

through the Heybrook Sextets the system took on a lean, dry nature. Bass guitar and kick drum had a tight, punchy delivery which gave a homogeneous sound to rock rhythm sections. Complex multi-timbral percussion which is present on numerous CDs of so called 'World Music' was well dissected, as the Meridians displayed the tonal variations teased out by different playing styles.

The amp's ability to respond to dynamic changes was quite effective, although when using recordings where the variation of level was especially intense the Meridians failed to encompass the entire spectrum of musical expression, causing the dynamic shading of a track to become slightly Spartan and in some examples a little emotionally bland.

With the bottom-end sounding dry and marginally laid back, the resultant diminished presence - due to a lack of bass richness - gave the mid-range frequencies a more prominent role in the overall sound. This aspect of the presentation endowed the system with a fair degree of communication, particularly with vocal and primary instrumental parts brought to the fore in a multitrack mixdown.

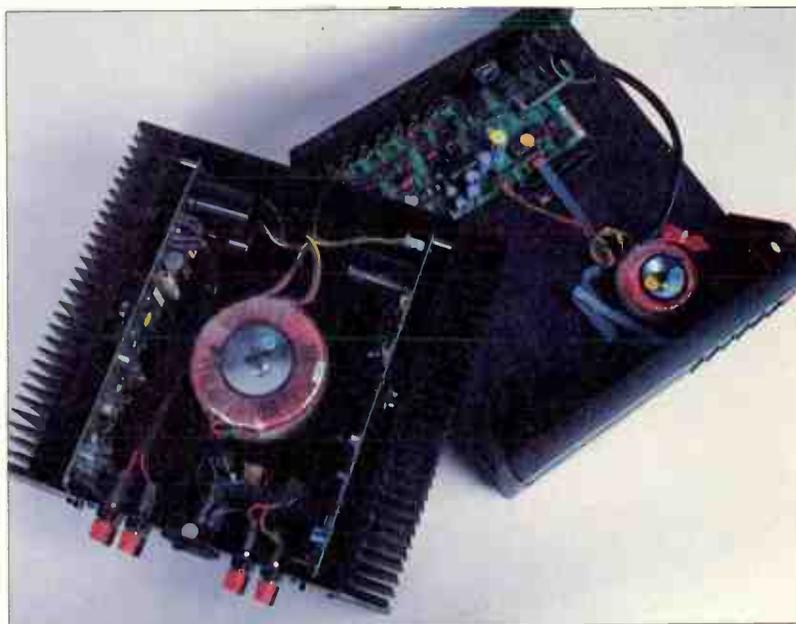
For example, Gerry Rafferty's voice was well presented, with a good delivery of the throaty tones that his vocals possess. A sibilant edge to some sharp vocal transients did become apparent

under close scrutiny, but this effect was marginal and not offensive to my aural sensibilities.

The reproduction of string arrangements again suffered slightly from the dry perspective that this system exhibited, resulting in a sound prominent in upper harmonics; it was pleasantly detailed and quite lively but could have benefited from the gentle warmth of a richer, more woody timbre, to inject a little more organic character.

With Rafferty's 'City to City' album the system proved adept at separating out various instruments, placing them into a well proportioned soundstage with a good degree of spatial precision. Towards the back of one track the Meridian highlighted some bongo playing which brought a strong sense of dimension to the image.

The latest Ry Cooder CD, 'A meeting by the river' on which he duets with V.M. Bhatt, has a gorgeous acoustic which, when played through an exceptional system, can sound breathtakingly solid. The Meridians made an honourable stab at this, managing good stage width and capturing a high percentage of the subtle



acoustic inflections that help to characterise the room acoustic. However, the system did diminish some of the huge stage depth by bringing the Tabla further forwards, compressing the depth perspectives of the recorded environment.

The analytical properties of the Heybrook's ribbon tweeters showed that the Meridians enjoy a refined treble, sounding particularly sweet with delicate percussion such as bells, triangles and tambourine. A slight haze could be detected, tempered with a light feathery wisp that sometimes prevailed when listening to 'brushed' cymbals. Having said that, the Meridians were able to show variations in the stroking of a hi-hat.

My final listening session with this system was used to assess the new Primal ►►

“Bass guitar and kick drum had a tight, punchy delivery which gave a homogeneous sound to rock rhythm sections.”



THE HI-FI LAW OF DIMINISHING RETURNS

Ask a Hi-Fi dealer to upgrade your system, and he'll sell you ever more expensive bits of hardware, giving you a constantly changing sound, new solutions producing more problems which can only be solved with more expensive equipment. The harder you try, the more it costs and the less satisfying the results. This is the well known Hi-Fi law of diminishing returns. We have an alternative:

THE RATA LAW OF INCREASING RETURNS

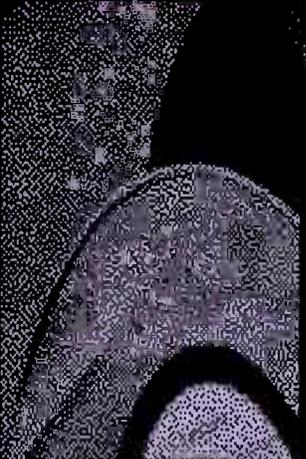
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Scream album which had just arrived for review. This was a very enjoyable experience, as the music is very much influenced by the sounds of the sixties, which I adore. The up-beat rhythms used in some cuts were portrayed by the Meridians with a good measure of enthusiasm and verve, the use of various percussive elements was also captured well, highlighting even more my delight in the obvious Rolling Stones influences used in the album's concept.

Acoustic guitar had a nicely varied tonal quality, although again there was an over-exposure of upper harmonics which

could lead to a sound more akin to a National than a Martin. Some limitation of dynamic expression also slightly hampered the emotional content of some of the more descriptive tracks, where violent attacks on the strings were a little neutered. The rhythmic involvement of the music was carried off well, thanks to the cohesive, dry bottom-end producing a well defined kick on the bass drum which was easy to follow, although I would also have liked a bit more dynamic impact from the kit.

As a complete package, the Meridians work together well, both electronically

and sonically. They rank very highly as far as ease of use and ergonomic design are concerned. As ornamental hi-fi they don't disappoint, being well styled and bolted together. They will certainly provide their owners with lots of product satisfaction. This counts for a lot, especially in certain areas of the market, one where sound quality takes equal or - sometimes-second place. However, in going for the a part of the market that is likely to be concerned about appearance, Meridian haven't forgotten their audio pedigree either, managing to produce integrated hi-fi units that look good and can sing too ●

MEASURED PERFORMANCE

MERIDIAN 501/555 AMPLIFIER

Being a long established company founded and still run by an electronics engineer (Bob Stuart), Meridian can be relied upon to produce a technically faultless amplifier. The 501 preamp and 555 power amplifier measured extremely well in all respects, but I was surprised at one particular feature - the system is all direct coupled. So don't expect to connect up any source with d.c. offset; the amplifier's protection circuits will kick in smartly with a loud clunk. Whilst most sources are a.c. coupled, the odd one or two are not and do possess some offset, so beware of this. Obviously, Meridian's own tuner and CD player are acceptable, but I've come across the odd cassette deck that produced output offset, so beware. Get a demo first.

Why direct couple in the first place? All other things being equal, it can enhance sound quality by eliminating coupling capacitors; it also gives tight deep bass. All the same, few manufacturers are bold enough to practice this, since d.c. output offset on a power amp blows loudspeakers up, that's why the 555 has protection circuits.

Meridian strongly band-limit their amplifiers to suppress transient distortions; the 501/555 were -0.5dB at 20kHz and have a -1dB bandwidth limit of 35kHz, which is low. This is good practice, providing the resultant amp doesn't sound dull or warm, as some can. This one did not though.

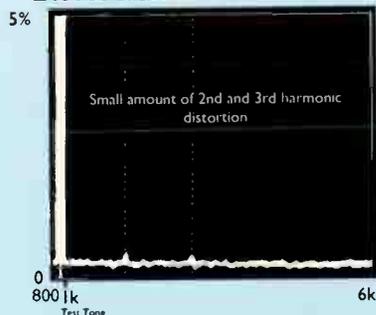
Distortion was well suppressed at all frequencies and levels, but harmonics at high frequencies were odd-order only. A hint of hardness in the sound can be introduced by this.

The pre-amplifier was very sensitive, needing just 100mV (160mV via CD) to drive the power amp to full output that measured 78watts into 8ohms (120watts into 4ohms). This is a well engineered amplifier **NK**

AMPLIFIER TEST RESULTS

Power	78watts
CD input	
Frequency response	0Hz-35kHz
Separation	81dB
Noise	-90dB
Distortion	0.01%
Sensitivity	100mV
dc offset	68/72mV
Disc	optional (not tested)

Distortion



MERIDIAN 506 CD PLAYER

As you'd expect from a company like Meridian, the 506 CD player measured extremely well in all respects, showing good quality engineering. The response was very flat, showing just a slight roll off above 10kHz, which should ensure this player has an inoffensive treble.

The 506 is a very linear player, exhibiting low distortion at all levels. Distortion rises a little at -60dB, giving a dynamic range of 106.6dB, but at -30dB, normal music level, it's virtually undetectable (see plot). Even with a -90dB dithered signal distortion time-averaged out to a very low figure, 3-4%, or about as low as it goes.

Elsewhere, the 506 measured extremely competently, with good channel separation, healthy audio output level and low noise. Even spurious outputs were low.

The 506 is a very well engineered player. I'd expect a smooth and detailed sound, but only subjective tests can fully reveal this. **DB**

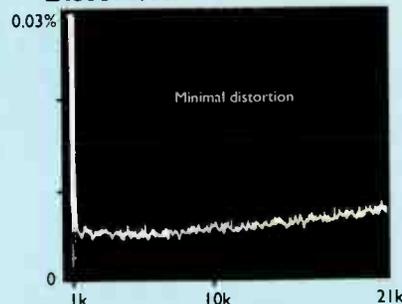
CD TEST RESULTS

Frequency response	4Hz-21.2kHz	
Distortion %		
-6dB	0.004	0.005
-30dB	0.006	0.006
-60dB	0.65	0.64
-90	35.3	34.7
-90dB dithered	4.1	3.1
Separation dB	left	right
1kHz	106	100
20kHz	88	76

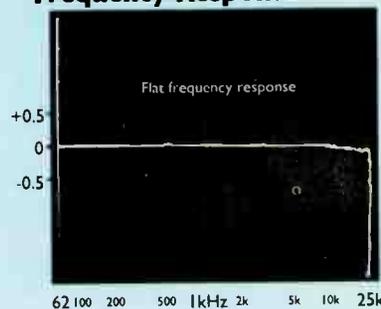
Noise	-96dB
with emphasis	-101dB

Dynamic range	106.6dB
Output	2.18V

Distortion



Frequency Response



Best of Intentions



I wuz robbed! Well, not exactly, but I was wrong. On first hearing, I thought the Heybrook Integra was in for a slamming. But, hours after it had been switched on and after a night's sleep, I changed my mind. And, I'd better say, I did a bit of a U-turn without anyone threatening me with a going-over by any of Plymouth's stropplier marines.

What miffed me were two fundamental characteristics, one mechanical and one sonic, which coloured my judgement for a day. One was the simply horrible plastic control knobs, which are so poorly finished and so light to the feel they'd be sneered at by a manufacturer of clock radios sold off in the cheaper end of the market. Yet Heybrook have had the sense to put in two pairs of chunky binding posts for two pairs of speakers or bi-wiring, a sensible array of phono inputs, separate listen and record controls and a headphone socket - an endangered species these days. Heybrook, even though it doesn't make the TT2 turntable any more, has even put in a more-than-decent MM/MC disc stage.

If the controls are arrayed on a fascia that I feel looks a bit too early-eighties and is born out of primary school design, then my outraged aesthetic sensibilities are perhaps out of step. After all, they've been nurtured lately on some elegant expensive Counterpoint gear, or the smoother, curvier lines of Arcam and Orelle. Or maybe I was just expecting some polished wood at either end like the burr-walnut Heybrook adorn the Quartet speakers with. No matter. Every mother loves its young, so English audiophiles may worry less about the looks.

The Integra's single sonic fault, however, was hard to come to terms with, until I began to appreciate its other strengths. At first, a somewhat relentless, almost uncultured, treble drew my attention so much it subsumed all else. While it brought about a vividness to rock and jazz music, it made authentic violins distinctly screechy and scratchy and more abrasive than usual. Omette Colman on violin (no, that's not a mistake of mine - nor of his) is a bit hard to take anyway, but through the Integra it had a touch of the dentist's drill about it. A jazz trio, too, had a

new integrated amplifier's bass quality. It can be rhythmical, tuneful, sharply defined and yet with a warm enough quality to bring out real lower string and viola tone. At least when it had warmed through; in its first few hours it had seemed almost one-dimensional. Equally, the Integra could handle breadth and depth in recordings, even those studio ones where the ambient clues are usually, at best, dry and anaemic. It put body into a recording.

Now, why all this worked beautifully on something like Archy Shepp and John Coltrane live at Newport, with a

supremely enjoyable performance (hard-toned sax excepted), but not with opera or choral works, became as much of a mystery as the origin of the statues on Easter Island. There were absolutely no complaints regarding the breadth or depth of soundstage. All three of

Papageno's tormentors in *The Magic Flute* were located precisely where they ought to be. Characters moved across the stage with precision. But a full orchestra sounded dynamically flat by comparison with other designs. The larger the scale of the work, the 'flatter' the performance became.

This was a shame, because the adeptness of the Integra at conveying the range of instruments, their spatial location and subtleties of inflexion couldn't quite make up for the lack of dynamic expansiveness.

Or have I been too spoilt recently by Sugden's £100 more expensive A21a Class A amplifier? To put a better perspective on it, while noting the same lack of dynamic 'lift' on orchestral music, two friends rated the Integra's strengths as far more

"Kirstie McColl, too, though vocally a spot on the bright side, had a splendid array of realistic 'clubby sounding' backing instrumentalists"

hard-sounding flute.

Stop concentrating on that edge, though, and the Heybrook revealed real qualities which many amplifiers in this price bracket don't match. Woodwind, brass and double bass, for example, had a resolute, clear but warm and full tone. A couple of friends noted how the horns in a Haydn symphony rasped and roared over the strings with a sense of the sound of a live orchestra. Kirstie McColl, too, though vocally a spot on the bright side, had a splendid array of realistic 'clubby sounding' backing instrumentalists on 'Soho Square' and the Integra had resolution enough to separate artificially-induced drum sequences from real instruments where other more expensive amplifiers fail.

There's much to be said, too, for the

With the new Integra amplifier, Heybrook are intent on entering the amplifier market. Will they succeed? Eric Braithwaite listens; Noel Keywood measures.



should be bought 'sound unheard', nor partnered too exotically at either end, I suspect. But then, I drink coffee made from ground beans, not Gold Blend,

consequential than this weakness. In fact, they preferred its naturalness of tone to a thousand-pound integrated from overseas.

Heybrook have hit a difficult spot in the market. Although I find the Audiolab 8000A highly detailed, its restraint on occasion and seeming unwillingness to party gives the Integra an edge in that

respect. Heybrook's design also includes a phono stage that leaves very little to be desired against the line stages. In absolute terms, the company has engineered an integrated amplifier that has some of the best of the Audiolab blended with the best of the much-loved Creeks. It might be a winning combination, but it's not one that

and I have a taste for single malt. Who said 'Snob'?

**Heybrook
Heybrook Hi-Fi Ltd.,
Estover Ind. Est.,
Plymouth PL6 7PL
Tel: 0752 731313**

£550

MEASURED PERFORMANCE

The Integra started smoking with less than one second's full power delivery into a 4ohm load - it didn't want to know. We found the emitter resistors were responsible; they overheated instantly and need uprating. Amplifiers must be able to deliver current into a low load for at least some short period of time and a vast majority do. I suspect that in use, the Integra would burn out its emitter resistors if driven heavily into four ohm loudspeakers (some KEFs for example), although it is lightly fused to prevent this, so it may, alternatively, fuse-blow. It would be wise of Heybrook to make the Integra more robust before marketing it.

Power output was a healthy 84watts (8ohms), enough to drive any loudspeaker. The power amplifier is strongly band-limited, output falling to -0.5dB at 20kHz. The -1dB limit was 36kHz. This sort of roll-off is introduced to minimise transient distortion, but it often makes for a warm-ish or fulsome sound.

Sensitivity was unusually low at 400mV, for tuner, CD and tape. These days, 200mV is a normal value, since some budget cassette decks and tuners produce just 350mV or so. Similarly, the disc stages were insensitive at 6mV and 0.9mV for MM and MC respectively. The Integra ideally needs more overall gain.

Low frequency response rolls off below 18Hz on CD, a little high for this source. The bottom-end was band-limited to 44Hz with LP (MM and MC), to stop warps being amplified.

Distortion was low in the mid-band, measuring 0.03%. However, it rose at high frequencies to reach 0.15%, with extended harmonics, as our analysis shows. This is likely to be audible as a slight coarseness in the sound.

The disc stages were a little more noisy (equivalent input noise) than many these days. Hiss would be audible with low output moving coil cartridges, but less so with high output and moving magnet types.

Although the Integra works as it stands and has plenty of promise, it still needs some final tidying. **NK**

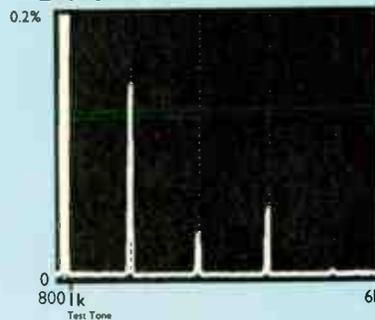
TEST RESULTS

Power	84watts
CD/tuner/aux.	
Frequency response	18Hz-36kHz
Separation	66dB
Noise	-97dB
Distortion	0.03%
Sensitivity	400mV
dc offset	0/0mV

Disc (MM)	
Frequency response	44Hz-30kHz
Separation	67dB
Noise	-76dB
Distortion	0.03%
Sensitivity	6mV
Overload	100mV

Disc (MC)	
Frequency response	44Hz-30kHz
Separation	67dB
Noise	-70dB
Distortion	0.03%
Sensitivity	0.9mV
Overload	15mV

Distortion





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World Radio History

DAC STACK

Once you've bought your Japanz CD 108SE turbo Mk II Limited Edition, offering high-end sound quality for £200, where do you look for a worthwhile upgrade?

We all agree that in the up-to-£300 CD player market the Japanese reign supreme, but above £300 things are slightly different. The problem is, ditching your £200 turbo for a completely new machine can be a costly business.

Fortunately, there's another option. Keep the player, but upgrade its electronics by buying an external convertor, or DAC (Digital to Analogue Convertor). This way, the player can be used to spin the disc, whilst the digital-to-analogue conversion process is carried out by an external processor of higher quality.

So here are six budget DACs, priced between £200 and £450, that offer a high performance and a cost effective upgrade for anyone who owns a CD player with a digital output. Most modern players have an optical output, but earlier ones commonly had an electrical output. All but one of the DACs tested here have input sockets for both; Dacula has just an electrical input, but then, its manufacturers will convert the optical output on your player to coax as they reckon it sounds better anyway. So these DACs can be added to nearly any existing stand alone CD player.

The advantage of a separate DAC? Well, that £500 player you were just about to buy more than likely uses the same transport mechanism (the bit that spins the disc and reads it) as your current £200 turbo player. So all you're really getting is a better DAC (or support electronics), and probably a few more flashing lights as well. Why throw away a transport that, in effect, you'll then buy again? Adding a separate DAC means that your funds are concentrated on the part that matters - the critical convertor electronics - so obviously this approach presents a much more cost effective upgrade path. Later, of course, you can get a genuinely better transport, especially if you buy a sync-locked DAC. With these, only made by Arcam and DPA at present, you have to buy their own transport later.

Robert Wilson
investigates six
budget CD
convertors that
promise to upgrade
the performance of
entry level CD players.

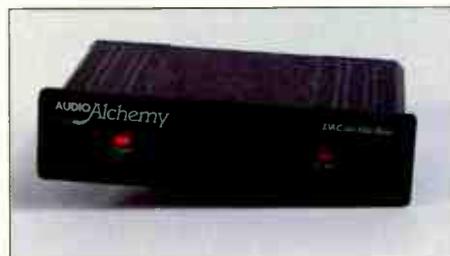
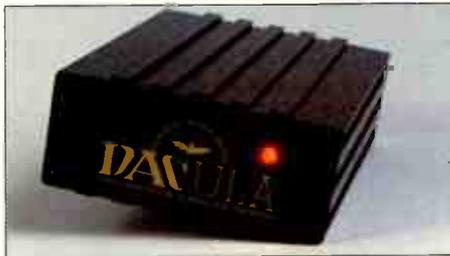
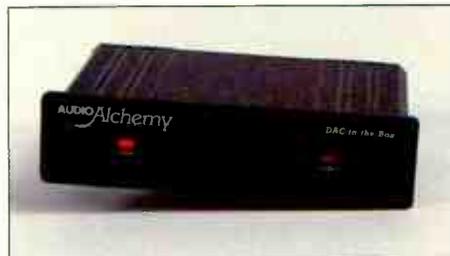
Dominic Baker applies the tests.

Stand alone DACs come from smallish, specialist companies whose main aim is to beat the competition in terms of sound quality alone. Major manufacturers get very tied up with 'perceived market value' and all sorts of other marketing concerns, which is why expensive CD players commonly come smothered in lights and what have you, all of which detract from the quality of their internal electronics.

In contrast to this approach all six of the DACs here are engineered for

sound first, making the combination of £200 CD player and £300 DAC the equivalent of any £1000 stand alone player. There might be another box and a few more wires, but there's also better sound and greater flexibility to upgrade.

So, if you're more interested in what it sounds like, than what features it offers - and you should be - read on. We've got six of the very DACs on test, all at affordable prices ●



DPA Little Bit II

If, like me, you're one of those people who enjoys pieces of hi-fi that are aesthetically out of the ordinary, then the Little Bit II will be right up your street. Finished in slate grey with curved edges all around the half width case, and a front panel corrupted only by a lone green LED, the Little Bit looks decidedly purposeful. All the main switches occupy the rear panel, including one for power and another for the Deltran sync-lock facility. The DAC has two digital inputs, one optical (Toslink), one coaxial, as well as the optical slave for the Deltran.

Conversion technology is Philips' Bitstream, incorporated into a circuit board displaying the neat surface mount componentry that DPA favour.

Sound Quality

The Little Bit II is a very lively performer with a tight and cohesive musical presentation. With 'Aye', an album by African singer Angelique Kidjo, the DPA enjoyed the complex rhythmical arrangements, creating a sound with precise dynamics. Bass definition was

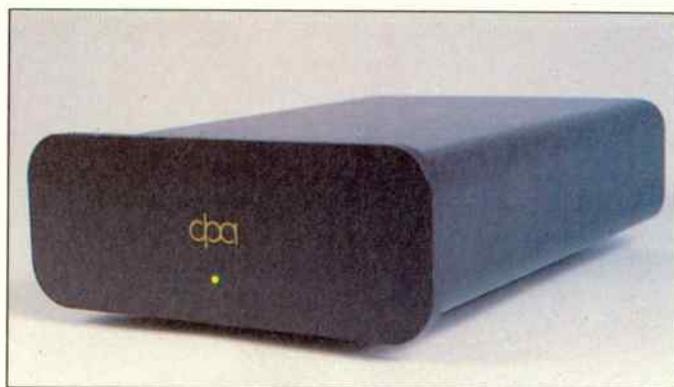
very good, being strong and quite deep with a rich tonal quality that is often lacking in this sterile digital world. You could criticise the bottom end for being just a tad slow compared to the more upbeat handling of higher percussion, but this is only a minor gripe.

Overall, the Little Bit expressed a very neutral character, enabling it to differentiate various instrumental timbres quite beautifully. When listening to "A meeting by the river" the subtle variations in playing techniques between Ry Cooder and V. M. Bhatt were crystal clear. This CD is a wonderful recording, produced using valve equipment and has a deep soundstage which was well exploited by the DPA, highlighting its ability to resolve intimate ambient and spatial information.

The DPA's excellent vocal definition and projection was admirably demonstrated by John Lee Hooker's 'Boom boom' where he positively

growled into a room bathed in reverb. With a Hammond organ punching through the mix, along with the kick drum and snare, the DPA put up a real performance. The treble resolution of the DPA is very explicit, if a little cold when compared to its bigger brother the PDM I/III. Hi-hat cymbals came across brightly with a sharp, incisive edge, but lacked the fullness of timbre that can be reproduced by the finest DACs available, but these cost between three and four times the Little Bit's £450 price ●

DPA Little Bit II **£450**
DPA Digital Ltd.
Unit 7, Willowbrook
Technical Units,
Crickhowell Road,
Cardiff CF3 0E1
Tel: 0222 795621



SELECT SYSTEMS Dacula

This small black box conjures up sinister images when placed in the presence of other DACs. The ribbed aluminium case produces a very workman like appearance which gives the impression that Dacula means business.

A sturdy power supply occupies a separate box attached to the DAC, that houses the crystal convertor chip, via a long lead and a 5 pin DIN plug. As with the DPA and QED, this convertor has all its operational niceties mounted on the rear panel. One coaxial digital input, a set of audio outputs and a toggle switch labelled stand-by/operate. There isn't a lot because there isn't any more room on the box measuring 45x110x165mm (hwd).

The front panel features an LED indicating the operating mode, red for stand-by, changing to orange and then green, traffic light style, when you play music.

Sound Quality

And the Dacula certainly does play music. It exudes a marvellous lucid quality with the treble in particular being sweet, very detailed and crisp. As with the Arcam, this DAC's balance also tends towards that expressed

by good analogue systems. The Angelique Kidjo album enabled Dacula to show its deft touch with intricate

percussion; triangle and bells sparkled, filling the soundstage with shimmering overtones.

The funky rhythm guitar was very lively and solid, especially considering its position at the edge of the soundstage, where the complement of backing vocals also helped to create the illusion of width. The overall picture was enthusiastically finished off with a fast, agile and warm bass.

The laid back assurance of the Dacula brought a gorgeous blend of steel and wood to the timbre of Ry Cooder's guitar, which, when mixed with the glass on steel harmonics of the bottleneck slide, was quite mesmerising. The natural acoustic of this fine recording was also expertly preserved, being punctuated by drum beats from behind the dueting guitars.

Dacula's presentation also suited John Lee Hooker, where he certainly came across as a laid back, cool cat with menace

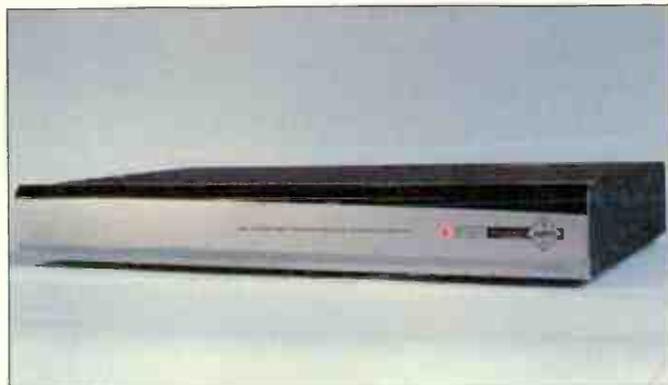
in his voice during 'Bad like Jesse James'. The natural unforced inflections in his voice were complemented by the full tonal quality of the guitar and all its threatening dynamics which only slightly lagged behind the lightning fast Arcam and DPA.

In fact, this refined and tasteful character of the Dacula had me reaching for a copy of Gerry Rafferty's 'City to City', so I could settle down in a mellow mood with 'Baker Street'. The delicate hi-hat, vivid sax and shimmering upper harmonics on the string sections didn't disappoint ●

Select Systems DACULA **£399.00**
Select Systems Ltd.,
Hanworth Trading Estate,
Hampton Road West,
Hanworth,
Middx. TW13 6DH
Tel: 081 893 8662



QED Digit Reference



The £450 Digit reference mirrors a growing trend in the UK manufacturing industry, that being the use of mirror finish chrome on the facia of hi-fi products. Although this does look very snazzy, it also shows up grubby finger marks with alarming ease, however this isn't such a large problem as once installed there should be no need to touch. All the switching is on the rear, one for power and another for selecting either coaxial or optical digital inputs. These are grouped next to the audio outputs.

The slim, full width case houses two separate Positron power supplies, one each for the digital and analogue sections. Conversion is performed using a Philips 7323 bitstream chip and the output is based around a Signetics op-amp.

Sound Quality

With the red LED glowing brightly in the dazzling front panel I settled down and let the music play. The QED presents the listener with an exciting perspective of the material. The balance is slightly forward with a sharp, sometimes forceful,

character.

The bass on 'Aye' was quick and deep, but not quite as well rounded or defined as that produced by the DPA or Arcam DACs. Vocals were highlighted well, especially using this album with its explicit mic techniques. You could certainly notice the Paisley Park studio influences on some of the tracks. Other vocals that had been EQ'd to make them more prominent in the mix (an old trick) did however become a little too shouty with an emphasis on sibilant transients.

The Indian percussion on Ry Cooder's new album was also more forward in the mix, the QED not so good at revealing the complex reverb patterns which create the illusion of space in the reproduction. Having said that, the QED still gave a wide soundstage with precise instrument definition and wonderful variations of the different guitar tones and textures.

John Lee Hooker was in the listening

room, large as life with all the emotion present in that guttural growl of his, although the lack of differentiation between the main vocal and the artificial reverb did make him appear a little less solidly placed than some other DACs manage. The striking guitar attacks on 'Bad like Jesse James' didn't quite have the heart stopping drama and dynamics that can be recreated using this disc. But the QED still managed to communicate Mr Hookers musical intentions with a clear portrayal of his style ●

QED Digit Reference £450.00
QED Audio Product Ltd.,
Sr. Perters Road,
Huntingdon,
Camb, PE18 7DE
Tel: 0480 52561

EMF Crystal



Another shiny one this, with a chrome mirror finish front panel measuring just 216mm wide and 72mm high. Chunky rotary controls are used to select the two coaxial and one optical input and to control the level of the variable output. Internally, the EMF uses, as its name suggests, a Crystal chip set with a low-jitter input interface, but cannot be sync-locked to a transport like the DPA or Arcam.

As mentioned earlier, the EMF features a variable output which allows the DAC to be connected directly to a power amp. It also has a set of output terminals fixed at the Philips standard 2 volts. Three LEDs on the EMF indicate the power status as well as showing when the muting and de-emphasis circuits are working.

Sound Quality

The EMF is a very refined machine which produces a detailed treble lacking the sibilant distortions inherent in some CD players. When listening to 'Aye' I noticed the delightfully deep ringing tones on some of the ride cymbal fills, giving a

more natural texture to the sound compared to the usual tizz you hear with lesser machines.

Overall, the EMF is a little drier than the Arcam, with a slightly shallower image which reduces the air and ambient presence of the track. However, this tighter sound does lead to a DAC that gives a very cohesive musical performance. Bass is particularly tight, and the dry nature also exploits the timbre of the drum skins that prevail in this rhythmic African music.

This enjoyable reproduction of percussion was highlighted again when listening to the Ry Cooder and V. M. Bhatt disc, where the tabla had such an incisive snap that it seemed to lift the tempo of the entire recording. Midrange detail was laid bare with exquisite steely textures to the guitar strings, recreating the metallic ringing of their harmonics. It's just unfortunate that the woody timbre of the instruments body was not quite as well rounded as I'd have liked.

The EMF does a superb job of focusing your attention on the prominent instruments in the mix. The Hammond organ in 'Boom, boom' was resolved well, giving insight into the lively style of playing used by Hooker to convey his interpretation of the arrangement. The hard edge to the attack on the acoustic guitar had an authority which gave body and strength to "Bad like Jesse James". This was also evident during Steve Winwood's 'Roll with it' where the EMF revelled in this excellent mix of piano, organ and brass ●

EMF Crystal £450.00
EMF Audio,
2A Bellevue Road,
Frien, Barnet,
London N11 3ES
Tel: 081 361 6734

AUDIO ALCHEMY

Dac-In-The Box

A little tongue in cheek, this product. Surely enough is enough, what with Dacula and Little Bit. Trust the Americans! However, not everything in the USA is bigger, I discovered, when picking up the Audio Alchemy DAC-in-the-box from Hi-Fi Experience on Tottenham Court Road. The DAC does come in a box, a very small box, most of it taken up by the power supply!

The actual converter comes in a very small metal case measuring 35x140x100mm (hwd) with two LEDs on the front panel, one for power and the other stating when the data-stream has been locked on. Data conversion is taken care of by a multi-bit Analog Devices 1860 chip with a Crystal input receiver. The rear panel houses the two digital inputs, optical and electrical, as well as audio outputs for the stereo channels and a small jack plug socket for connection to the outboard power supply.

Sound Quality

I must admit to being a little taken aback by the Audio Alchemy. With its toy shop name and Corgi size I was expecting a

Mickey Mouse sound, but this little gem told me otherwise.

The first instantly noticeable aspect of this DAC's sound was its dry, tight bass. Although being the lightest in the group it was still quick and lively, if a little lacking in the dynamic punch and transient definition of other DACs. This was at its most obvious with the Angelique Kidjo disc which displayed great integration of percussion, especially the up-beat tracks, but lacked the dynamic shading that is present in the recording, leaving it sounding a touch bland with the leading edges softened.

Image depth and stage width were magically captured in the 'Meeting by the river' CD (which makes it an excellent reviewing disc). The Audio Alchemy produced a slightly enclosed stage with a shallower depth and less explicitly detailed acoustic information. However, its portrayal of the guitars was seductively mellow and refined, if again lacking the

raw metallic glare which these instruments can produce.

The treble quality displayed by this DAC was very inoffensive; there was plenty of detail and musical insight, although it didn't shimmer in the way Dacula can.

The gentle character of the DAC-in-the-box was a little at odds with some of John Lee Hooker's material where the menace in his delivery was fractionally diluted. But the blend of instrumentation and the overall integration of the sound was very good ●

Audio Alchemy £199.00
Path Distribution,
Unit 15, Hayward Ind. Park,
Tameside Drive, Castle Bromwich,
Birmingham B35 7BR
Tel: 021 749 2240



ARCAM

Black Box 50

Internally, the new Black Box is very interesting, employing what Arcam refer to as a hybrid 18 bit conversion system, where multi-bit conversion is used for the upper bits and single-bit conversion for the lower ones. At £450 this technology comes resplendent in a full width case with elegantly curved front panel complemented by subtly rounded switches. These select the digital input (coax/optical), the sync-lock defeat, phase inversion and power status.

Arcam have fitted the Black Box with two sets of audio outputs as well as a monitor output for digital connection to a DAT or CD-R machine. Like DPA, Arcam have fitted a sync-lock, slaving the transport to the clocking mechanism in the DAC. However you must purchase Arcam's Delta 250 transport to use this feature; thankfully this was also supplied for review.

Sound Quality

The Black Box sounded very promising even when fresh out of the packing case, but I allowed it to 'burn-in' over the weekend of the Bristol show. What greeted me on Monday morning was a very good CD source indeed.

What immediately struck me about the Black Box sound was how much detail it resolved, and that it delivered music in such a seductive manner. This DAC manages to give a vinyl-like balance to the digital medium. The treble was sweet and lively, if a touch breathy at times and the bass warm and rich with excellent timing and rhythmic presence.

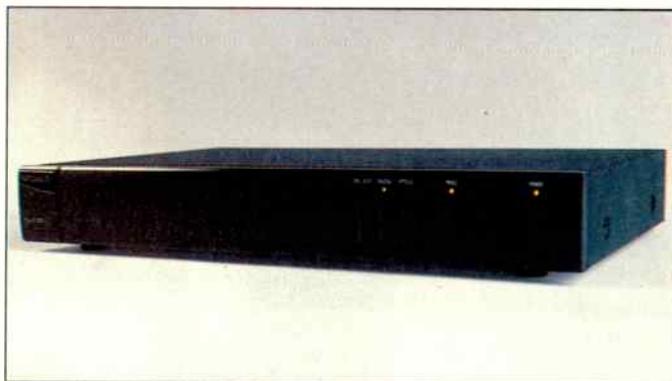
The image thrown out by the Black Box was both wide and deep, with the central vocals slightly laid back in respect to the plane of the speakers. Listening to the 'Aye' album I became very aware of the integration of Angelique Kidjo's voice into the mix; this led to a pleasing and harmonious musical presentation. With percussion the Black Box produced tight and cohesive transients that were very nearly equal to that of the DPA, however the Arcam did just edge ahead in the bass, being a bit fuller and quicker.

The gorgeous instrumental timbres present on the Ry Cooder CD, recorded

using valve gear, were enticingly exposed by the Black Box, giving an exemplary insight into the techniques of the performers. The depth of the recording, which is filled out by Indian percussion, in this case a tabla and a dumbek, was also well preserved giving a solid image with acres of space around the musicians.

Where the DPA dissected the mix with surgical precision, the Arcam manages to blend the various harmonic clues into a complete picture, yet still maintaining the intricate positional balance within the soundstage ●

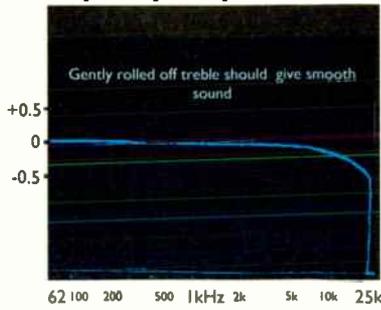
ARCAM Black Box 50 £450.00
A&R Cambridge Ltd.,
Pembroke Avenue,
Denny Ind. Centre,
Waterbeach,
Cambridge CB5 9PB



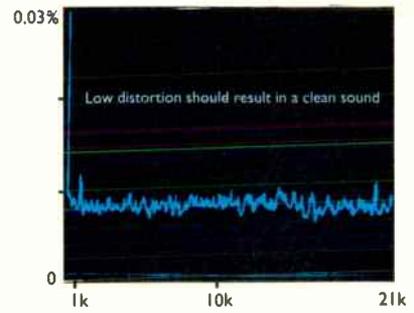
DPA LITTLE BIT II TEST RESULTS

Frequency response	4Hz-21.25kHz	
Distortion %		
-6dB	0.0056	0.0054
-30dB	0.011	0.011
-60dB	0.77	0.72
-90	37.7	35.1
-90dB dithered	13	12.5
Separation	left	right
1kHz	110	110
20kHz	99	94
Noise		-102dB
with emphasis		-105dB
Dynamic range		105dB
Output		1.86V

Frequency Response



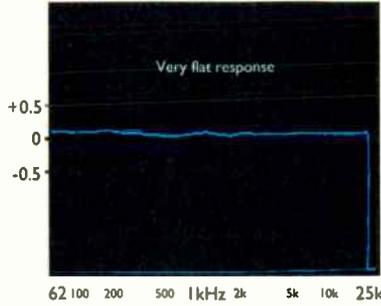
Distortion



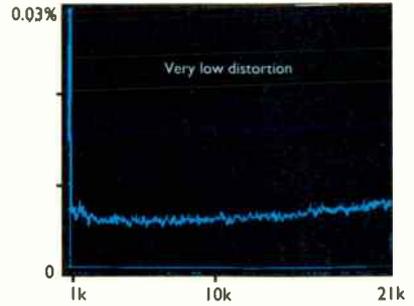
DACULA TEST RESULTS

Frequency response	4Hz-21.2kHz	
Distortion %		
-6dB	0.006	0.006
-30dB	0.006	0.006
-60dB	0.75	0.73
-90	33.4	32.3
-90dB dithered	5.26	3.5
Separation	left	right
1kHz	104	109
20kHz	89	86
Noise		-89dB
with emphasis		-89dB
Dynamic range		104dB
Output		1.9V

Frequency Response



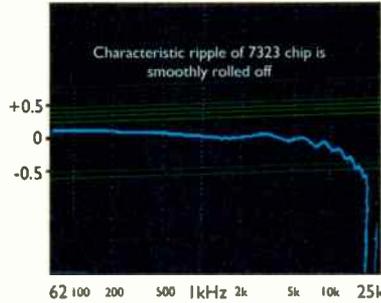
Distortion



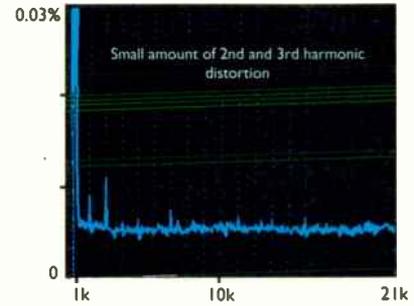
DIGIT REFERENCE TEST RESULTS

Frequency response	4Hz-20.4kHz	
Distortion %		
-6dB	0.004	0.004
-30dB	0.02	0.02
-60dB	0.59	0.51
-90	30.8	28.7
-90dB dithered	6.31	7.74
Separation	left	right
1kHz	97	101
20kHz	95	93
Noise		-100dB
with emphasis		-101dB
Dynamic range		107dB
Output		2.38V

Frequency Response



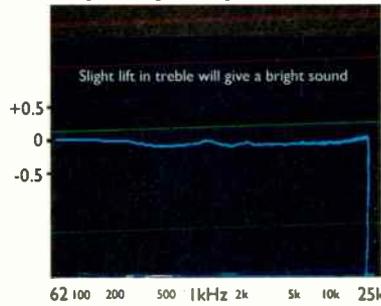
Distortion



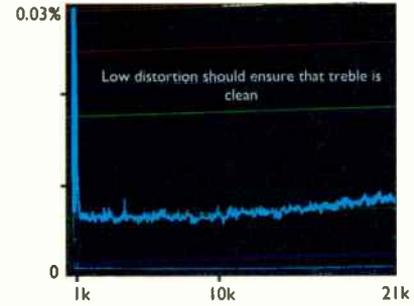
CRYSTAL TEST RESULTS

Frequency response	3Hz-20.2kHz	
Distortion %		
-6dB	0.006	0.006
-30dB	0.012	0.008
-60dB	0.43	0.36
-90	34	38
-90dB dithered	19	24
Separation	left	right
1kHz	109	106
20kHz	89	87
Noise		-120dB
with emphasis		-120dB
Dynamic range		114dB
Output		2.02V

Frequency Response



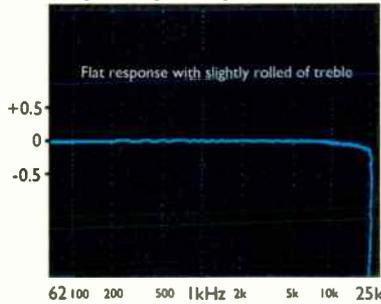
Distortion



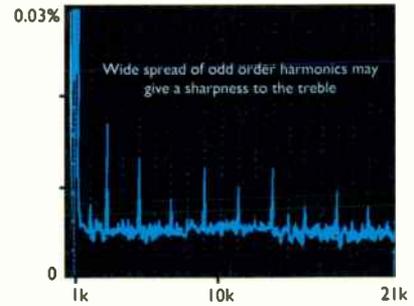
DAC-IN-THRE BOX TEST RESULTS

Frequency response	4Hz-21.3kHz	
Distortion %		
-6dB	0.009	0.01
-30dB	0.03	0.03
-60dB	1.02	0.89
-90	55.9	49
-90dB dithered	32.5	24.5
Separation	left	right
1kHz	117	98
20kHz	104	72
Noise		-106dB
with emphasis		-109dB
Dynamic range		101dB
Output		2.55V

Frequency Response



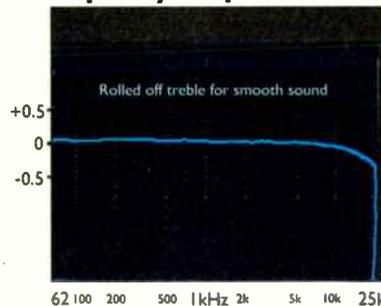
Distortion



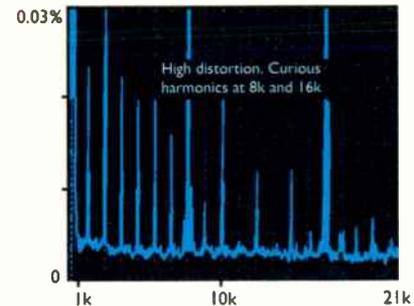
BLACK BOX 50 TEST RESULTS

Frequency response	4Hz-21.4kHz	
Distortion %		
-6dB	0.014	0.017
-30dB	0.096	0.128
-60dB	1.34	2.62
-90	39.9	78.9
-90dB dithered	12.7	6
Separation	left	right
1kHz	101	90
20kHz	92	68
Noise		-89.5dB
with emphasis		-93dB
Dynamic range		98dB
Output		2.36V

Frequency Response



Distortion



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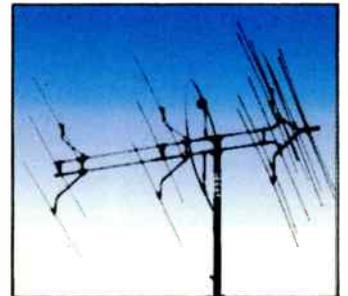
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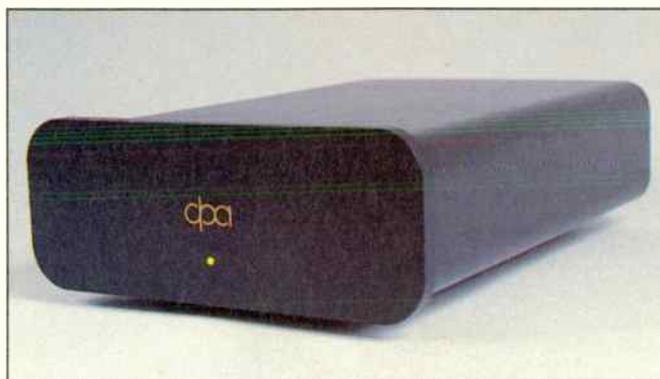
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CONCLUSION

All the DACs in this test were successful in that they provided a sufficiently high standard of sound quality to justify their purchase. This underlines the fact that CD replay has advanced considerably over the last couple of years or so. To be honest, if you own a good middle market CD player that's beginning to get a little sonically 'dog eared', then any of these convertors should bring about a sizeable improvement in sonic performance.

At £199.95 the DAC-in-the-box was



a little out of its depth in this group. Having said that, however, it didn't disgrace itself. In fact, since the other products all cost at least twice as much as this little wonder from Audio Alchemy, it was they who needed to prove their worth against it. DAC-in-a-box gives a disproportionately high quality of sound for such a miniscule outlay.

If you already own a QED Digit and Positron, the Reference is definitely a convertor to listen to, especially in view of the upgrade path that QED make available. It gives the Digit more dynamic presence, one which creates an exciting musical perspective that is slightly raw around the edges. Good for rock music maybe, but the QED lacks some of the refinement that makes the remaining DACs better all-rounders, I feel.

It was this refinement that marked out the EMF Crystal as a particularly impressive convertor. The treble could be singled out as being especially detailed, whilst at the same time retaining a cohesion that made listening very pleasurable. This DAC's ability to focus a listener's attention on the main elements of a mix, without compromising the detail present in the rest of the soundstage, made for a very informative sound which could be just a touch too dry in the bass, but never slow.

The Dacula was seductively subtle in

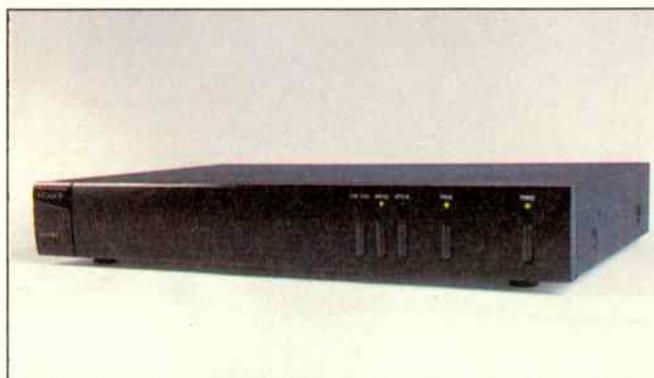
its presentation of a musical performance; this was its forte. This device gently creeps up on you with devilish intent, until it consumes you with its persuasive performance. Forget this unit's unorthodox looks and size, Dacula is a very desirable product. Music is recreated with a panache that belies its digital origins, the shimmering treble is an absolute delight, especially at this price. The cohesion of the sound across the entire frequency spectrum was also the main reason for the DAC's ability to

mimic a good vinyl system, along with tuneful bass. It's unfortunate that the Dacula didn't possess the feature that enabled our remaining two DACs to contest the final shoot-out.

Yes, you've guessed it, Sync-locking! OK, I can

hear the other manufacturers crying "foul", but I feel that it's unjust not to allow the DPA and the Arcam to benefit from their inclusion of this feature. However, even when used as ordinary stand-alone convertors these two still did enough to justify their place in the final battle.

The Little Bit is the most neutral performer here. Its ability to differentiate



between instrumental timbres was most enjoyable as was the dynamic shading and resolution of transient information. Where the DPA did slip up, however, was in the bass. It was superbly defined and taut but I felt it lacked a little pace. Overall, the DPA did appeal more to one's cerebral facilities than to the heart.

Oh for a smidgen of the Dacula's soul!

So this leaves us with Arcam's Black Box 50. A controversial choice this one, but to my ears it was the convertor that sounded most impressive, more so when sync locked with the dedicated transport.

The bass was superb: tight, extended and very articulate. In the treble the Arcam displayed a sweet nature with the only major gripe being a slight breathy quality which was tidied up by the sync-lock, but what won the day was the portrayal of John Lee Hooker's voice - it was the most life-like of all I felt. Others (Eric Braithwaite, Dominic Baker and Noel Keywood, all of whom listened) had some reservations, acknowledging it as very impressive in timing, bass power and overall dimensionality, but feeling that there was some slight loss of body to vocalists. A certain degree of lower treble emphasis may have been responsible for this, but it also enhanced detail.

Whatever - and there were reservations about measured distortion colouring the sound slightly - the Arcam must be auditioned. Everyone found it impressive, although some preferred the DPA for truthfulness of balance. We were split on this one.

TRANSPORTS

When assessing these DACs, three of the manufacturers, Audio Alchemy, Arcam, and DPA expressed a preference for their own transport to be used. This was particularly relevant with the products from Arcam and DPA, because they use an optical link between the DAC and the transport enabling the clock fitted to the convertor to control the data from the transport.

The use of sync-locking allowed the Arcam and DPA to take a step ahead of the competition, in both cases bringing about a cleaner,

more precise sound, tightening up the musical strands of a performance to produce a better defined structure.

The only drawback of this system is the expense (isn't it always!) which works out at £750 for the Arcam Delta 250 transport and £795 for the DPA T1 transport ●



Musical Celebration

When I took Danish cartridge manufacturer Ortofon's new flagship, the MC7500, home with me, I promised not to make any bacon jokes. But it brought home to me how astonishingly good the sound from vinyl can be. (Oops. Near miss, there.) And that is having had a bevy of equally expensive digital replay gear around over the last few months. At £2000, I'll say unequivocally the 7500 moving coil cartridge is worth every penny.

I've always held that reproducing the real-life scale of music through hi-fi is an unattainable goal. Anyone who has sat next to a concert grand or even a flute-player will know the sheer dynamics are impossible to re-create. But the illusion is attainable and the Ortofon comes so close it's uncanny.

Take Mingus live at two different venues in New York. The atmosphere was tangible, the subtle differences of captured ambience quite distinctive, and the playing entrancing. There's something about the way the Ortofon reproduces

Ortofon celebrate their 75th anniversary with the MC7500

Moving Coil cartridge.

Eric Braithwaite celebrates its superb sound.

acoustic instruments that is exceptional in its stability, shades of tonal colour and convincing accuracy. Listen to an alto or soprano sax and each is absolutely spot-on, so real you can see the shape and the size.

As a window into recording quality, the Ortofon is almost frightening in its clarity. After the Mingus, after a whole bevy of Blue Notes, I turned to Gerry Mulligan on Castle. What a shock it was to hear the unmistakable sound of a DAT master tape copy rather than Blue Note's reel-to-reel. A friend thought it was a DAT machine I was playing it on.

This extraordinary insight and resolution brings with it some difficulties. Some of my favourite rock was

disappointing. There's little point in playing Dinosaur Junior; the whole damn thing was so electronic, so flat, un-dimensional and compressed and the Ortofon so unforgiving that it becomes depressing, no matter how good the music. The MC7500 is for serious collectors.

So, by and large, it was my 'serious' collection of recordings I turned to (that, by the way, didn't exclude rock, but it did mean picking early pressings like the first American one of LA Woman, rather than ones made from second or third generation tapes). Here, the Ortofon is supreme.

On opera, the nuances of vocal expression, the dynamics of the singers and orchestra, the staging, are captured

with vivid realism and great grace. Desdemona's scream at the end of Otello was spine-chilling; the great burgeoning of orchestral colour in the Overture to Tannhauser mouth gappingly dynamic.

So it is with concerti, whether they are Romantic or Baroque. C. P. E. Bach's concerto for two pianos was reproduced with the most accurate timbral differences and subtleties possible, each absolutely precise in scale and positioning vis à vis the rest of the instruments. Ricci's violin in the Decca SXL of the Tchaikovsky Violin Concerto was breathtaking in purity and quality of tone, as well as technique. That's not ignoring the emotional effect, either. As with all hi-fi to aspire to, the MC7500 conveys the full gamut of emotion from A-Z with the fervour of a live concert.

Curiously, it does all this without any of the distracting side-effects associated with vinyl replay. The Gyger Replicant stylus (sounds like a Schwarzanegger character) is so called because it's intended to replicate the shape of a cutting stylus. It does this to such effect that even my more worn, treasured, ASD and SXL recordings replayed with a remarkable lack of surface noise. What was more distracting, although it never detracted from the performance, was the amount of tape hiss behind the music, or on Decca's Kingsway Hall recordings the rumble of the tube trains below the hall. I have a strong suspicion that even the producers have seldom heard their pressings so well-reproduced.

There is one curiosity. While the Ortofon is exceptional in conveying scale, tonal colour, intimacy, breadth and depth, there are times when the bass appears to have a couple of anomalies, at least, when it's assessed against top-end digital, even if it's fully equivalent and often superior in other areas. There is a bloom to it which makes timpani and occasionally double-basses sound too fully and less sharply defined than, say, the beautifully rosinny tone of cellos and violas, or the unerring reedy tone of woodwind in all its variety (even when an oboe is buried in the depths of a score, its position and sound is unmistakable). This can be tightened up with care by adjusting the tracking weight and bias, but while the focus stays sharp, rhythm and beat on rock driving along like a TGV, bass tone is still less pure than one suspects really was recorded.

All the same, that is simply subsumed by all the other things the MC7500 does so well. Dynamically, Ortofon's new top-end model deals with changes in pace and volume with absolute aplomb. It's in the subtlety of it that it deserves acclaim: when a pianist holds one note back, slightly behind the beat, this is normally subjugated to the rhythm. With the 7500 in the arm, it's plain for all to hear, just as the player intended.

No snags? Well, apart from it costing the price of a second-hand car, its output is low. At 0.13mV it's not so near

inaudibility as previous Ortofon MCs, but I doubt if any normal MC stages would cope with it without hiss (but then, you wouldn't use it with a £250 integrated, would you. Would you?) A dedicated top-quality MC stage or transformer are essential. Ortofon also supply eight-nines copper headshell leads - use them, they sound better. Unfortunately, they also supply screws rather than allen-headed bolts, which are harder to tighten up.

But the plusses outweigh all this. The body is machined out of titanium, subtly shaped like a Saab Turbo and silkily finished even down to a laser-printed name and number on the front. Even without seeing the Bosboom miniature

leather Gladstone bag it arrived in, everyone was impressed. I don't want to return it; my friends don't want me to send it back. Alas, I've emptied my piggy bank and it just doesn't have a hundred thousand two-penny pieces in it. Now, where did I put that pools coupon... or that book about the Great Train Robbery?

Ortofon MC7500 £2000
Ortofon UK Ltd.,
Chiltern Hill,
Chalfont St. Peter,
Bucks. SL9 9UG.
Tel: 0753 889949

MEASURED PERFORMANCE

Frequency response of the MC7500 is shown at fairly high resolution in our third-octave analysis. Like that of most moving coils, the upper midband does not droop, since there are no generator losses. Ortofon have tamed the treble peak - a common problem with MCs - well, but I was surprised to see it centred at 10kHz, reminding me a little of the old SPU. By cartridge standards though, the 7500 has a commendably flat frequency response. In case you are wondering, the peak at the left (low frequency) end of the trace is caused by arm/cartridge resonance; it's not strictly a cartridge phenomenon.

Tracking performance was very good at low frequencies and exceptional in the midband. I was surprised to find the 7500 clear 25cms/sec rms, something few other cartridges can manage. This will give a very secure and confident sound, on vocals in particular.

Distortion from MC cartridges is always a little higher than that from a good MM. Ortofon's own VM Series used to turn in around 0.3% on lateral modulation. The 7500 produces 0.7% in contrast to this, primarily second harmonic in nature. Vertical tracking angle measured an accurate 23degrees, keeping vertical mod. distortion down to a low 1.5%. This is lower than that from most cartridges (3-5%).

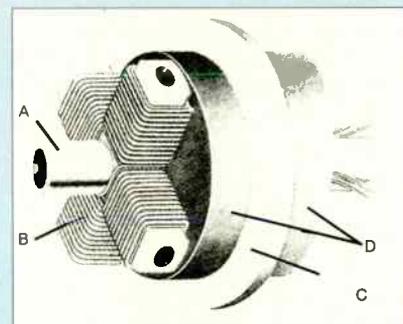
Channel separation was a satisfactory 24dB overall. Output was very low at 0.19mV at 5cms/sec rms. Technically the best way of matching is via a step-up transformer, but to date I have found good preamps sound a little better. However, it would be impossible to produce a preamp for this cartridge that lacked audible, if slight, hiss, its output is so low.

The 7500 measures like a good MC should. However, measurement doesn't reveal much about tip geometry, nor a myriad other factors that affect sound quality, so listening tests must be, as always, the final arbiter of sound quality.

NK

TEST RESULTS

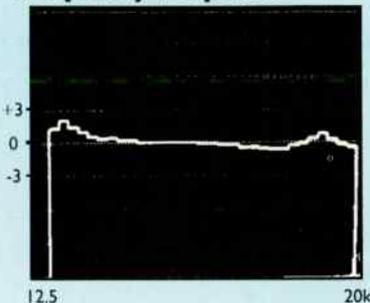
Tracking force	2.5gms
Weight	11gms
Vertical tracking angle	23degrees
Frequency response (2dB)	20-20k
Channel separation	26dB
Tracking ability (300Hz)	
lateral	90µm
vertical	45µm
lateral (1kHz)	25cms/sec.
Distortion (45µm)	
lateral	0.7%
vertical	1.5%
Output (5cms/sec rms)	0.19mV
Channel imbalance	0.6dB



MC7500 Signal Coil assembly

- A - Cantilever holder
- B - Signal Coils
- C - Platinum washer
- D - Rubber Dampers

Frequency Response



Three Ways Forward

Dominic Baker listens to the high technology, three-way Kappa 6.1i from Infinity.



A good three-way loudspeaker promises good bass, a clear and cohesive midrange plus sweet treble, thanks to dedicated drive units. With such potential in mind I looked

forward to getting Infinity's Kappa 6.1i speakers home. Having a price tag of £995, they sit at the bottom end of this U.S. manufacturer's range, one that stretches from £200 up to - well - infinity.

Pouring over the blurb I discovered that a lot of thought has gone into the drive units of this speaker. The bass unit has a large 8inch injection-moulded graphite cone. Injection moulding gives a

more consistent and controllable wall thickness than vacuum forming (the usual method) and the graphite used gives a strong, yet light cone that handles power well but can respond quickly to transients.

Moving upwards, the midrange driver is made from a soft, clear plastic which allows its 2inch dome and surround to be moulded from one sheet of material. The metal gauze behind this dome was not, as I first thought, to prevent little fingers pushing it in, but is there to break up standing waves in the cavity behind the surface of the dome.

At the top lies a circular ribbon tweeter using a lightweight Kapton diaphragm. In general, ribbon tweeters offer a sweet and unusually clean treble response.

So, the ingredients all seemed to be of high quality and my expectations, as I read the literature, were steadily rising. A couple of other points worth mentioning are the level controls for midband and treble (well, Infinity are American) and the use of wedge shaped cabinets to reduce standing waves.

So that my expectations weren't falsely shattered, I left the Kappas in a small room pumping music overnight to run them in properly. Ribbon tweeters especially tend to need this time to sweeten up and deliver their best.

Next morning, seeing that these speakers were rated as 6ohms impedance, and that the minimum recommended amplifier requirement was 30watts, I decided to remove the valve amplifier from my system and replace it with a DPA solid-state design, which seemed a safer bet to begin with.

I began listening with Texas and their new Ricks Road album. This is a good, full bodied recording that tends to bring the best out of most hi-fis - and it certainly worked well in this instance. The Kappas had a big, easy and relaxing sound that managed to engulf the room and the listener. Their bass was on the larger side, giving a heavy thud to bass lines, but it just managed to steer clear of sounding monotonous. It wasn't what I'd call particularly powerful or dynamic, though it was firm and there was plenty of it. The midband and treble regions were good quality too. The midband had the kind of focus and smoothness that only good three-way 'speakers have and the treble was as sweet and open, as you'd expect from a good ribbon.

It wasn't until track seven, 'You've got to give a little', that I started to doubt the 6.1is. This track is a real foot tapper if ever there was one, but something was missing that threatened to take away its appeal. The upper bass punch which forms the foundation and beat for this track failed to make it out of the cabinets, giving an almost reticent presentation, reducing their apparent 'speed'. This track also picked out a few other oddities that started to explain what the Kappas were up to. Although each individual drive unit is undoubtedly very good at its job, they

weren't integrating well enough to give a cohesive performance. Here was a case of plenty of individual talent, but an uncoordinated team effort.

Moving on to REM's Automatic for the People, the Kappas sounded a little more together. They are best suited to this kind of dry recording, but given anything a little rich they seemed stifled. The soundstage was quite wide and had some depth to it, which is a good thing, and they imaged well enough to place Stipe and the members of his band reasonably accurately. I did try experimenting with the midband and treble level controls during this album, but although the midband could be forced a little further forwards and the treble given a little extra crispness, they also became more obvious as individual drive units.

The Kappa 6.1is are a soft, relaxing loudspeaker to listen to. They don't offer much insight into music but they do give it a pleasantly warm character. I suspect that part of this softness was due to the midrange dome failing to match the bass unit or excellent tweeter. It sounds as if there was a gap either side in the

frequency spectrum, removing some crispness and punch. They don't suffer poor recordings well either; where other 'speakers push a recording at you, the Kappas refuse to let it out and if the recording is already a little recessed sounding in itself, the effect is cumulative, resulting in a muggy sound.

The Kappa 6.1is have many good things going for them: their treble is excellent, having a lovely, detailed and liquid quality that sets ribbons apart from the rest. The midband was good too: smooth and clear, if a little too far back to offer real projection. But as a package the Kappas fail to impress. They are polite and won't offend, but they we're just a little too laid back for my taste ●

Kappa 6.1i £995
Gamepath Ltd,
25 Heathfields,
Stacey Bushes,
Milton Keynes,
MK12 6HR.
Tel: 0908 317707

MEASURED PERFORMANCE

Infinity are one of America's biggest loudspeaker manufacturers, so I was expecting a well engineered and thought-out loudspeaker in the Kappa 6.1i. And indeed I found just that. Using impressive drive-unit technology, their frequency response was both even and within desirable tolerance limits, ensuring a balanced subjective performance.

There was a lift in the upper bass and again higher up in the midband, enough to add a little punch to the bass and help push vocals out of the 'speakers, avoiding boxy colouration. The dip higher up in the treble will remove some sparkle and energy, but the positive side is that the speakers won't exaggerate sibilance or harshness, so a smooth sound should result.

As is common with many U.S. loudspeakers, the Kappa 6.1is are of higher than average sensitivity. They produced 88dB of sound pressure level at 1m with a 2.83V pink noise signal, which is 2dB or so higher than average. This means that the Kappa 6.1is will go loud with relatively few volts.

However, the impedance curve gives more of the story. The Kappas are a low impedance load, which means that although they are sensitive, they aren't particularly efficient. They demand nearly twice the current from an amplifier that a typical high impedance British loudspeaker would for the same volume control position. Our analysis shows that this speaker's impedance sits just below 5Ω for much of the frequency range and has a measured overall value of 6Ω, which is low. This makes them a demanding load, one that is liable to highlight power supply

differences in solid state amplifiers and demand the use of a 4Ω output tap in a valve amplifier.

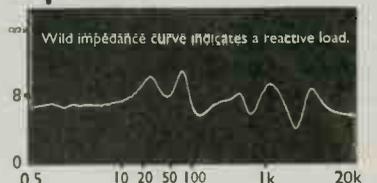
The Infinity's are also a highly reactive load, shown by the sharp dips and peaks in the impedance curve, but having said this, most modern transistor amplifiers will have no problem driving them.

The Kappa 6.1is are a well engineered loudspeaker. Their frequency response is smooth due to successful integration of the three drive units, at least in measured terms. They are a quite demanding load, but a quality transistor amplifier of around 50watts or so should drive them with ease. DB

Frequency Response



Impedance



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Orelle
Hi-Fi

Recently we've measured - and rejected - a number of products that hadn't been properly tested during development. They behaved abysmally in objective terms and the problems were audible. I hope the fallacy that products can be developed satisfactorily without measurement isn't about to set sail once again.

It's a convenient idea for cash strapped small manufacturers, and it's convenient for non-technical journalists (and magazines) too, who would equally like to believe that testing can legitimately be avoided. It isn't very convenient for buyers though who, in the fullness of time, will too often find they bought a pup and won't wish to repeat the experience.

In the long run, duff niche products tar all small manufacturers with the same brush - one of incompetence - discouraging buyers and retailers alike from taking an interest in products occupying this part of the market.

At present, Britain's got a great indigenous hi-fi market. I'm surprised by the robust enthusiasm with which U.K. hi-fi enthusiasts pursue their hobby. They're prepared to risk spending thousands of pounds on specialist products of unproven reputation - but it's an act of faith that should not be abused. If it is, then slowly but inexorably the desire for such products will be overwhelmed by fear of unreliability and poor performance. Buyers will drift away and that'll be the end of that. The market for niche products will die as potential buyers feel they must, by all common sense, be forced to accept the poorer sound but greater reliability of mass produced equipment that comes from the better equipped major manufacturers.

If this happens, Britain will lose not only its present vigorous and, in places, inventive cottage hi-fi industry, but also the potential to support new company start-ups. Large oaks grow from small acorns;

most UK hi-fi manufacturers started up in a back room somewhere or other. Too many poorly developed products will kill this sort of entrepreneurial spirit, ultimately destroying a tenacious sector of British manufacturing that has existed from the very beginning of electronics as a technology, way back near the turn of the century.

The dangers of ignoring measurement are not obvious, but they can be severe. My favourite example, because it is so cogent, is that of the Decca London cartridge. Anyone



Reflections from Noel Keywood kaleidoscope

who's heard it admits to being mightily impressed - including me. It delivers hair-trigger transients and possesses the fastest, punchiest bass going. But often I hear this interesting tell-tale observation "If it's right, then all other cartridges are wrong".

Sadly, the Decca isn't right - it's massively wrong: measurement proves it. But this remark is fascinatingly true about many products that measure poorly - they may sound quite radically different, leaving listeners to decide whether they are very right, or very wrong.

This cuts right to the heart of the dilemma such products raise. It is possible to produce a hi-fi product that sounds different, even interesting in sonic character - but of poor basic performance. I'm not being academic here - having the ability to measure I've come across many in twenty five years of reviewing. That these products are wrong is not necessarily immediately obvious though, at least, in listening tests. I'll come onto the product that sparked off these musings in a minute. First let me give you another example of one of the most blatant and

accepted examples of acceptable wrongness - the Euro 'speaker.

This animal has boom and ting. It isn't, unfortunately, a figment of the imagination of Europhobic British journalists. Many European loudspeakers are still engineered knowingly with a sound tailored to appeal to what what European buyers find most desirable.

Does it matter if something is not right, so long as it's enjoyable? Perhaps not, but that's a personal decision that should be left to the individual listener. I suspect most people would at least like to know about this sort of thing beforehand, and it's essentially our job to provide such information in reviews of course, which is why we have an in-house laboratory and measure every item we review.

Finally, let me cover the situation that renewed my fears about the subjective-only assessment and development of hi-fi products. A valve amplifier arrived for review. One independent freelance had reputedly said it sounded awful and had refused to review it, yet another had

said it sounded really good. We measured it - awful!

We studied the circuit, looked at the components used and the quality of construction and then listened. The reasons for the ambivalence toward it became obvious. High quality components and the fact that, as in all valve amps, just a few thermionic amplifying devices were present, in this case with necessarily limited feedback, guaranteed a good degree of basic clarity and crispness to the sound. But the distortion we measured was also audible, colouring

the sound severely with coarseness if volume was turned up (this was a 70watt amp).

The first reviewer listened at high levels, the second at relatively low levels. Neither got all of the picture. One heard all that was wrong about the amplifier, the other all that was right. I sympathise with their plight more than I do with that of the manufacturer, who had commissioned the design from an engineer who knew it was wayward and yet had not thoroughly checked the outcome. I told him exactly what was wrong and who could put it right for him (we could, but it would compromise our impartiality). We will review the amplifier soon.

I hope you can see from these tales why measurement is essential. A good measured performance doesn't guarantee good sound quality, but it is an important prerequisite for it. Some people in the industry have conveniently convinced themselves that measurement isn't necessary. They are wrong - dangerously wrong. It's not in anyone's interest to produce duff products ●

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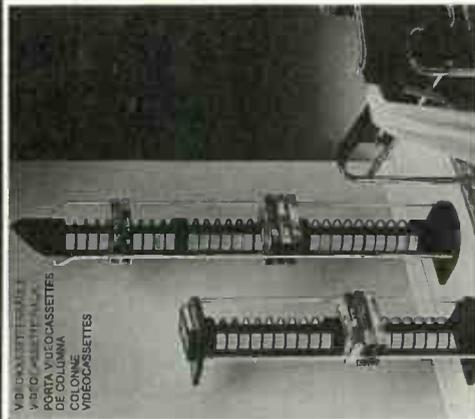
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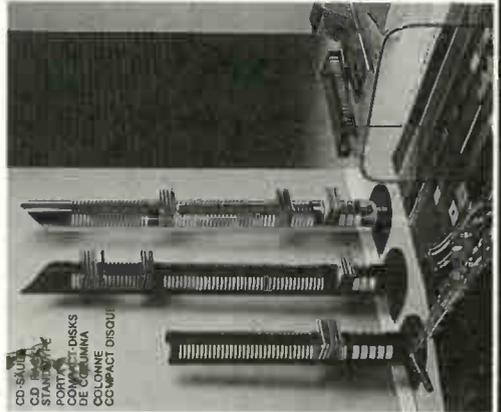


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BRISTOL SHOW

Eric Braithwaite on the prowl, brings new products launched at this year's Bristol Hi-Fi Show.

Either the Bristol Marriott hotel was squirting essence of optimism through the air-conditioning or the Sound and Vision Show in February had hi-fi in their most bullish mood for a good while. Arcam's Rick Pullar was cracking jokes (that's what he called them) all the way through demonstrations. Hope he doesn't give up his day job . . .

Though Arcam had their new cheapish converter and Delta 250 transport, there were otherwise fewer niche products than usual. But then, the Japanese companies were waiting to launch their newest and brightest at the Brown Goods Shows in April. Sony were rumoured to have their new MiniDisc players (in-car, a Walkman-sized playback machine, a similarly pocketable record/playback device and the first hi-fi sized player) for private view, but the sound of Amie blazing away on the telly in one of Sony's rooms was too loud to find out. Speaking of which, Cerwin-Vega, exiled to the far end of a corridor, had something (a CV1515) with two 15in woofers in it that made a devil of a racket, but my ears couldn't take it.

Much more interesting were the first of Monitor Audio's 200 series loudspeakers, designed by ex-Epos luminary Robin Marshall. Judging by the sound, the 201 combines the best of the MA Studio designs with the best of the far-famed Epos ES1 I. Systemdek had their new range of Systym speakers, including an elegant slim floorstander which is due in about six months.

New company Questech popped up with a pyramid-shaped range using Bandor drive units, while Royd produced a good sound from the tiny £595 Sorcerer, spotted very briefly at Ramada last autumn. Like Pioneer, who had their 'UK' speaker in their room, Sony have produced a speaker for the UK too, with a 'biocellular' tweeter, made of fibres grown by bacteria. I'm sure that's what they said. Which reminds me, Canon added a sub-bass system and wedge-shaped speakers to their non-organically grown mushroom-shaped range.

In electronics, novel developments

appeared from Audiolab and Kinshaw. Audiolab have come up with an £800 phono stage, just to prove vinyl won't lie down. They also showed their new transport and mentioned (but didn't display) their forthcoming 'Zq' range of amplifiers, to include a line-level alternative to the now ageing 8000 series. Kinshaw were producing very wholesome sounds in the Kronos room (via Triangle speakers) with their new sub-£500 integrated in the Overture range. It includes a phono stage and DAC to complement the higher-end Perception series. Also spotted there was a £220 Pro-ject turntable and three (!) Ortofon MC7500 cartridges. a Pro-ject integrated amplifier is forthcoming.



Also on display in the Creek room (now divorced from Tannoy and in the hands of Mike Creek again) were the new 4240 integrated, P42 pre-amp and A42 power amp, all very affordable and newly cased at £250 each.

NAD played host to Onkyo, a once-widely known brand in the UK, but absent for some years, with a full range of electronics and the first A/V amplifier to use Sanyo's new THX chip.

Also making its first appearance was an elegant midi-system, the DF10, from Denon, which isn't. Each bit is available as separates, including a choice of RDS and non-RDS tuners. Rotel announced, still in the tuner kingdom, their RT990, based on Michi electronics, and Denon, again, had the first sample of their new TU-380 RDS tuner for under £200.

Linn assaulted neighbour Gramophone's ears with Reggae and Ragga, via Magik-I, Mimiks and Keltiks, then turned to Baroque, ironically, when they left. By association of ideas, Naim showed their new sub-£1000 NA CD3 CD player, which has a drawer that swivels out instead of sliding. Novel, eh?

Some manufacturers stayed away, Tannoy, B&W and Philips (and DCC, hmm) being notable absentees, but ProAc were represented in Michell's CD-free room (the only one, and pretty busy) with a brass-hatted Alecto taking pride of place.

Yamaha, KEF and JBL were giving various varieties of film and Surround-Sound a work-out as usual, though JBL cracked up towards the end of Sunday, put the blood-and-thunder films away and started playing Lemmings on their twenty-foot wide screen. Great fun, but the guy who walked in, said 'This is frivolous!' and stormed out would have been more welcome in the Meridian room, where Bob Stuart was demonstrating digital Surround Sound, but without pictures, just to prove you can have real audio as well as the Odeon in your living room. The sound was coming (mostly) from the new 565 Surround-Sound processor, 5000 digital and DSP 5000C centre-channel speakers, which had just been previewed in Las Vegas.

Bob made much play of many early recordings being three-track, left, right and centre. Though RCA and others did record three channels in the Fifties and Sixties (the Rubinstein Chopin recordings, for example) I don't think they meant us to hear three. Or did I misunderstand the purport of his introduction? However, real music did indeed sound more like real music and less like a soundtrack in the Meridian room.

A year ago, JBL's Lemmings might have been a metaphor for the industry, but it's good to see interest in hi-fi reviving again. Now we're all in a happier mood, have you heard Rick Pullar's joke about the . . . on second thoughts, maybe you don't want to ●



BUDGET BIAS

Nearing the end of its lifespan, Aiwa's AD-F810 three-head cassette deck can be found at bargain basement prices.

Noel Keywood and Robert Wilson report.

Here's a real bargain: a three-head, dual-capstan cassette deck with all the gizmos needed for high performance, but at a bargain basement price of £199.95. Nowadays, that'll normally get you a budget single-capstan machine with two heads - a basic specification. What's the catch? Simple, the Aiwa AD-F810 is being phased out, so it's become a "bin-end"

That might sound perjorative, but this is no ordinary bin-end, which is why I decided to devote a page or so to its passing. If you are in the market for a cassette deck, the Aiwa AD-F810 is an interesting bargain worth close consideration. It owes its peculiar price/performance ratio to outside events, the strengthening of the Yen being the most significant, bin-end status less so.

Nowadays, through rising domestic labour costs and the strong Yen - which if America gets its way will only continue

on its journey upward - Japan cannot offer such complex products for so little. Aiwa long ago started moving its manufacturing out of Japan to Singapore, to reduce labour costs. But sophisticated key components like the dual-capstan transport and siamesed record/replay heads are still made in Japan, so they remain expensive. As a result, the day of the £200 price tag on a deck of this specification has long since gone.

The AD-F810 will be replaced with a model of similar basic specification, Aiwa told me, but it will be more expensive. Based on current trends, it's unlikely that the fundamental performance of the new model will improve upon that of the '810; there'll probably be a re-arrangement of gizmos at most.

We've already tested the '810, during late 1991, and concluded that it "offers a fine blend of properties, resulting in excellent recording quality with ferrics, chromes and metals, plus fine replay of

pre-recorded tapes." For this revisit we re-tested another sample supplied by Richer Sounds, just to be doubly certain about its performance.

What is it that a deck of this apparent complexity offers? Being three-head it has separate record and replay heads (the third is the erase head). The theoretical benefits are higher recording levels, flatter frequency response and lower distortion. Separate record and replay heads also allow an owner to monitor a recording whilst it is being made, giving instant assessment of the impact of both bias and recording level adjustment.

A good dual-capstan transport cuts speed variations right down, giving a stable and clear sound, free from unsteady pitch or the coarseness and colouration caused by flutter.

The AD-F810 also has record gain adjustment to compensate for differing tape sensitivities. The Aiwa doesn't, at this price, have Dolby S of course, but it does possess Dolby B and C, as well as HX PRO headroom extension. So there's quite a line up of facilities on offer. Bear in mind too that because the head can record high levels onto tape, this helps make hiss less obvious, giving better dynamic range.

SOUND QUALITY

Starting with pre-recorded rock music the Aiwa sounded very promising. The ability of the bass to remain taut and solidly bolted down helped to produce music with a rhythmic coherence which made listening to cassette more enjoyable than it sometimes can be.

Treble content was also reasonable, the Aiwa managing to defer from the usual splashy mixture that is common to budget decks, offering instead good resolution of the leading edge of hi-hat cymbals.

A Chopin piano recording is always a tricky task, even for the finest cassette transports, laying bare the slightest deviation in pitch control. The Aiwa made a fair stab at this; the piano wasn't especially stable causing the image to waver at times, but stable enough to make the overall reproduction entertaining, which

made up for the odd variation in pitch.

When it came to recording however, the Aiwa really shone brightly. It has the ability to express quite noticeable differences in the standard of tape formulation.

Using a high quality metal tape showed that the Aiwa wasn't out of its

projection was already partially diminished. Bass also lacked presence when compared to the master, the authority and weight that could be heard in the original was slightly softened and lacked the punch and dynamics which give drive to a track. But we're talking about perfect cloning here and to damn

the Aiwa on these counts would be very harsh as it did a very fine job indeed. Treble definition was very good, the detail being presented in a very clear and concise manner, without sibilance or spit.

“The recreation of the stereo image, so explicit in the master, was again well recorded with very good depth and only a slight softening at the edges.”

depth, with Maxell's MX being particularly sweet. There was a slight veiling of main vocals in some complex rock mixes, leading to a reduction of presence in the track where vocal

The recreation of the stereo image, so explicit in the master, was again well recorded with very good depth and only a slight softening at the edges. The central focus of the track was solidly placed, and again only partially recessed with respect to the master.

When switching to chrome tape, in this case Maxell XL II-S, there was a distinct increase in musical involvement due to a tighter, punchier bottom end which contrasted well with a tonally balanced midrange. Nicely reproduced instrumental timbre also added to the overall picture painted around articulate vocals. The main reduction in recording clarity with the swap to chrome was in the treble, which became slightly more hissy with a loss of the crystalline detail that was prevalent with metal tape.

Finally, with ferric tape the sound quality became a little more limited. The treble was dull in nature, lacking the life and sparkle that was present in the previous recordings, even when the bias was optimally adjusted. The influx of raw edges in the treble also became very prominent on vocals adding a sibilant character to the dynamic transients. Although the midrange maintained a good degree of tonal neutrality it seemed to be a little slow, due to the underlying bass arrangements which lacked the integration shown with chrome tape.

The Aiwa is a very competent deck when used with pre-recorded material, especially rock music, however it really begins to shine when used as a recording tool, if care is taken with respect to the choice of a good quality chrome or metal tape ●

MEASURED PERFORMANCE

The AD-F810 showed itself to possess a bit more drift than the best, but it still managed well for the price. Drift can sometimes be heard when listening to forms of music that contain sustained notes, most commonly from piano. A sudden change in pitch is heard; it is slight but can be surprising because of its subjective incongruity.

Dual capstan transports are meant to lessen or eliminate flutter, something the Aiwa does well. You can see this as an absence of spikes or peaks across the central area of the speed stability analysis. It was successful in this respect, giving a purer sound in consequence.

The head and record E.Q. together deliver a very flat frequency response characteristic, shown for metal tape in the analysis. Identical results were produced for ferrics and chromes. Variable bias tuned in all three types effectively.

Head overload levels were good, but not exceptional. This again is down to cost, but it's certainly better than most at this level. That's MR-X PRO turned in creditable +5dB/+1dB mid-band/treble overload figures all the same.

Replay frequency response, which affects pre-recorded tapes, was flat to 18kHz. This is sufficient to ensure they do not sound muffled with Dolby B engaged.

REPLAY (pre-recorded tapes)

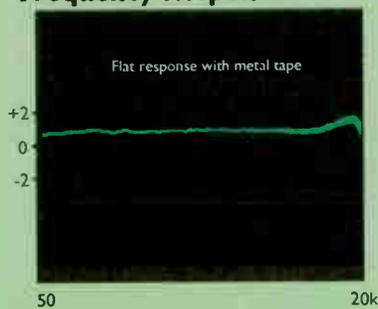
Frequency response (-2dB)30Hz-20kHz
Speed accuracy +0.3%
Hiss (70uS, Dolby out) -58dB

RECORDING (blank tapes)

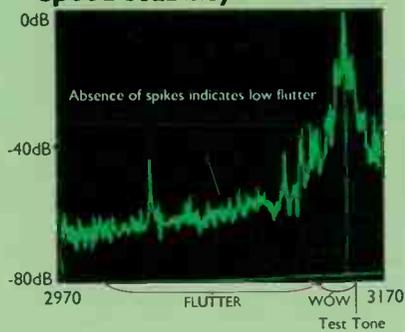
Frequency response (IEC Primary Refs.)
ferric (IECI) 12Hz-17kHz
chrome (IECII) 12Hz-17kHz

metal (IECIV)	12Hz-20kHz
Separation (1kHz)	-54dB
Distortion (315Hz)	0.6%
Hiss (70uS, Dolby out)	-55dB
Speed variations (DIN total)	0.05%
Flutter energy (3-3.13kHz)	-34dB
MOL/SAT (IEC Refs)	315/10k
IECI (ferric)	+4.5dB/-5dB
IECII (chrome)	+4dB/-4dB
IECIV (metal)	+4.6dB/+0.5dB

Frequency Response



Speed Stability



Available for £199.95 from Richer Sounds and other retailers.

AIWA AD-F810 £199.95
AIWA
5 Heathrow Summit Centre,
West Drayton,
Middlesex UB7 0LY.
Tel: 081 897 7000



World



WHEN WILL IT STOP?

Whilst I applaud your interest in DIY, I'm concerned about the way in which your new DIY projects are bought to reader's attention. If I were keen to build a valve amplifier, I would have been keenly interested in your kit for a Mullard 5-20. However, whilst waiting and making up my mind, I would have learnt of your future plans to produce a 300B amplifier, surely well worth the wait - a better amplifier.

Then, during the delay while you sorted out transformer difficulties with the 300B, I would discover that you had plans for a Single-Ended 300B, which is surely worth the wait, being a better amplifier.

If you carry on at this rate, constantly offering a better future, I don't think I would ever build my valve amplifier. When will this all end? I see myself in the year 2000 looking at your silver-wired and coiled single-ended amplifier using HFW triodes

thinking that it might be better to wait for the gold wired and coiled version!

**Andrew J. Blackburn
Sevenoaks,
Kent.**

Always assuming you have infinite amounts of wonga! The amplifiers are separated by quite wide price gaps.

Mullard 5-20 was fine in terms of its basic circuit, but simple in its chassis work. We replaced it with K5881 which fully meets, or surpasses, commercial products in build quality - cost, just £395.

In contrast, 300B (push-pull, 30watts) costs £750 at present, which is quite a lot more. It is proving to be a very difficult amplifier to get into production, mainly because it is so specialised and we are perhaps a little too dedicated to its perfection. Also, modern-day GZ-34 rectifier valves have proved to be hopelessly unreliable when operated within Mullard's original

550V max. specification, which has caused further delay. We've found a better alternative.

Single-Ended 300B, another design in prototype form only at present, produces 20watts and is, because of its highly unusual nature, an even more expensive amplifier, available - because of its necessarily massive transformers - only in monoblock form. So it does not overlap with 300B push-pull.

We've are now having special audio capacitors built to our specification - in addition to the transformers of course - and do hope, ultimately, to produce silver

wired transformers and, probably, all components to our own design spec. The improvements in sound quality such components provide are forcing us along this path. Conventional components were never designed exclusively for audio and when you study their construction, their limitations within this critical role become obvious.

It'll all end when you run out of money or we disappear in a puff of smoke when our latest 2kV wonder power supply throws a wobbly! **NK**

Letter of

LONG LIVE MUSIC REVIEWS

The comments made by Brian Cochrane (World Writes, March '94 issue) prompted these thoughts.

Long live the record review section of HFW. I have found it an invaluable guide to much interesting music. Through your reviews I have discovered some superb albums, many of which I have subsequently purchased. With CDs costing as much as they do, I like to limit the chance purchase. A hi-fi mag without record reviews is like a computer mag without program reviews. I mean, equipment is all very nice to look at, but it's albums that

we actually listen too. Isn't that what hi-fi is really all about - listening to music?

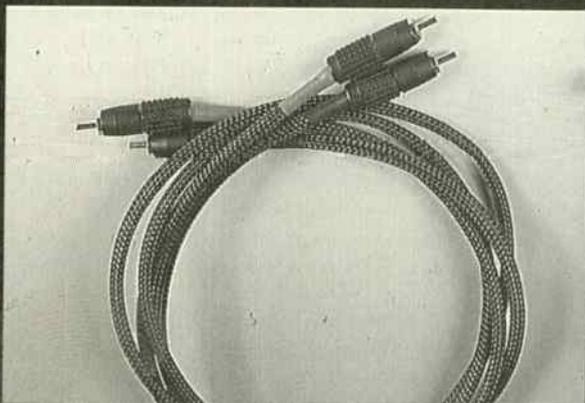
On the same theme - listening to music - let's consider the law of diminishing returns. There is a certain point in hi-fi where small gains in performance start to cost silly money. True, good performance isn't cheap, but in terms of the increased hours spent listening to music, it is value for money. To give an example: The Pink Triangle Da Capo: yes please, I would like one. Well worth the asking price and guaranteed to make you listen to more music, but £1500 for a d.c. battery supply! Would a d.c. battery supply make you

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writes

NOT ENOUGH LINN

We were pleased to read of Mr Hatton's delight with the Cirkus upgrade to the LP12.

Since the formation of Linn Products, we have been committed to easy-to-use, value for money products that offer both longevity and performance. The LP12 with its single button control expresses our view that hi-fi should be easy to use and enjoy, in addition to offering the best possible sound.

At Linn, because customers come first, we respond positively to magazine requests for products. You have recently

reviewed a Karik, Kaim, LK100 and Keilidhs in a system, and we currently have outstanding requests from you for the Arkiv and the Klyde moving coil cartridges in the pipeline.

We welcome criticism because we have confidence in our products and we trust our customers to establish the facts about value and performance for themselves and, indeed, as enthusiasts we see the diversity of view within the enthusiast sector as an essential element in developing our business.

Everyone is capable of appreciating fine music at home, so Linn does not qualify or limit customer, retailer or magazine access to

its products in an elitist or prejudiced way. All Linn customers are important to us and we wish to be able to address their investment in their music collections and their Linn hardware for as long as they wish to develop their systems. To this end, we continue to work with all our retailers, including Harrods, to set new and higher standards because we all care about music.

**Ivor S Tiefenbrun, MBE,
Linn Products Limited.**

"What's all this about?", you might ask yourself. It's Linn's diplomatic response to an observational reply I wrote to a reader's letter (penned by Richard Hatton of East Sussex in our April 1994 issue), where I claimed Linn had lost interest in the specialist market and in supplying us with products for review. "Not so", said Ivor Tiefenbrun, founder and managing director, when he ear-wigged me by telephone, claiming that my observations were inaccurate and misrepresented Linn's policy towards its customers. I was being biased by adverse publicity generated by rivals and a few disgruntled dealers, he said.

I have to contend that we've traditionally experienced unusual difficulty in getting Linn products for review, in spite of strenuous efforts on our part, prompted by persistent reader demand. Ivor says we haven't tried hard enough; I've promised to bombard Linn with fax requests to prove that we do try. Don't hold your breath, but do keep your fingers crossed!

NK

IMAGINARY IMAGE?

In the past I have, through your letters pages, criticised what I see as the arrogance of Linn products in making sweeping statements about sound quality. I have not however criticised the products themselves and in fact, after listening to numerous turntables, including Voyds, Roksans etc. and after the dismal failure of a bankrupt stock Ariston RD90S project, I have settled on a Linn LP12/Akito. This set up has effectively silenced my CD player and got me listening to the music again, instead of the system.

So what? I hear you cry. This is what. While in the process of buying the LP12 I had a long listen to the Keilidh speakers, finally rejecting them on the grounds that my beloved Rogers Studio 3s could 'out image' them with one tweeter tied behind their backs. The very next day I picked up your December issue and noted that Dominic Baker drew similar conclusions in the Linn system review. Still, speaker choice is very subjective. It's what happened next that intrigued me.

The chap from the dealer's, whilst installing the LP12, asked my opinion of the Keilidhs and then told me that imaging doesn't exist, but is just an idea generated by hi-fi mags!

It seems the Linn view is that the only thing we can be reasonably sure of is that what was recorded was music. We cannot know and therefore cannot pass judgement on the original positioning of individual instruments etc.

continued on page 47... ▶▶

the Month

listen to more music than at least 150 new CDs? Not in my view.

I have to say, I like the balance of HFWR. I can do without reviews of headphones, equipment supports, etc. If you fancy reviewing something different, how about a look at the many varied means of storing CDs?

**Simon Filmore
Edgeley,
Stockport**

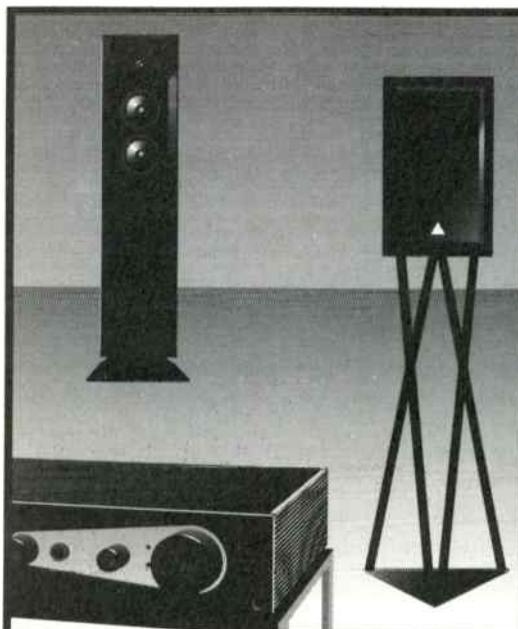
"Long live the record review section", we certainly hope it will. However, the big record companies can be a little reluctant in supplying a specialist mag such as this with their latest mega releases. Vox, Q, etc get

precedence, even though our readers have massive record collections, our surveys show. I'm glad our reviews successfully guide you when purchasing.

As for diminishing returns, well, lets face it, reproduced sound is still light years away from being truly life-like, so every small advance helps, even when the costs involved are astronomical. RW

Yes, you're right, music is what hi-fi is, ultimately, all about. We'll never drop record reviews, we all enjoy music too much - and we know our readers do too. Thanks for your encouragement. **NK**

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



TRIANGLE

ELECTROACOUSTIC

FRENCH SPEAKERS

...as reviewed by English speakers...

"The Alicante's big, fluid, wide-ranging and open presentation lets the music speak for itself."

Jonathan Kettle, AUDIOPHILE, November 1993

"The Titus E has an absolutely riveting sound with openness and rhythmic drive."

WHAT HI-FI?, March 1993

"The Icares are fast and enthusiastic; there's nothing twee or laid-back about their presentation of music - whether reserved classical or high energy rock."

WHAT HI-FI, October 1992

AND AS FOR THE AMPLIFIER...

"The Triangle TE60...has very clean treble...separation is first class...bass is outstanding...an excellent product. A super little amplifier, nicely styled and beautifully finished."

Jimmy Hughes, AUDIOPHILE, March 1994

THE ROMANCE OF FRENCH HI-FI

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Burnham, Slough, Berks
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ACOUSTIC DIMENSION
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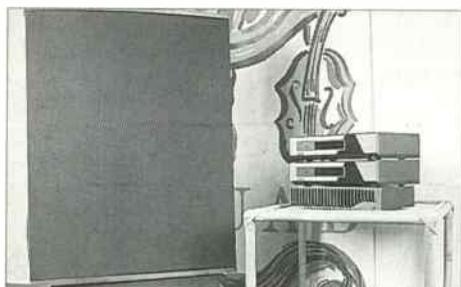
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However, it seems to me that unless someone inadvertently mixes up the two stereo channels we can be very sure of what was left, right and centre. Imaging, in the three dimensional sense, then follows from the reproduction of ambient cues which I believe work on the ears in a similar fashion to that which produces stereoscopic vision. Therefore, to deny imaging is to deny stereo.

Of course if I'm wrong and the Linn installer is right then two questions arise.

1. What have numerous researchers been wasting their time for since the Columbia records experiments in 1931?

2. Why don't Linn sell Keilidhs singly?

Colin Berrisford
Billing,
Lancs,

I also wish people wouldn't make sweeping statements about imaging and such like without really knowing what they're talking about - especially when they're supposed to be knowledgeable in the field of hi-fi. The hi-fi installer may well have never heard a pair of loudspeakers that can image, but then he's probably got a midi-system at home. **DB**

Don't be fooled by salesmen: good loudspeakers most certainly do image.

As a recording engineer I spend a lot of time sitting at a mixing console creating this illusion. If the stereo image did not exist, then why do companies like SSL and Neve bother to fit pan pots to their £250,000 consoles? Why do the world's top recording studios, such as George Martin's superb new AIR complex, spend vast sums of money on 'state of the art' digital reverbs if the effects

produced by them cannot be heard in a stereo mix. Even listening to a basic recording made using a pair of 'crossed' mics you can determine whether it was produced in a small 'dead' room, or a large reverberant auditorium, showing that it is possible to capture an entire three-dimensional acoustic in stereo.

The layering of different instrumental parts from a multitrack to a stereo mix is easily achieved through clever use of the pan controls, fader position (separate track level), EQ, which enables certain parts to be made more prominent, and spatial information (reverb, mic positioning etc).

From a musician's point of view, open the gate-fold cover of Paul McCartney's "Press to Play" album and you will find colourful drawings by the 'Fab One' illustrating to the engineer/producer Hugh Padgham how he wants the 3D image of each track to be built.

To monitor the building of a stereo image requires very good speakers; ATCs and B&Ws are favoured by many engineers, for instance, and I'm not in the least bit surprised that the Rogers 'out imaged' the Linns, as they do make monitors that are used in the industry (e.g. the BBC).

And now we have the new and startling three-dimensional effects created by Sensaura and OM3D from just two loudspeakers, where people can actually walk around the listening room, helicopters can take off vertically and drums can appear to be coming from behind you! This is currently causing some consternation amongst even die-hard stereo engineers - at least, those who haven't come across the psycho-acoustic theory that has made such astonishing effects possible. Pity your poor salesman when he hears this! **RW**

QUAD MODS

I am so glad to have discovered your magazine over the last few months - we seem to be in tune. I have finally discovered some people who approve and applaud some of the kit I use: Quad ESL63, Troughline tuner, Garrard 401 - and not just dismiss this stuff as quirky or old fashioned.

Are there any mods I can make to my ESL63s without invalidating the guarantee? And can I find or make, or are there better kinds available than the little 'L' shaped bit that the shop screwed to the base with 2" long wood screws!!

Prompted by your magazine today I auditioned and purchased an EAR834P from Hi-Fi Confidential in London. Many thanks. Luigi at Hi-Fi Confidential was the most knowledgeable person in a hi-fi shop I have met! And your review very accurate, except that the 834P is not quite silent in my system. All the same, it is as you say "a piece of REAL Hi-Fi". It has made my records and Quads come to life!

Luigi demonstrated the 834P using the prototype of your kit pre-amplifier and 20W power amp - very impressive and I am told easy to build. Please send me some more details.

Thanks again for your positive approach and guiding me to a product that is all it purports to be.

Robert Keeling
Horsham.

We're glad you liked the 834P as much as we did; it's a gorgeous valve head-amp, of that there's no doubt.

There are an infinite number of mods you can make to Quad 63s, all of which will upset Quad, invalidate the guarantee, threaten your life and give you lots of enjoyment! With 2500volts on them, modding Quads is all about living dangerously. The single biggest improvement comes

from removing the protective aluminium louvred grill through which the sound struggles to escape. You must remove the fabric sock first, then the louvred panels can be popped out. The sock can then be replaced.

This mod. greatly improves clarity and fine, low level detailing; you'll feel you could hear a pin drop from a 100metres after this - it's how we use our Quad 63s. Bear in mind though that this mod. exposes dangerously high voltages, so it is not recommended for those with small children. Ideally, another grill with a more open mesh should be substituted. Garden centres have interesting plastic mesh for plants that I've mused upon as possibly suitable. The current grilles are designed to resist the attentions of children with metal knitting needles. **NK.**

FIRST TIME READER

I recently bought my first copy of HFW (the March issue) and felt a strange yearning for the days when I would buy SME headshells, remove playing weights etc. Tweaking. Now that's something you would never get in "What More Adverts", unless of course it involved the purchase of more expensive kit.

The strangest tweak I ever came across was when I auditioned a second hand pair of Celestion Ditton 44s. Removing the grille revealed tweeters that had been fitted with 'collars' made from sections of a washing up liquid bottle. They were held in place by Blue-Tack. Their owner, who had himself bought the speakers second hand, said that he had never had the grilles off and had no idea why the collars were there.

I have found that there are two tweaks that improve the sound of my system considerably. To improve the bass response - close the

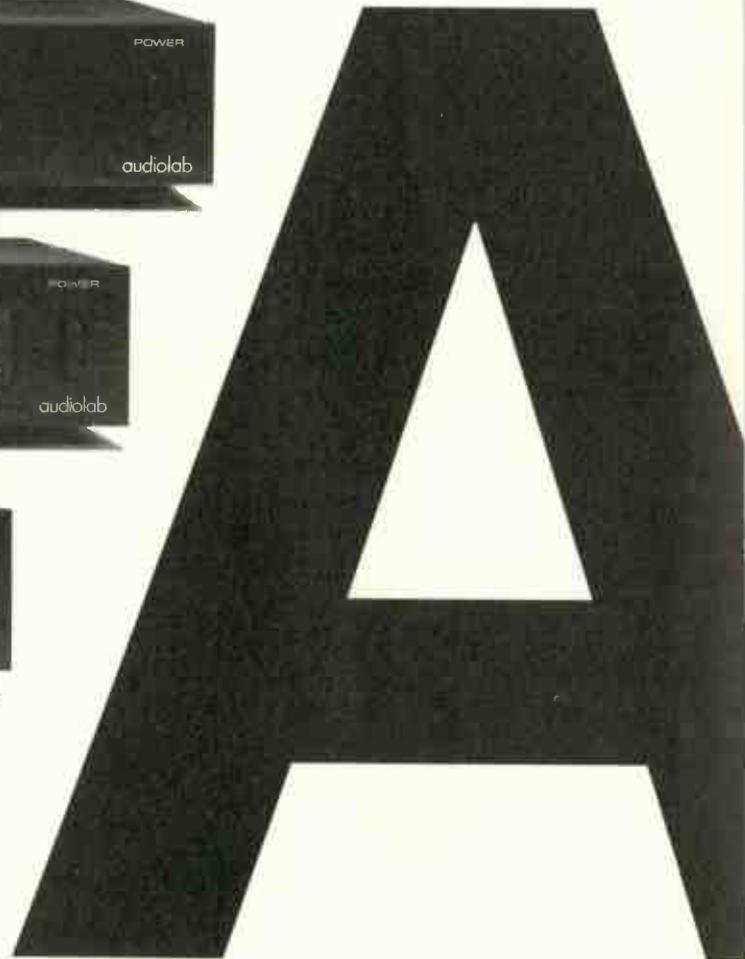
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curtains, remove the arm chair and replace it with a dining table chair! To improve high/mid range - have my ears regularly syringed.

Seriously I have found that the listening environment can have a considerable impact on sound quality. Auditioning of equipment is valueless unless carried out in one's own listening environment and as part of your own system. I have found, to my regret, that speakers which sounded wonderful in the dealer's showroom sounded quite different when brought home.

Although there have been constant attempts to establish objective, scientifically measurable parameters to define high fidelity, in the final analysis subjective elements cannot be dismissed. For example, CD was claimed to have near-perfect audio quality: total channel separation, low signal-to-noise ratio etc. Yet there are now devices whose sole aim is to give CD a more 'vinyl-like' sound! How introducing spurious cross talk could add an essential vinyl ingredient, that is, static scratches, surface noise and the odd mistrack is beyond me.

In conclusion, I enjoyed your magazine immensely and found it a stimulating read. But there is a final tweak you could consider. Put on your favourite music and sit down, accompanied by your specific tittle. If the sound is not acceptable, imbibe. Continue until either the system sounds great or you no longer care!

Brian Neal
Bishops Stortford,
Herts.

3D SOUND ON VINYL?

Your article in the January issue of the Hi-Fi world about the new OM3D recording process so intrigued me that I decided to purchase one of the recording's recommended by you. I therefore went to

our local record shop armed with the necessary information and requested them to order initially either Ian Shaw's Ghostsong's or Keith Tippett's the Dartington Concert for me, both stated to be available on LP or cassette, as I still stick to my record player, anachronistic as it may be.

To my dismay they have now come back to say that only CD is available and that the LPs were withdrawn last Autumn.

Can you confirm this and/or tell me where I can get an LP, preferably, or a cassette which has been recorded on the OM3D system, and put me out of my misery.

F.J. Heath
Aldeburgh,
Suffolk.

It appears that LP has been deleted, but CDs and cassettes are currently available, we have been told. The Dartington Concert is from E.G. Records, cassette number EEG 2106-2. Ghostsong's is on Ronnie Scott's Jazz House label, cassette number JH MC025. We hope this helps you locate the recordings.NK

MAN WITH A MISSION

In the days before esoterica, ordinary people bought their 'stereo' a pieces of furniture. Ours was a good looking teak radiogram. We thought it sounded lovely, so did our friends, who eventually bought similar units.

Our high fidelity reading was a few half-understood articles in Everyday Electronics or Gramophone. After ten years of blissful ignorance, a breed of electronic virus emerged - the 'Hi Fi Reviewer'.

This deadly virus started to spread amongst us. It infected our Sixties values, disgorging strange new buzz words. We had suddenly become. . . electronically challenged.

I was seriously infected by this virus, and in a moment of high fever, sold my trusty radiogram and bought a Philips tuner/amp and a pair of Wharfedale speakers. Delicious. Turn it up. Let's hear the swish of the conductor's baton. Bang! Out popped the speaker cones. Not the amp or speakers fault. Too much broadcast mush. I wondered if I could make a sturdier pair of speakers.

A library search unearthed a book by G. Briggs, and one of his designs appealed to my new found purist strivings. It was a 40 litre monolithic box with one eight inch bass and one tweeter. I made two, not from the as-yet undiscovered MDF or even well known chipboard. No-one had told me about coloration and box resonance, so my speakers were made from furniture - quality oak veneered plywood - real wood from trees - 20mm thick.

They sounded fine with KEF units fitted, and as time passed were tweaked bit by bit. First a Coles super tweeter. Next some sticky felt lining - then solid wiring and a host of silly things, like polystyrene cup rims stuck on the tweeter; spikes, front baffle suspension, BAF wadding, no BAF wadding, Blue-Tack, Black-Tack, Green-Tack and on and on.

So here I am twenty years later, divorced, grey and middle aged - with the same speakers. Now though, the latest electronic wizardry feeds them; NAD amp, CD player, tuner, and a Rega deck. All are recommended by the "Hi Fi Reviewer of the Century". A touch of golden guidance in a maze of confusion.

It must be time to change the speakers, I think. They look a little bashed in and, well, sort of old-fashioned. But what should I buy? Technology must have roared ahead in the last twenty years. I will buy the "Audio Award

of the Year" and save all those baffling comparisons and pushy salesman. So I buy a pair of Mission 760i SE speakers and some Target stands - without even listening - the magazine will be right: it was before with the Rega and NAD equipment.

I carefully read the manual, set up the speakers, put on my most demanding CD sit down and. . . disaster. Sounds mushy and compressed. Fiddle around with the stands. Hammer in the spikes. Wiggle the connectors. No difference - still mushy. "Wait for a week and you will hear a difference", says the salesman. I wait. No difference. Rush outside to save the old speakers from the garage junk heap. Wire up. Sit down. Relief. All the familiar clarity and warmth. My old friends are back, warts an' all. Ready for another twenty years.

David Manser
Swindon.

Even modern high tech loudspeakers can be no match for a well engineered 'speaker of the past, especially if it cost 10 times or so more; Quad's electrostatics are the best demonstration of this point. The Missions are well ahead of most rival budget speakers around. They are recommended with similarly priced competition in mind, not something that costs several times the price, even if they are a few years old. DB

Also, when you make loudspeakers they are, naturally enough, tailored to the sound you prefer, be it right or wrong. Isn't this one of the wonders of DIY? Having become accustomed to that sound, a different one can be difficult to accept. I'm surprised you should find the Mission's "mushy", because they are known for their lucidity. NK

continued on page 54...

THREE OF A KIND



Dominic Baker and Noel Keyword investigate what three mid-priced floorstanding loudspeakers have to offer the audiophile.

Floorstanding loudspeakers promise deep bass, yet in our experience too few actually manage to deliver it. Additionally, they commonly don't possess the coherence of smaller loudspeakers that more closely mimic a point source. But perhaps things are changing. Let's hope so, because there's plenty of evidence that people would like better bass than that from a box on a stand. Floorstanders take up no more room, but they have more cabinet volume and that should mean deeper bass.

We've picked three floorstanders to test this month, all between £500-£600 -

an increasingly popular area of the market. These are the kind of loudspeakers that you'd typically use with a high quality specialist integrated amplifier, perhaps an Audiolab 8000A or a Sugden A21a.

The three we picked, hopefully, represent the state of the art in British loudspeaker design.

First of all, the Castle Chesters. These were chosen on the strengths of the more expensive Howards reviewed last issue. They come from one of the more traditional loudspeaker companies, Castle Acoustics, who seem to have taken on a new lease of life over the last year or so.

Next in line are the Systemdek System 937s. Systemdek have just entered the loudspeaker market and are already doing well, combining quality drive units with good engineering. They are also nicely styled, to give a modern, young, image.

KEF have been in loudspeaker design for nearly three decades now and the Q50s are plucked from their latest range. Using the well known Uni-Q point source drive unit they aim to bring point source imagery to a floorstander.

So, here are three floorstanders with plenty of potential. To see how we got on with them - read on ●



for consistency and quality. The tweeter is similar to the one used in Heybrook's Quartets, which we know to have a smooth and detailed sound and the bass unit is a heavily doped 6inch paper unit with a supple surround.

The Systym 937s took far less time to run in than the stiffer coned Chesters, but a good ten hours or so is still worthwhile. The light fabric dome tweeter becomes a lot smoother and sweeter after a few hours of use and the bass frees up a little. Another thing worth bearing in mind, especially if you have polished wooden floors, is that because the bass vents close to the floor, the 937s sound cleanest if the supplied spikes are used.

Unlike the Chesters, the 937s could be pushed right up close to a rear wall, which makes them very versatile in terms of positioning. However, although the bass didn't become overblown, it did show some slight flabbiness and a tendency to slow the music down. Pulling them out a little rectified this, but even right out in the room the bass wasn't as fast as that of the Chesters. Slow bass is a drawback of transmission line 'speakers, but the benefit of this form of loading is a full, warm and engulfing bass that is smooth, rich and deep.

The 937s are real smoothies, with an even balance that made them relaxing and easy to sit in front of day after day. They're not so impressive initially, but they grew on me. The 937s don't draw attention to themselves; there's plenty of detail to be heard, but it's not presented in a forthright fashion. You can press Play on the CD, sit in front of them and enjoy the music without being pinned to the wall.

Their gently detailed soft dome tweeter and doped paper bass unit are extremely well married together, making for a cohesive presentation. Music can rise seamlessly through the crossover point without suffering a change in character or tonal balance. This makes the 937s well suited to slower, more subtle rock tracks, jazz and classical than, say, dynamic pop. The latter benefits from a more forward mid and better bass attack.

The 937s displayed the American country rock character of Counting Crows' 'August and Everything After' album especially well. The dark atmosphere of the recording and damped acoustic were accurately relayed in an emotional and musically rewarding fashion. The strike of the drumstick on the snare and the rapid decay of the sprung wires resonating against the bottom skin could easily be picked out, with Hammond organ and the moody vocals of Matt Malley adding to the suppressed ambience of the recording.

Aimiee Mann's catchy pop lyrics were given a super smooth delivery by the Systemdeks. The acoustic bass on 'Jacob Marley's Chain' had a lovely rich bloom to it, punctuated by the squeak of the guitarists other hand sliding up and down the fret board, attempting to hit each note on time. Aimiee's vocals weren't pushed quite as far forward as they deserve to be, but were well focused and uncoloured all the same.

The Systym 937s are an easy and enjoyable loudspeaker to listen to. They aren't especially precise in their delivery and they don't image with great precision, but the soundstage they create is open and full. Having said this, these speakers are undemanding and easy to sit in front of, possessing a fluidity of presentation that makes almost any form of music sound pleasant. They don't shout or introduce coarseness, which should make them popular with many music lovers. Not as forthright as the Chesters, but a soothing remedy to a hard day's work ● DB

SYSTEMDEK SYSTEM 937

Systemdek have only recently entered the furiously competitive world of loudspeaker manufacture. However, they're already celebrating success with a well thought out range of competently engineered loudspeakers, the smallest of which, the Systym 931s, we enjoyed a couple of issues ago. The Systym 937s are the newest of the range, designed to offer good bass from a modest sized floorstanding enclosure.

This is achieved through transmission line loading, which in this case acts as a long reflex port venting low bass forwards at floor level through two thin slats in the front baffle. They are attractively styled, the textured grey front and rear baffles combined with wood veneered top and sides to give a modern image. Both drive units are supplied by SEAS, being chosen

MEASURED PERFORMANCE

Systemdek's Systym 937s are a transmission line loaded, two-way floorstander. Transmission line loading in this form promises good, deep bass; the low-bass output of the line is vented forwards to add to the upper bass directly radiated from the main unit. The output from the port in the analysis is a lower level to that of the main response, due to microphone position. In practice this output will be boosted by wall and floor reinforcement; we measure in free space.

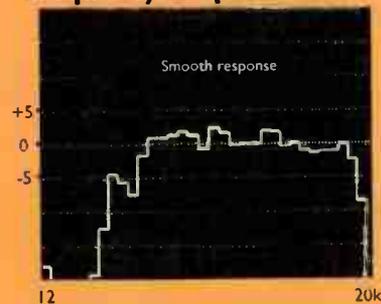
The 937's frequency response measured reasonably flat and where it does deviate the effects will be helpful rather than detrimental. The peak at 2-3kHz will push the sound out of the box; the lift in the lower bass will add speed

and punch. Treble level is a little low compared to bass/midrange output but not by enough to make the 937s sound overtly dull so much as smooth.

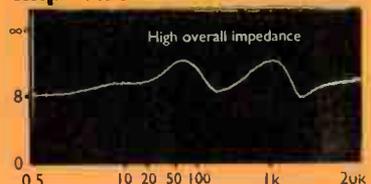
The 937s are of average sensitivity at 85.5dB for a nominal watt (2.83V) pink noise input measured at 1 metre. But, like most British loudspeakers, they have a high overall impedance of 10.5Ω which means that they won't be too demanding on amplifiers. The single small hump at the bass end of the impedance curve shows that the line has been correctly proportioned and damped, so good quality bass should result.

Like Castle's Chesters, the 937's are well engineered to suit a wide range of amplifiers and give a smooth frequency response. DB

Frequency Response



Impedance





CASTLE CHESTER

After enjoying the Castle Howards, reviewed in the last issue, I decided that it was likely to be worth taking a look at another 'speaker in Castle's range. Flicking through the file I came across the floorstanding Chesters. These are very similar in many respects to the Howards, using a 6.5inch doped paper bass unit, 25mm metal dome tweeter and 1/4 wave resistively terminated bass loading. But, unlike the Howards, they have no upward firing driver, which I found was responsible for slight midband confusion. Eagerly, I ordered a pair.

When they arrived I was even more eager to get them running. For £600 you get a pair of beautifully finished real wood veneered cabinets. They are not quite as elegantly styled as the Howards, but

possess high quality drive units and chunky gold plated bi-wire binding posts all the same. The Chesters were nicely proportioned too and should blend well into most living environments.

In my rush to listen to the Chesters though, I forgot one thing - and it's worth bearing in mind if you audition these 'speakers. As with other Castle loudspeakers that I've come across in the past, they take a good thirty hours to run in properly. Straight out of the box they can sound dry and constrained in the bass and a little sharp in the treble, which certainly isn't representative of what they can achieve in full song.

Returning to the Chesters a couple of days later I found the sound had improved quite considerably. They have real upper bass punch, which lends drive and enthusiasm to music, and their treble is sweet and open, but crisp, adding a pleasant sparkle to the balance. I quickly found that the tightest and most tuneful bass was to be had at a distance of around 2ft from the rear wall of my room. They are quite sensitive to placement so this will probably vary from room to room.

The Chesters have a very clear and communicative presentation, displayed well by the BMX Bandits with their forwardly placed jangly guitars, the dry thud of bass drum and cleanly recorded vocals, right through to the lighthearted and humorous 'Kylie's got a crush on us'. The Chesters do a superb job of allowing instruments and vocals to play freely without becoming blurred or smearing into each other. Individual melodies could be followed with ease, I found, making for

a very tidy and composed performance.

Next into the drawer of my CD player went Magnapop's Hot Boxing. Sadly not the best of recordings this one, but the Breeders/Pixies style tracks put this recently released album high up my list of new favourites. It's quite a complex album to deal with for lesser 'speakers, tending to push them into confusion, but the Chesters managed to make an excellent stab at it producing a powerful, gutsy performance. The 1/4 wave loaded bass gives speed and power to music such as this, in a way many reflex 'speakers cannot match. It also appears to provide a free and uncoloured midrange with good projection.

Given a recording with a little more richness than raw sounding indie rock and the Chesters can really charm. Sharleen Spiteri's lightly strummed guitar and polished vocals on Texas's Ricks Road album (this is as well recorded on vinyl as on CD, by the way) gave the Chesters something to really sing about. They related the width and depth of the soundstage well, providing enough focus to allow instruments and vocals to be placed precisely and with confidence. With some concentration, their was just enough cohesion to the sound to allow a good picture of the band to be formed.

The Chesters really are quite special in my opinion. They add little character of their own to the music, allowing it to communicate well with the listener. The treble is sweet and inoffensive with a crispness to it that gives the Chesters a fresh balance. The midrange isn't constrained by the box in any way and the bass combines good punch and drive with enough weight to create a large and realistic performance. I'm trying to think of a criticism, just to avoid being accused of sycophancy! For £600, I can't. Even the spikes in the base are larger than normal, well finished and screw in smoothly. A fine piece of engineering in every respect, the Chesters deserve recognition ● **DB**

MEASURED PERFORMANCE

The Castle Chesters use the same 1/4 wave bass loading as the Howards, reviewed in the last issue. However, with the Chesters there is no second bass unit to drive the line, just one firing forward. This gives the Chesters slightly lighter bass, but also avoids the problems of interaction between two units covering the same frequencies.

Our frequency response analysis shows an even and smooth characteristic. The crossover has been very well engineered: there's little real evidence of a dip, which should give them a truthful and clean sound. There is a little lift in the midband, but this will usefully serve to push vocals and detail forwards. The bass is even too, with good extension, given that we measure in free space conditions.

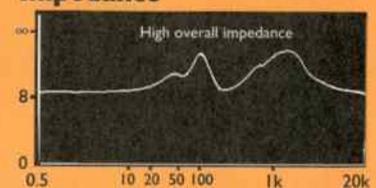
Castle claim 90dB sensitivity for 1 watt at 1 metre, but I could only squeeze 87dB - just above average - out of them using 2.83V of pink noise. But they are efficient, shown by the high impedance curve which gives an overall 10.5Ω. They will not demand much current from a partnering amplifier.

Castle have engineered the Chesters well. They have a flat and well controlled frequency response, good sensitivity and high overall impedance, making them suitable for most amplifiers. **DB**

Frequency Response



Impedance





size with bass output. Initially, the Q50s appeared to have lots of grumbling, rolling bass that started from somewhere deep inside the cabinet, coursed its way around a bit then exited through one or other of the ports to continue its tortuous journey to my ears. Pity that all the other frequencies chose a more direct path, for the two apparently end up somewhat out of sync. I felt

This subjective phenomenon - out of sync bass - is a common price to pay for a speaker that is less damped than is good for it - and boomy. Some tracks, those that tuned into the cabinet's resonance, gave the Q50 a hard time. The metronomic drum beat in Do or Die, from Grace Jones'

Fame album, induced an embarrassingly box-bound "boof...boof" from the Q50; it sounded unhappy.

Curiously, the Q50s don't have the sheer bass depth of many other KEF speakers. I was surprised at the lack of rolling thunder from the opening of Steve Earl's 'Copperhead Road'; equally, but in another vein, the spectacularly explosive timpani in Carmina Burana made the cabinets boom, yet failed to really shake the room. Moving to the eternally difficult bass lead of Tina Turner's Break Every Rule showed clearly that the Q50s produce upper bass strongly, but curtail deep fundamental power. On balance, I would summarise the Q50s as having a balance that is subjectively bass prominent, under-damped and somewhat cabinet-resonant.

With the lower frequencies making themselves so well known it wasn't perhaps surprising that the midband should in contrast seem a little pushed back on the sound stage. Vocalists were quite clearly

reproduced. Angelique Kidjo's wonderfully characterful vocals swooped up and down in expression and power, but she had taken a few paces backward on the stage it seemed, the band's bassist apparently taking her usual place further forward. Hmmm.

Whilst KEF explain that the crossover point of their Uni-Q drive unit is aurally invisible - and technically they are right - subjectively the tweeter does have its own character, characterised by a slight low-treble prominence that adds a touch of occasional brightness into the sound with rock music, but occasionally had more impact with classical, I found. The violin of Hideko Udagawa was projected forward very strongly and came across as a little shrill and lacking in real detail. The vivid shimmer of the strings, their overtones and the instrument's rich woody resonances should all have been more explicit I feel. Whilst the Q50s threw the violin forward, plucked basses grumbled their way out of the cabinet ports. The Q50s worked well enough with rock, the tweeter livening up the speaker at high frequencies and giving it clarity, but with classical they were less successful.

The Q50s display less of KEF's traditional tonal levity than earlier models. Whilst they don't veer too far away from this particular ideal with rock, I have my reservations about their behaviour with classical recordings. Orchestral works and solo violin in particular suffered from colouration and distorted perspectives. Imaging was imprecise too.

KEF built their reputation not only by offering loudspeakers of great reliability and consistency through sheer weight of engineering, but also by making them appeal to a broad spectrum of musical tastes as well. In my experience, the Q50s take one step away from this ideal, offering a more coloured performance. It's good enough to find an appreciative audience, but by being what they are, the Q50s do demand to be auditioned carefully first - preferably in the home ● NK

KEF Q50

Floorstanders are enjoying something of a comeback these days. KEF's Q50s join the throng, coming in at £499. They are slim and unintrusive, possessed of a black ash veneer finish with gently curved black cloth grills and a discreet Q logo at the top of the cabinet. Floorstanding cabinets have plenty of room on their front panels for a drive unit or two - KEF chose two. There's a full range Uni-Q driver which has a tweeter positioned at the centre of its cone, taking the place of the usual dust cap.

Augmenting it is a bass driver which works up into the lower mid-range. Both work in ported reflex chambers, one port firing forward, the other backward. As KEF say "this arrangement gives the advantage of high power handling and efficiency". It also provides plenty of cone area for, potentially, strong bass.

Rightly or wrongly, most of us equate

MEASURED PERFORMANCE

The crossover between the mid-range driver and tweeter is smooth, but there is a steady lift upward in output above 4kHz, and above 8kHz output dies away, suppressing upper treble output. This will take away treble sparkle, but the lift will add lower treble forwardness.

Low bass falls away, but there is a peak in the upper bass at 250Hz which will add some upper-bass prominence. The wide shallow dip throughout the midrange is likely to constrain vocals to the box. It is well known that such trends are far more audible than deeper, narrower dips which the human ear can't detect so easily.

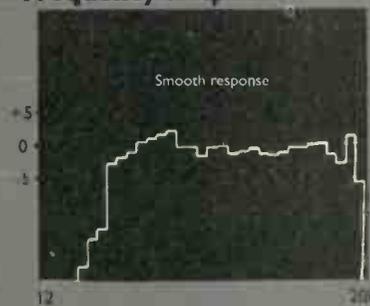
The low slung impedance curve results in an overall impedance of 7Ω-3Ω or so lower than most other British

loudspeakers. BUT NOT low enough to cause a problem to modern solid-state amplifiers. The curve itself has a sharp peak in the midband and impedance dives rapidly after this point - not a good loudspeaker for low feedback amplifiers.

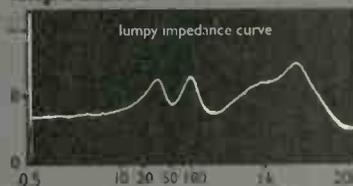
The Q50s are of above average sensitivity, partly because of their low impedance. I measured 89.5dB at 1m using a nominal watt (2.83V) of pink noise input. This means that with a 30-40watt transistor amplifier they should go loud enough for all but the largest of parties.

The Q50s are reasonably well engineered. Their frequency response does not deviate too far from flatness and they offer a reasonable load. **DB**

Frequency Response



Impedance



J. E. Ellis,
Pinner,
Middx.

Hi-Fi World,
64 Castellain Road,
Maida Vale,
London W9 1EX

Ref: 300B AND 5881 VALVES

Dear Hi-Fi World,

Your 300B valve amplifier described in your August supplement is said not to be a re-run of an old design. If my memory serves me correctly, Partridge Transformers published very similar designs over fifty years ago for directly heated triodes PX25, DA30, DA60 and DA100. Admittedly, they did not have feedback windings on the driver transformer.

Distortion products of the 300B amplifier are said to be mainly second harmonic. One of the features of push-pull working is the balancing out of even harmonics so either the output stages of the prototype are out of balance or the fault lies in the driver stages.

Turning to the K5881 valve amplifier kit, the 6L6 is stated to have been designed by R.C.A., but this is not strictly accurate. The screen grid or tetrode has a kink in its characteristic, rendering it unsuitable as a power valve. Philips added another grid to make the pentode and patented it in 1933. C.S. Bull and S. Rodder of E.M.I. were given the task of circumventing the Philips patent, which they did by the invention of the beam tetrode. However, the Marconi Osram Valve Co. said that they could not mass produce it and the invention was passed on to R.C.A. The M.O.V. Co. did later make it in the form of the KT66, KT standing for Kinkless Tetrode (source: The Setmakers, published by BREMA).

J.E. Ellis



The 300B triode



The 5881 beam tetrode

Yes, I did not claim originality of the total design, but the driver stage and its methods are mine. One of the reasons for the driver transformer (my own winding method and propriety design) was to provide enhanced reliability to the output stage (why it enhances reliability I do not wish to divulge).

On the complete amplifier, the driver stage contributes about 50% and is mainly 2nd harmonic at about 0.4% with 70V rms (approx. 200V p-p) drive to each output tube due to it being a single-ended input and driver device.

Any absolutely balanced "push-pull" amp will still have even harmonic terms in its output. I have yet to see any amp, regardless of its technology, (i.e. transistor, FET, valve) having less 2nd than 3rd harmonic. The maths of this is due to odd orders being modulated by the fundamentals to produce even order by two non-linear terms.

The real purpose of the 300B was simplicity and consistency of performance, to encourage beginners into the world of hi-fi.

I know R.C.A. did not invent the tetrode but did

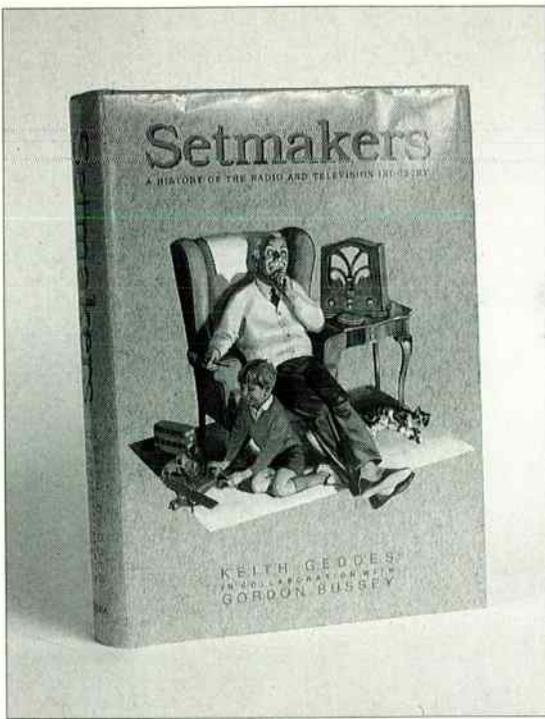
design the 6L6 and its derivatives, such as the 5881. There is a difference between inventing, designing and being an "applications note" engineer.

**Tim de Paravicini
Esoteric Audio Research**

**From the book
SETMAKERS**

"The first tetrode commercially available in Britain, designed by H.J. Round of the Marconi Company, was introduced by M-O V in 1926, and other manufacturers soon followed. However, it was not until

1928 that it was widely adopted by setmakers, prompting Wireless World to announce "Real H.F. amplification, formerly the privilege of the few, is now open to everyone". The applications of the screen grid valve were limited by an unfortunate 'kink' in its performance curve, and to suppress this Philips introduced a fifth electrode, between screen-grid and anode. The resulting 'pentode', eventually to become the most widely used of all receiving valves, found immediate application as the 'power' valve driving the loudspeaker, its high gain



as welcome at that end of the receiver as the screen-grid valve's was at the other." (p68)

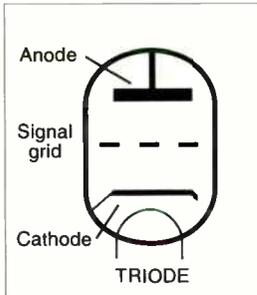
"In 1933, two members of the Department (EMI Research), C.S. Bull & S. Rodder were given the task of circumventing Philips' patent on the pentode valve. Within two days they had conceived the notion of the beam tetrode, in which the electron stream was brought to a focus between screen grid and anode, and was thereby made to perform the function of the 'suppressor-grid' that Philips' had added to the tetrode to create the pentode. The idea

was patented, and around 100 experimental valves were made in Research Department, but when manufacture was proposed to the M-O V they declared that it could not be mass produced. The patent was subsequently shown to RCA, who used it to produce the highly successful 6L6 valve, whereupon M-O V relented and belatedly developed its famous British counterpart, the KT66." (p147) (KT - Kinkless Tetrode)

Reprinted with kind permission from BREMA, the publishers, and Keith Geddes, the author.

TRIODES, TETRODES, AND ALL THAT

In the early days of radio there were only triodes and



diodes. The diode was used for rectification and detection; it cannot amplify. The triode was used for amplification.

Triodes are not perfect, especially at high frequencies. They have limited gain, due to their comparatively low internal resistances, demanding a lot of preceding amplification, as well as a high drive voltage. This means using more valves, which is expensive, cumbersome and limited the amount of feedback that could be applied.

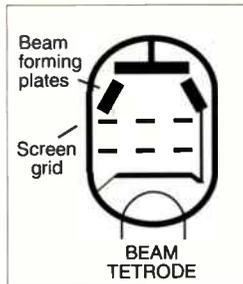
Triodes also suffer "Miller Effect" at high frequencies. The grid-to-anode capacitance causes

real problems, especially in high frequency amplifiers, but even in audio amplifiers too. Researchers found that putting an extra grid (screen grid) inside the valve between the input grid and the anode was the answer. It shielded the input grid from the anode giving rise to the Tetrode (four electrodes).

The tetrode revolutionised the radios of the day. Not only did it have the effect of reducing the input capacitance to a much more acceptable value, but it also greatly increased the valve's internal resistance, increasing gain so that wide-band, high gain stages could be designed easily. This cut down on the amount of valves needed to get good performance.

One problem remained. Inside a valve, negatively charged electrons emitted by the cathode smash into the anode at mind-boggling velocities. They cause more electrons to be emitted from the anode. In the triode

these "secondary electrons" cause no problems - they simply float around for a bit and then get attracted back to the positively charged anode. But in a tetrode some are attracted to the screen grid, reducing the anode current. This causes a "kink" in the valve's characteristics which can produce distortion.



To overcome this problem, a third grid was introduced (by Philips), placed between the screen grid and the anode. It's called the "suppressor grid" and is held at ground

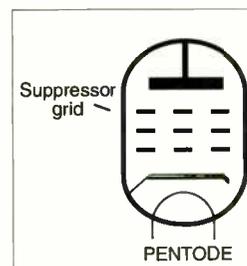
potential. It sends the secondary electrons back to the anode, eliminating the kink. This three-grid valve became known as a pentode and had both excellent high frequency performance and high gain.

Needing only a small input voltage to get large power output ,

pentodes appeared to be good output valves. Examples are Philips EL34 and EL84.

A later alternative to the screen grid was to squeeze the electrons from the cathode into a tight beam with earthed "beam guiding plates". This type of valve became known as the "beam tetrode", even though it had five electrodes inside. Such valves are used mainly for power stages because they give low distortion and are very efficient. Examples of this type are KT66, KT88 and the 5881 (KT = Kinkless Tetrode).

So we can see that the pentode and beam tetrode were the result of a lot of development to overcome the problems inherent in triodes. Yet even when they were introduced, some



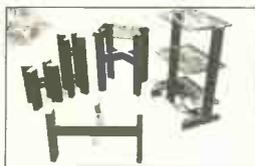
engineers continued to claim, for good reason, that triodes were superior. Today's view that this is so echoes an argument

from yesteryear.

Andy Groves

M.A.F

STANDS THAT DELIVER



Speaker Stands

MAF speaker stands have received critical acclaim since their recent launch. Trevor Butler said in Hi-Fi News (Feb'92) "Vocals were portrayed with superb realism and presence. Bass drums were reproduced with authority and orchestral bass was improved becoming smooth, deep and highly musical." These unique stands do deliver and are made in a variety of sizes and heights dedicated to specific speakers. These are not 'one size fits all' stands. Phone for details, or a copy of Trevor Butler's review.

Quad ELS Stands

these are the stands used by Chris Beeching in his feature on servicing and rebuilding the ELS (Hi-Fi News, Nov'93), and have elevated the performance of the ELS into another league.

Turntable Stand

This unique design will allow you to enjoy the ultimate performance possible from your turntable which will undoubtedly put a smile on your face. The unit is available with an additional shelf to accommodate a power supply if required. Please specify turntable type and size when ordering, as these superb stands are made to suit individual turntables.

NEW PRODUCT

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This unit is made specifically to order, and with from two to five rubber-mounted 10mm thick smoked-glass shelves. The unit can be made to any height. This was the stand which took the Ramada show by storm, supporting Audion's magnificent '845' pre- and power amps. If you want to make a feature of your hi-fi, this is the shelf unit to have. It sounds great, too.

Unit 12b
Burton Business Park
Wellington Road Extension,
Burton on Trent,
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DE14 2AP
Telephone and fax No:
0283 30550

The thrill of hi-fi is often hearing the most delicate and subtle aspects in a recording. Today's CD technology can present an astonishing amount of information, but getting it all into your system is not quite that easy.



The more you put in
INPUT

It's here that Audio Technica's micro engineering skills can help, starting with the **AT6078 CD Lens Cleaner**. Deep inside your player the lens attracts dust, smoke and other debris, an industry acknowledged problem. A 10 second session with the unique eight brush disc safely returns optimum performance, greatly reducing tracking error for higher fidelity. **AT6078** contains CD control codes for fully automatic operation (in car **AT7121**). As an improvement to all machines but especially those 'budget' models **AT674 CD Stabiliser** is a carbon-fibre disc which helps reduce servo motor movement and aid error correction. Finally there's our magic green damping rings **AT6079** which fit to the edge of individual CD's to absorb stray laser light. The result is a smoother, more integrated sound and added disc edge handling protection.

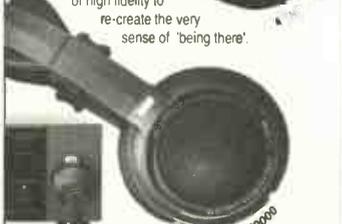


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IN THE JUNE ISSUE

What better way to pass those long hot summer evenings than listening to some good music and reading your favourite magazine, especially with the reviews and features we have lined up for the June issue. Here's a selection of what we hope to bring you next month -

DPA PDM Ten Twenty-Four

A stunning new digital CD convertor from innovative DPA. Designed mostly in-house to avoid the of mass-production chips, the new £6000 Ten Twenty-Four promises to be revolutionary. We'll have an exclusive review.

MISSION CD PLAYER

This stunning two box player looks set to cause another buzz around the office, especially since we'll also have two PSX power supplies to go with it.

TUBE TECHNOLOGY GENESIS VALVE AMPLIFIER

New monoblock flagship valve power amplifiers from a well established manufacturer.

BUDGET AMPLIFIER GROUP TEST

Can home grown budget integrated fight off the marauding hoards of tweaked-up Japanese 'super amps'?

ROGERS STUDIO 5

The latest mid-sized speaker from a respected manufacturer whose name is synonymous with the quintessential British sound.

AUDIOLAB CD TRANSPORT

The long awaited partner for the 8000DAC, will both combine to form something special from the digital medium?

SENTEC AURORA

Large floorstanding loudspeakers from Scandinavia, with a big sound.

RECORD CARE

With vinyl becoming very precious, we've decided to take a serious look at what's available for preserving our recorded heritage.

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TWEAKED UP

The RA-960 BXII is the latest of Rotel's products to receive special attention. Dominic Todd thinks it was worth the effort.



Rotel are mounting something of a come-back in the field of amplifiers. The old 8-series amps rarely failed to get glowing reports every time a new derivation was launched. However, the introduction of the 9-series, two and a half years ago, didn't receive such universal recognition. The budget 920 and 930 were well received, but Rotel's more expensive amps met with something of a luke warm reception.

I remember the RA960BX was a particularly slow seller, especially in comparison to the new breed of "superamps", such as the Pioneer A400 and Marantz PM 40SE, which simply left the Rotel floundering. Over-pricing didn't help the 960's cause either, being a good £100-£130 more expensive than rivals, right up until its demise.

Now, after the storming success of the year old RA935BX, comes a new

improved RA-960BX, imaginatively named the Rotel RA-960BXII. This time Rotel have got the price right too. Whilst most rivals have been creeping up in price, Rotel have held fire. A price of £325.00 is competitive against the Pioneer A400X (£299.95) and NAD 306 (£329.95). It's not a steal, though, with rivals from Denon and Marantz still undercutting the Rotel by £75 and £25 respectively.

In a break from my usual habit I'll mention what hasn't changed first of all. The casing, all controls and features are identical, making it indistinguishable from its predecessor. This is no bad thing, though, as Rotel products are one of the best finished in the business. A solid, compact casing is fronted by a smart, black brushed aluminium effect metal front panel. It also makes a refreshing change for an amp of this price not to suffer the usual bending rear panel, as one attempts to attach and disconnect phono plugs.

Features include, a headphone socket (don't laugh, it's something you'll no longer find on the A-400X), defeatable tone controls, separate record and listen

MEASURED PERFORMANCE

The RA-960BX worried me initially by running hot compared to most solid state amplifiers, then I saw a warning in the handbook where this was attributed to Class A working in the driver stage. Otherwise, the amplifier behaves conventionally, turning out 78watts into 8ohms and 121watts into 4ohms. Unaffected by reactive loads, it possesses plenty of power and will handle speakers that are a difficult load.

The main amplifier (i.e. CD/tuner/tape inputs, etc) reaches down to 16Hz (-1dB), low enough to give it bass power with some feeling of speed, for really deep bass can apparently slow things down. At the other end of the audio spectrum, treble

rolls off slowly above 25kHz, becoming -1dB at around 55kHz minimum, the precise frequency depending upon volume control position, as is so often the case. The RA-960BX is flat across the audio band though. It is also sensitive, needing just 200mV for full output, and noise free. Distortion levels were generally low, except as level went up at high frequencies. Then, it rose rapidly, reaching 0.17% just below (-1dB) full output. This may just be perceptible as a slight sharpness in the treble, since third harmonic and higher odd-order components took over from second above a few watts of output.

The disc stage has switchable MM/MC input options on the rear panel and the MC

input offers a 100Ω load, not 47k as in so many amps. It is also very sensitive, needing just 0.25mV for full output, enough for low output MCs. Hiss was quite low too, measuring 0.1μV equivalent input noise, so this stage puts up a good measured performance for MC cartridges. The same applied to MMs. However, Rotel have taken the low frequency response of MM and MC down to 20Hz before rolling it off, allowing some cone flap to occur with warps, at least in a system prone to it. The plus side is that deeper bass should be apparent.

The RA-960BX measures well and has well engineered disc stages, which is a bonus. **NK**

selectors and two sets of speaker outputs (one switched). The real changes have occurred internally, although the only technical specification to have increased is the damping factor. Power remains at 60 watts. The key changes have been to use polypropylene capacitors in the negative feedback area, and the output device. There has also been a change to the internal chip in the line amp, and the power supplies are now de-coupled via Rubycon smoothing capacitors.

This may not sound a lot, but every change of component was carefully listened to and evaluated before the final specification was decided. I've never been a fan of the original 960's sound quality; although it was free from any serious vices, I found it rather lacking in pace and involvement. So after burning in the test sample I was interested to see if Rotel had achieved their goal; superior timing, speed and articulation in the bass.

With Celestion SL6 speakers being one of the speakers used in the mark II's development, I hooked up my own similar SL600s, to see how it would cope with this often difficult load. Joe Jackson's, 'Nineteen Forever', got the Rotel off to a fine start. The extra drive was instantly noticeable, and much improved from the original 960. The bass guitar's prominence led the mix, and gave it the vital weight of sound needed for listener involvement. Vocalists don't usually present a problem for Rotel amps, and the 960 was true to form here. Jackson's vocals were presented with the

characteristic Rotel warmth and richness. Fortunately it avoided the syrupyness of some over-smooth amps, but at the same time failed to wring every last detail out of the music, as something like an A-400 would.

Jeff Healey's interpretation of Mark Knopfler's 'I Think I Love You Too Much', showed the 960 to have a more forward, and subsequently less recessed, balance than any previous Rotel amps (pre/powers included). It came as quite a surprise to find that Healey's vocals were

pushed well in front of the rest of the mix, and had real presence. This contributed to the sound stage's excellent depth and width, which rivals some of the best at this price range, and marks yet another break from Rotel's tradition of tending to sound occasionally shut in. This new found openness really does change the character

of the whole amplifier, allowing it to sound less constrained with complex music, and hence less fussy with varying types of music.

If there was a weakness to the 960's convincingly well rounded sound quality, it was shown up with a Capercaillie 'Crosswinds' album, and by comparing the amplifier to others directly afterwards. Instruments and vocals that crossed into the upper mid-range, such as violin and saxophone, could occasionally sound strangely out of tune, almost as though they weren't playing as a whole with the rest of the music. It's not a trait one really notices, though, until another amplifier is heard directly alongside. Also, it's not a problem that I see as serious; it doesn't affect the

listener's enjoyment of the music.

Classical music, a traditional Rotel forte, gave an all round competent performance. Large scale orchestras were free from dynamic compression, and the broad soundstage coped admirably with the instruments' separation. The Rotel also gave the listener the opportunity to follow particular instruments in movements of a dense structure. With quartets, it wasn't the last word in crystalline clarity, and wasn't quite as open sounding as some, but none the less represented a firm step in the right direction over previous Rotel products.

The Rotel RA960BXII is a likeable product. The build quality is first rate for the price, and inspires real confidence. All the features that should be included, are, and none that shouldn't be (such as loudness controls), aren't. What's more, there is a large dealer network, meaning that you don't have to travel miles for a dem, and servicing is a straightforward job. I can say from experience that Rotel amps are also superbly reliable. Yet the old RA960 amp had all of this, but I still wouldn't really have recommended it on the grounds of its rather drab sound quality. Here, the Mark II really excels, sounding confident and composed with a wide range of music, it's also pacy and reasonably articulate.

Despite the odd niggle, the Rotel RA-960BXII has matured into an amplifier which I can confidently recommend alongside the successful Pioneer A-400X and Denon PMA-350II. The modifications have transformed the 960 from a middling contender to one which is firmly entrenched in the top league ●

Rotel RA960BXII £325
Gamepath Ltd.,
25 Heathfield,
Stacey Bushes,
Milton Keynes,
Bucks. MK12 6HR.
Tel: 0908 317707

“The Mark II really excels, sounding confident and composed with a wide range of music”

TEST RESULTS

Power	78watts	Sensitivity	2.8mV
CD/tuner/aux.		Overload	170mV
Frequency response	16Hz-74kHz	Disc (MC)	
Separation	78dB	Frequency response	20Hz-60kHz
Noise	-95dB	Separation	52dB
Distortion	0.02%	Noise	-69dB
Sensitivity	200mV	Distortion	0.02%
dc offset	8/14mV	Sensitivity	0.25mV
		Overload	15mV
Disc (MM)			
Frequency response	20Hz-52kHz		
Separation	59dB		
Noise	-74dB		
Distortion	0.02%		

Distortion



The domination of the chart scene by dance music has had one profound effect on popular music today, that is the death of the Lyric - indeed the threatened death of the popular song form itself. Put in this way, I believe we ought to regard dance as a "pure music" form - more akin to classical music than to the aural song tradition which has formed the basis of all folk, rock and pop music until now.

A very different kettle-of-fish it is to the tradition of the song, which reaches back to the pre-literate past. (Of course, rap music represents an important exception, but in rap, the message - albeit often distastefully xenophobic and misogynous - is of such overriding importance that this type of music is a form of poetry and not a musical form at all.)

To me, this emergence of a pure, popular musical form is both a good thing and a bad:

Good, because the exploration of pure sound is very far from the meretricious experimentation which it is sometimes accused of being (why shouldn't musicians blend sounds in a manner to delight our sense of hearing in the same way a cook might explore different ingredients to delight our sense of taste?)

Bad, because it cuts us off from the vital tradition of the finely crafted three minute song. Put another way; where are the "our songs" of the future?

I don't suppose anyone can know exactly when the song-form first developed, but it was an invention every bit as important as the wheel (although, come to think of it, where would Bruce Springsteen be without both inventions?).

The first songs I remember were folk-tunes which we learned at school. And it's odd, how thirty years later I discover that I learned highly sanitised versions of these most early songs. For instance

although I remember singing, She Moved Through the Fair, I don't remember singing the final verse:

*I dreamt it last night that my young love came in,
So softly she entered, her feet made no din,*

*She came close beside me, and this she did say,
"it will not be long, love, till our wedding day."*

With the inclusion of this last verse, the perfect blend of everything a good



recorded message

Left by Richard Brice

song should be, it becomes. It's delightful, humorous in a way that is delicately self-mocking, erotic, but not licentious. These attributes are what attracts me to what I consider to be the great period of song writing, the nineteen-twenties, thirties and forties. Whether it's Jerome Kern's and Dorothy Fields' A Fine Romance or Cole Porter's:

*There's no love song finer
But how strange, the change
From major to minor
Everytime we say goodbye.*

The delicate double rhymes and the musical prosody to mimic the words "major to minor" shows a creative deftness which is quite wonderful.

Which brings me to Gershwin and Gershwin, and my "desert island" lyric:

*In time the Rockies may crumble
Gibraltar may tumble,
They're only made of clay
But our love is here to stay.*

A characteristic of these lyrics, typical of the words of the popular song during the twenties, thirties and

forties, is their air of urbane detachment. I'm not for a minute suggesting that the art of great Lyric writing is dead - far from it. However, the modern songwriter just has to be so-o-o serious!

*The boy child is locked in the fisherman's yard
There's a bloodless moon
where the oceans die
A shoal of nightstars hang fire
in the nets
And the chaos of cages where
the crayfish lie.*

It's brilliant but, blimey Sting, it's grim stuff - Samuel Taylor Coleridge on 48 track digital. Neither is the eloquent romantic dead either, at least whilst we still have Annie Lennox:

*Stay by me
And make the moment last
Please take these lips
Even if I have been kissed
A million times
And I don't care if there is no tomorrow
When I could die here in your arms*

But it is very earnest. Of course, teeny-pop still provides a lightweight alternative. The New Kids

on the Block might have "acronymically" become the tough NKOTB, but the songs haven't.

And Take That, even the titles: Babe, A Million Love Songs. Let's face it, they don't auger well for the following Lyric. And when you listen to the Lyric, well your pessimism's not disappointed!

And a cab combs the snake trying to rake in that last night's fare and a solitary sailor who spends the facts of his life like small change on

strangers pauses inside peekhole park for a welcome 25 cents and the last bent buff from a package of Kent's as he dreams of the waitress with Maxwell House eyes and marmalade thighs with scrambled yellow hair and a rhinestone studded monarch he says "Irene" as she wipes a wisp of dishwater blonde from her eyes and the Texaco bacon burns on a steel belted attendant with a ringing valve special crying "fill her up and check that oil you know it could be the distributor and it could be your coil!"

Is it any wonder, when Lyrics have reached this sophisticated synthesis of James Joyce and Raymond Chandler, there's perhaps nowhere left to go.

Conceivably, that's why dance music has emerged as a strong force. Not so much a denial of the lyric as a reaction against a kind of brick wall brought about by the polarization of the contemporary lyric between the high-brow existentialist's creation of meaning and the puerile. Perhaps rock has finally hit the same crisis which has hit all the arts in the 20th century, the "Where do we go now?" crisis ●

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When the time came for me to set the Classified Ads section this month (see our last few pages, for those of you who never get that far!) I was reminded of my impoverished past. With Japanese equipment increasing in price all the time and well known British companies trying to move upmarket away from cut-throat Oriental midi-systems, it is becoming increasingly difficult to put together a really good system for little money. Here's where our Classifieds can help.

There's a wealth of high quality second-hand equipment around at the moment. The reason is perhaps that as signs of the recession lifting start to show, people are upgrading to newer, more expensive equipment. But whatever the reason, it will benefit those who have the time to read through the used equipment advertisements that appear within our pages, and those of other sources such as Exchange & Mart.

BEGINNING

At the beginning of my hi-fi enthusiast years I bought equipment almost exclusively from classified ads, as well as retailers who took equipment in as part exchange, selling it to less wealthy customers. I started out in my teens (and this is the first time I've admitted to owning any of this stuff!) picking up an old Thorens TD160 (£80), Helius Scorpio tonearm (£40), an AT-95E cartridge (£16.95 new), a wicked looking and heavily built Sugden A48a Class A 50 watt amplifier (an amazingly well spent £75) and a pair of what are now known as Ruark Sabres. The ones I had were pre-Ruark (called Diesis Solitaires, as far as I remember), but they sounded better than anything else I could afford at that time, so I took a risk and bought them for £90.

So for around £300 I got what I thought at the time to be an excellent system. It wasn't long before I'd modified, re-wired, bi-

wired everything to a point that made them pretty much worthless to anyone wanting a neat and tidy hi-fi system, but I enjoyed it and the whole exercise taught me a lot about how hi-fi works.

From there onwards I steadily upgraded my system through second-hand equipment. In the end I managed to amass an excellent system consisting entirely of used equipment: a Cambridge CD2, Rose RV23 valve pre-amplifier, Deltec 50S power amplifier (I still use this, one of my best-ever buys) and a pair



Dominic Baker

dB on the level

of Celestion SL600s. The whole system cost less than half of its original retail value, yet was in as-new condition.

Of course, not everyone has the time or inclination to buy second hand in this fashion, but it is an option worth considering; there are real bargains out there. Interestingly, keeping the second-hand market active supports the retail price of new products too. Both Jaguar and Mercedes have found in the past that it was in their interest to support the second-hand market for their cars in order to reassure new-product buyers that the price paid wouldn't plummet directly they handed over their wad. So healthy second-hand demand makes for a more active primary market.

I couldn't help noticing, whilst compiling this month's classifieds, the amount of excellent equipment that's up for sale at bargain prices. I reckon I could put together a superb system for under £1000, all esoteric gear and quality stuff, the kind that lasts. For example, a top flight vinyl system could be made up from: Elite Rock, Rega RB250, AT OC5 (a

little bright, but not bad for a first cartridge), the whole lot £335. An Audiolab 8000A would be an extra £295 and a pair of Epos ES14s complete with stands £350. The Elite Rock is a superb turntable complete with a unique damping trough that controls the arm, to the benefit of the cartridge, allowing it to perform at its best. The 8000A is an excellent and perennially popular amplifier and the ES14s are lucid, and very neutral in their sound.

This is a system of high quality items that are built to last. They should give a lifetime of pleasure - and all for the price of a top-of-the-range midi system. Record decks especially are good value at the moment, it seems.

There are other notable bargains to be had, the best of which must be the Pink Triangle PIP at £350! These were around £2000 new only a few years ago. It may be a mistake, but if it isn't, someone's going to get a real bargain here.

Looking for a decent phono head amp? How about a Michell Iso with Hera power supply for £275. Another Michell

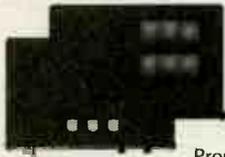
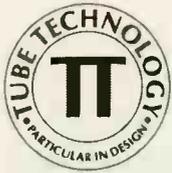
bargain is the Gyropower power supply at £50! If our contributor Eric Braithwaite hears about this one it'll be gone before the magazine gets printed. There's a latest generation Mission Cyrus 1 for £175 and a QED Digit and Positron complete with Digiflex interconnect for £119, so good quality hi-fi is easy to find at reasonable prices.

Now, the tricky bit - the law. Unfortunately, as I mentioned in a column a year or so ago, the law basically goes as far as "let the buyer beware" and no

further. So it is your responsibility to make sure that everything's done properly when buying.

Don't get over excited about the bargain you're about to land, because if you rush into it, you're likely to get something you didn't want. A courier is the best means of transport as they will insure the parcel during transit and a record is kept of the equipment's movements between the two parties. Even though Amtrak have a so-so reputation with our American readers we find (they are America's equivalent to B.R.!) their service in the U.K. is excellent.

We are trying to set up a special courier service with Amtrak for readers at the moment, offering good rates and fast, safe carriage. Hopefully this will open up the masses of quality second hand equipment to a much wider audience. This should be in place in time for the June '94 issue. So if you've never flicked through the classifieds at the back of the magazine, have a look now. You might find that it opens up hi-fidelity to you in the way it did for me ●



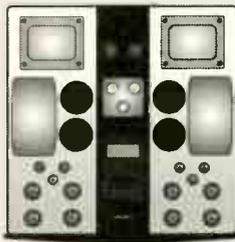
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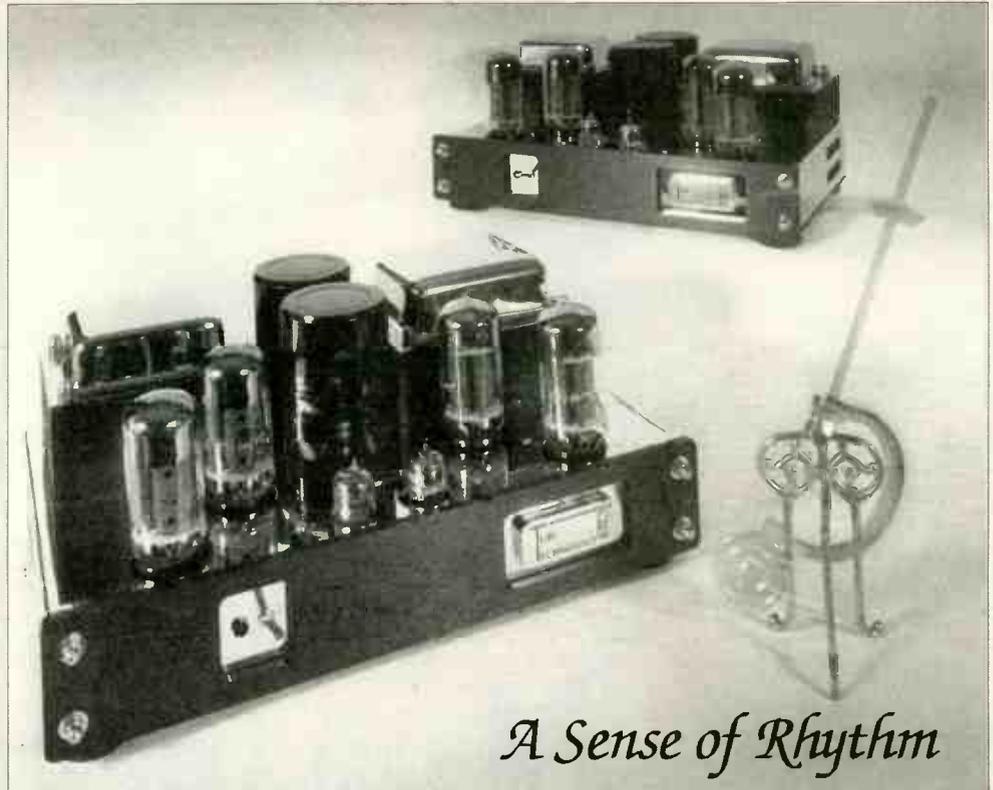
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A reference guide to Britain's Manufacturers and Distributors.

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ALEMA UK LTD., 25 Montifore Road, Hove, BN3 1RD. Tel: 0273 202637. Audion 'Edison' 'Andersson' (Trade enquiries welcome for our newly extended range).

APPOLLO, The UK based designers and manufacturers of high quality speaker stands and equipment racks have now added to their comprehensive range a modular system ideal for housing audio visual products and CD storage. Please send for our free brochure to Zenith Crown Ltd. Tipton Rd, Dudley, West Midlands, DY14 Tel 021 520 5070. Fax: 021 522 2055. - All export trade enquiries welcome for our newly extended range).

ARCAM, Pembroke Ave, Denny Industrial Centre, Waterbeach, Cambridge, CB5 9PB. Tel: 0223 440964 or Fax: 0223 863384. Manufacturers of the Delta 290 Amplifier and the Delta 280 Digital FM Tuner. The two together produce a sound that has been described as 'subtle and intriguing' and that provide 'real clout' - discover this for yourself! For information on not only these products but also the Arcam CD Players, Speakers, Cassette Decks etc., Phone or write in to request a brochure - The pleasure is all yours!

AUDIODOTE CD, Unit 1, Block C, Hove Business Ctr. Fonthill Road, Hove BN3 6HA. Tel: 0273 220511. Audiophile supply a range of very high quality and very expensive audiophile components including valve output transformers.

AUDIO SYNTHESIS, 99 Lapwing Lane, Manchester, M20 0UT. Tel: 061 434 0126. Audiophile design, development and distribution. Please contact us for details of PASSION the passive controller everyone's talking about. SILVERBLUE pure silver interconnect cable and the ultra analog based dac - DSM.

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OPA DIGITAL, Unit 7, Willowbrook Technical Units, Crickhowell Road, St Mellons, Cardiff, CF3 5DF. Why do reviewers across the world rave about DPA products? Listen to DPA's DACs, transports, amplifiers and cables and discover for yourself.

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EJ Jordan Designs are now World leaders in foil cone technology First and foremost. **ELECTROMAL**, PD Box 33, Corby, Northants, NN17 9EL. Tel: 0536 204 555. The branch of the well known R.S. Components trade mail-order business that deals with the public. They have a huge range of components - and catalogues to match.

EMF, 2a Bellevue Road, Friern, Barnet, N11 3ES. Tel: 081 361 6734. Manufacturer of Sequel 50w integrated amplifier and the Crystal D2A converter. Please write in for details.

FALCON ACOUSTICS LTD., Tabor House, Norwich Road, Mulbarton, Norwich, Norfolk, NR14 8JT. Tel: (0508) 78272. U.K. distributors of FOCAL drive units and SOLEN (chateauroux) polypropylene capacitors and the largest inductor manufacturer in the U.K. Comprehensive range of DIY Speaker Parts and Kits, Sub-Bass and Electronic Filters.

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READY FOR BATTLE

With its thick front panel and heavyweight construction TEAC's new £600 VRDS-7 CD player certainly looks ready to fight it out in the middle ground.

Robert Wilson lends an ear.

This TEAC player looks imposing, filling up a shelf on our equipment rack with consummate ease. By the sheer bulk of its presence you know it means business - or at least, you hope it does - so it ranks highly on any perceived value scale. For £599 you get a hefty, solid box (442x149x331mm) with a solid slab of a front panel made of brushed aluminium studded with chunky illuminated 'professional' push-button switches. It creates an impression of something built to withstand the rigours of professional life, rather than the quieter waters of home. This isn't particularly surprising, given that Tascam (Teac's parent company) is heavily involved in the broadcast and recording industry.

The main reason for the chassis' size

is to provide the space required for Teac's superbly engineered Vibration-free Rigid Disc-clamping System (VRDS). This is mounted in the middle section of the player and it takes up a lot of space vertically, making the VRDS-7 quite high, compared to more conventional machines. Any player using the VRDS unit will never be a slimline model.

So what makes VRDS so special that Teac are willing to resort to the tooling needed for such an expensive chassis layout? Well, conventional CD transports only clamp the disc in the centre which, according to Teac, allows it to vibrate when spinning, especially at the edges. This makes the task of reading the disc that much harder for the laser. These difficulties are compounded by discs failing to be flat. So, Teac devised a

system which supports the whole disc from above, using a platter with a precision-machined concave surface that allows disc warps to be 'ironed' out. Of course, these techniques have been employed for donkeys years by those chaps who build vinyl playing machines.

The D/A conversion technology used in this player employs Philips' bitstream system where two SAA7350 chips are used in differential operation to reduce common-mode distortions. Digital filtering is handled by a 20 bit, 8 times oversampling chip. With transport and power transformer mounted centrally, Teac have chosen to locate the digital and analogue circuit modules separately on either side of the chassis.

The player is blessed only with basic operational functions as far as switches are concerned. These are duplicated on the remote control, together with more specialised commands. A fluorescent orange display located centrally, below the disc tray, provides the operational information and can be dimmed via an on/off switch on the remote.

Initially, I was a bit shocked by the rather flimsy nature of the disc drawer, which appears ill at ease with the solid external construction. However, the loading mechanism was smooth, if a little slower than some other players due to the complex nature of the transport operation.

Once the disc had been loaded and I'd settled myself into the sofa along with a cup of coffee, all that was left to do was turn up the volume on the Cyrus III and press play.

As if to reinforce the solid appearance of the Teac the music was

given a firm and stable foundation. Bass from this player grabs you immediately, especially with a big, lively sounding disc like 'Aye' by Angelique Kidjo. The various strands of percussion combined to form an intricate image around the singer. The Teac allows the music to be easily dissected using a well spaced and proportioned soundstage, although with a little less ambient detail recovery than some, a property that resulted in a shallower image.

Dynamically, the Teac was slightly more up-front than a lot of bitstream machines. Its ability to convey the impact of drum beats and the percussive nature of some powerful bass guitar lines was certainly a pleasant change from the bland perspectives often found in players using this type of D/A conversion. Musically, the bottom end was very fluid, rolling along quite nicely, the timing being not outstandingly precise but still competent enough to maintain an interest in the complex rhythmic patterns and layering involved in this African music.

Listening to "The first of a million kisses" which has Fairground Attraction's extraordinarily diverse use of acoustic instrumentation, showed that although the Teac can go down quite deeply into the lower registers it can at times be caught out. This occurs during more complex melodic bass lines which

become muddled and balloon out into a 'one note' rendition, but at least the Teac attempts to do something with these tracks; other players don't even hint at the depth of bass present in the music.

With vocals, the Teac displayed a strange phenomenon, almost as if it has a dual personality. From a slightly warm and rounded bass character the Teac reverts to a colder, slightly harsher mid-range.

" Its ability to convey the impact of drum beats and the percussive nature of some powerful bass guitar lines was certainly a pleasant change. "

Simple acoustic arrangements begin to sound disjointed. Mid-range information comes that bit further forward in the mix, which sounds impressive and immediate with rock music, giving lead vocals an exciting edge, but when analysed using more subtle music the Teac tends to strip away some low level acoustic and harmonic clues which affect the way a piece of music forms into a whole composition.

The incisive playing of some musicians could be a bit fierce, accentuated by a hard grainy edge which complemented the expressive drive in fast rock, but could be a touch fatiguing when you're in the mood for something more soothing.

Things start to get really interesting

with this player when you decouple the transport section and feed the data stream into an external DAC. For this I used the DPA PDM I/III which is normally Deltran locked to a Teac P-500 transport. However, this is not a VRDS unit. Basically the VRDS-7 has a superb transport, the DPA convertor filled out, the mid producing a more lucid and timbrally purer sound with a sweeter treble, while retaining the solidity and strong architectural aspects of the Teac's sound. Considering that the VRDS didn't have the undoubted advantage of being sync-locked to the DAC the sound quality of the pairing wasn't that far behind that produced by our usual transport.

So there you have it. As a stand alone player the VRDS-7 is a very competent machine blessed with its fair share of virtues and vices. However, if you're looking for a well built player to use while saving up for a top quality DAC, to eventually mate with it as a transport, then the TEAC is worth auditioning. The transport section is a honey and will certainly do justice to a wide range of excellent convertors ●

TEAC VRDS-7
TEAC UK Ltd.,
5 Marlin House,
The Croxley Centre,
Watford,
Herts. WD1 8YA
Tel: 0923 225235

£599

MEASURED PERFORMANCE

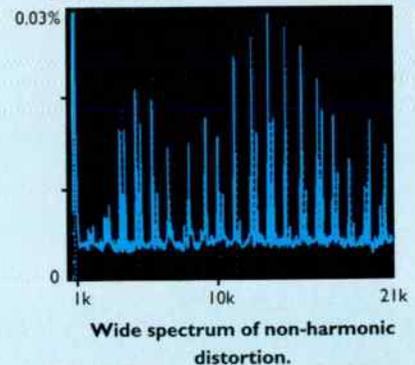
The VRDS-7 displayed a peculiar trait: it threw up a spectrum of aliasing products at -30dB music level from disc. Our spectrum analysis clearly shows this as an apparent spread of distortion products (seen as spikes) but, being non-harmonically related, we had to sum them with a pencil and a piece of paper as it were - the analyser was flummoxed. The total amounted to 0.08% distortion, a relatively high level similar to that from old sixteen-bit machines. However, since this spectrum only appeared at one specific level, it may be of little consequence subjectively. At all other levels the Teac proved as linear as any multibit player, even if it was not quite up with the best.

The frequency response characteristic, seen in the analysis, measured flat up to 10kHz and rolls off above that frequency. From experience I know this ensures its sound will not be bright or spitty. The Teac had good channel separation, a normal output of 2volts and low spurious output levels above 21kHz. With a reasonably wide dynamic range of 106dB, it measured well in all respects, except for the peculiar aliasing problem. **NK**

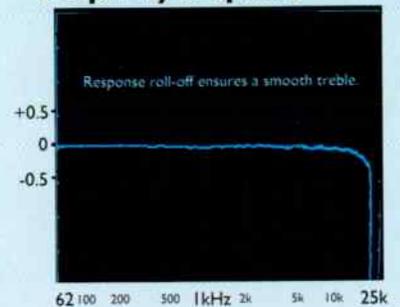
TEST RESULTS

Frequency response	3Hz-21kHz	
Distortion (%)		
-6dB	0.004	0.004
-30dB	0.08	0.08
-60dB	0.6	0.6
-90	29	29
-90dB dithered	4	5
Separation (dB)	left	right
1kHz	115	119
20kHz	91	97
Noise	-116dB	
with emphasis	-116dB	
Dynamic range	106dB	
Output	2.2V	

Distortion



Frequency Response



ONKYO IN-TUNE



Returning to the UK marketplace, are Onkyo in-tune with the budget T-401 tuner? Dominic Todd makes some comparisons.

Japanese manufacturer Onkyo had a good reputation for solid build quality and value; now they're back after an absence of three years. Here we look at what is essentially the successor to the T4120, the T-401 tuner.

Three years have certainly done little to alter the successful Onkyo formula. With a price of £159.95 it's good value alongside obvious rivals such as the Rotel RA 930AX (£175.00), Yamaha TX-470 (£159.95) and - the one to beat - the NAD 402 (£169.95). An unmatched 3-year warranty furthers the tuner's case in the value stakes. It includes a brand new replacement should the item show a fault within the first year of ownership.

Features include, 40 station random preset storage (split into six "classes"), a two mode front-end (local/DX), (auto/mono) and Medium Wave (for Virgin Radio, for example).

Features that you might be surprised to learn are absent include, Long Wave, remote control, direct access station search and RDS (now seen as near essential by most of the Japanese tuner manufacturers). If you seek this feature check out the T-450 RDS at £259.95.

A MOSFET front end, solid aluminium front panel and details such as the cork feet all add to the impression of the Onkyo being carefully and solidly built.

The T-401 replaced a Revox B760 in my system, although because this isn't exactly a fair comparison I had an NAD 402 on hand for comparison.

The B-52s on Radio 1 sounded slightly less compressed than this particular radio station can sound, and the T-401 sounded fairly dynamic as a result. However, a boxiness and nasal midrange were

apparent in comparison to the NAD.

Tuning into one of our local stations had the effect of broadening the soundstage, reducing some of the veiling that had affected Radio 1. Yet the vocals in particular still seemed to be somewhat trapped inside the speakers.

News and drama on Radio 4 didn't possess any particular sense of realism - of actually being there - that the best tuners can convey. There was a lack of sibilance on female vocals though, and good depth to the soundstage that gave plays

reasonable listener involvement. Yet again, the Onkyo had to assume second best to the NAD, which has the uncanny ability to really involve a listener, echoing more expensive tuners.

The Onkyo had quick and sensitive auto-tuning. The national BBC stations were picked up on three or even four different frequencies, although many were unlistenable (distant transmitters), even in mono, due to distortion.

Classical music proved the Onkyo's strong point, with a suitably light and breezy balance for quartets, and good weight to larger orchestral pieces. Once again, though, it couldn't overcome the NAD, which demonstrated less muddle between the instruments, and a greater sense of "air" around the individual players.

The Onkyo T-401 is a competent machine, but time appears to have taken its toll on this tuner somewhat. Tuner technology has advanced in leaps and bounds, as shown by machines like the NAD 402. Sound quality that was once first rate at the price is now simply competent, placing the T-401 amongst its competitors at best - not ahead. If sound quality is paramount, then I'd suggest you take a look at the Rotel RT 930 or acclaimed NAD 402 ●

MEASURED PERFORMANCE

The T-401 has a slight roll down in the upper audio band, our analysis shows, that will result in a little less of the subjective hardness that affects many mass-market tuners.

Distortion proved very low at 0.1% (stereo, 50% mod - see our spectrum analysis), on central and far left and right stereo images. Pilot and sub-carrier were well suppressed too.

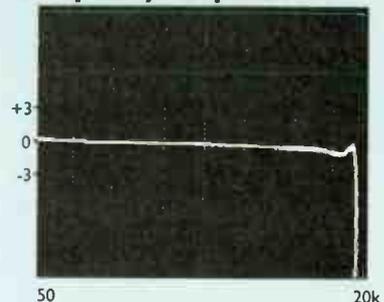
With an aerial signal of 0.6mV or more, hiss dropped to a satisfactorily low -72dB. That makes the tuner quiet enough for critical Radio 3 listening. Selectivity was good too, at 85dB alternate channel rejection both above and below any wanted station. Audio output was a healthy 700mV, high enough for passive preamps.

A Distant/Local legend switches to Local at 630µV, showing whether the aerial being used is adequate for optimum sound quality. The Onkyo T-401 measured well in all areas. **NK**

TUNER TEST RESULTS

Frequency response	4Hz-15.5kHz
Stereo separation	33dB
Distortion (50% mod.)	0.1%
Hiss (CCIR)	-72dB
Signal for minimum hiss	0.63mV
Selectivity (at 0.4MHz)	85dB
Sensitivity	
mono	1.6µV
stereo	25µV
signal strength	"Local" above 0.6mV

Frequency Response



.... Continue from page 11

VDH ON A SHOE STRING

A new entry level interconnect cable has just been announced by van den Hul. The Storm is a coaxial cable using silver plated copper and is suggested for use between CD player (or DAC) and amplifier.

Terminated with high quality gold-plated phono plugs, the Storm is available in two lengths, costing £24.99 for a 0.8m stereo pair and £29.99 for 1.2 metres.

VAN DEN HUL (UK)

P.O. Box 304,
Maidstone,
Kent, ME16 8TS.
Tel: 0622 721636.

CABLE TALK

Another range of cables have been introduced by specialist manufacturer XLO. Dubbed the 'Standard' range, these are priced between the existing Pro and Reference ranges at £180 per metre pair of interconnect and £299 for a 9ft pair of speaker cables.

For those of us with more modest financial means, the new Pro 150 comes in at £55 for a 1.0 metre pair.

If, however, you are fortunate enough to own a seriously esoteric amp, then the Reference PL 10 powercord at £200 for a 6ft length may just prove to be the icing on the cake.

XLO have also produced a test/burn-in CD in collaboration with Sheffield Labs, which has special tracks for burning in cables. This hot stuff is available for £35.

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ALPHASON IMPROVEMENTS

With the world still gripped solidly in the hands of a global recession, Alphason have managed to do the politically correct thing. They've not only improved their best selling speaker stands, but also reduced their price.

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Tel: 0494 441736.

SORRY!

Apologies to Michell Engineering. In the reply to Alain G Lefebure's letter last issue we said that the Alectos do not enjoy low impedance loads. The monoblocks are happy driving low



impedance loudspeakers, it's the stereo that is not

HISTORY OF VALVES - CONFERENCE UPDATE

Here's an update on a conference entitled The History of Thermionic Devices, to be held by the Newcomen Society, who are based in the Science Museum, London. We first ran a short news item on this conference in our March 1994 issue.

The one-day conference will be held on Saturday 23rd April 1994 at the Science Museum Annexe, Blythe House, Blythe Road, London (close to Olympia). The day's programme will be -

The Physical Background, by Dr M. C. Duffy, University of Sunderland.

Nineteenth and Early Twentieth Century Origins, by K. R. Thrower, OBE, Research Director, Racal Radio Group.

Growth of the Electron Tube Industry, by Dr T. Going, Senior Scientific Officer, London Hospital Medical College.

Applications and the Growth of New Industries, by Pat Leggat, formerly Chief Engineer, External Relations, BBC.

High Frequency and Microwave Tubes, by Dr J. R. Pierce, formerly Bell Telephone, Professor of Engineering at California Institute of Technology, Chief Technologist, Caltech Propulsion Labs.

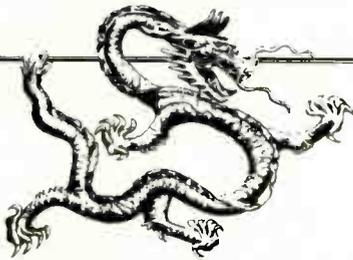
Industrial and High Power Thermionic Devices, by M. Foley, formerly head of valve division, ASWE.

The Entertaining Electron, by E. Davies, Special Projects Group, The Science Museum.

Delegates will be provided with a buffet lunch, at which they can also see "relevant artefacts" (old valves!) from the Science Museum reserve collection. At 5.30 p.m., there'll be a light buffet accompanied by archive film and slides, before the final paper. The conference will end at 7.30 p.m. The fee will be £35 (inc VAT), which includes coffee, lunch, afternoon tea, finger buffet and proceedings. Please send your application, with the conference fee, to -

Executive Secretary
The Newcomen Society
The Science Museum
LONDON SW7 2DD.

Contacts -
Newcomen Society - 071-589-1793
Science Museum - 071-938-8000
or write for a programme to -
Keith Thrower, Old Cedar,
12 Wychcotes,
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GOLDEN DRAGON MAIN DEALERSHIPS, available in selected areas. Please call Clive Norris for details

A good hi-fi system can be immensely entertaining and rewarding over a long period of time. However, as a retailer, demonstrating such equipment can be anything but.

Having attended many a demonstration myself, from both sides of the fence I can appreciate just how bewildering it can be. Here are seven golden rules to help make any demonstration less stressful - and perhaps even enjoyable!

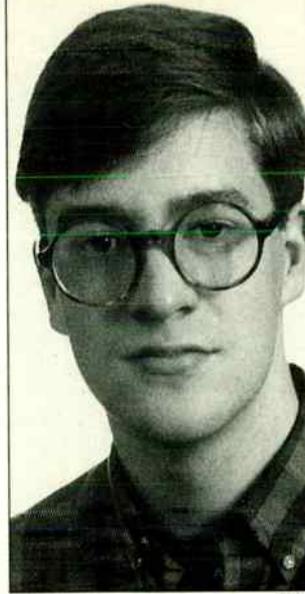
1. Rule number one is: find a good dealer. They can make all the difference between walking away with a mediocre system, or owning something state-of-the-art. Questions to ask yourself are: has the dealer been established long? Do you feel you can trust and feel relaxed in conversation with him or her? These factors can matter more than choosing someone with the largest stock and the cheapest prices. Shopping by mail order may save you a few pounds - and there are certainly bargains to be had - but in the long run using a local dealer will give you access to expert knowledge as you upgrade, secure a decent demonstration, provide good service (and possibly a piece of loan equipment whilst yours is being repaired). Most dealers can also offer a good part-exchange deal when you upgrade, which goes some way toward offsetting the savings you might have gained by buying mail order.

2. The second rule is tied in with the first, being about the demonstration conditions a dealer can provide. Single 'speaker rooms are a must. Basically, they provide an environment where you can sit down with just one pair of loudspeakers and listen to all the equipment without being distracted by the workings of the rest of the shop.

Another option, which more and more dealers are picking up on, is home demonstration. This has the obvious advantage of putting the customer in the most familiar and relaxing environment, as well as yielding a sound that is in no way influenced, for better or

worse, by the acoustics or nearby bustle of a dealer's demonstration room. It's not uncommon to get a piece of hi-fi equipment home and be disappointed after listening to it at the dealer's - and vice versa.

Although a home demonstration can be a good bet, it's still not ideal. You may quickly grow to dislike a product that is superficially exciting but, for your tastes, fatiguing or apparently flawed in the longer term. A good dealer should understand and appreciate this and let you change the



Fair Views

- from Dominic Todd, our man in Scarborough

equipment after a day or so if it doesn't suit.

3. Third, always take along a couple of CDs or LPs that you're familiar with. If not, choose something that the dealer has that is familiar. You need to know how your prospective hi-fi will cope with the type of music you listen to. This is especially important, as different brands, and even models within those brands, can suit different types of music. An experienced dealer will know which brands to recommend, based upon your taste in music.

4. The next rule is to make sure you actually listen to the track(s) you want to listen to, or the entire track if necessary. Also ensure that the dealer changes over equipment without delay, as the human brain has a very short memory for retaining detail.

5. Fifth, have an idea of how much you can spend. This may sound obvious, but it's surprising how many customers wish they'd spent a little more, or could have got the sound they wanted for less. As with everything else in life, hi-fi is game to

the law of diminishing returns. This tends to set in at around £300 per separate item. Below this, compromises commonly become noticeable; above it the differences become smaller and harder to spot. What you have to keep asking yourself is: does one CD player actually sound X pounds better than another CD player. So be flexible with price and set yourself a price band. In this way you're more likely to get exactly what you want.

6. The sixth rule is to be flexible about the equipment itself. Magazines offer a useful guide as to what's available and, of that, what's worth auditioning. However, just because a piece of equipment hasn't been reviewed, or has, but received a luke warm review, should not necessarily rule it out. Hi-fi equipment can be fairly particular about what it's partnered with, and it's not unusual to find a trio of "Best Buys" that just do not gell together.

Again, this is something to trust to the dealer who should know from experience what works together and what doesn't. If you doubt him, ask for proof

via a demo. Be receptive to what the dealer may recommend, even if you'd not considered it before.

A word of caution though. Expensive separates can stand around in the shops for a while. There may be nothing wrong with such products and provided it's made clear that they are ex-demonstration or a discontinued line they may still make the best choice.

Try to be sure you know where a particular product is in its development history (some products are on their sixth variation for example).

Again this is something that magazines can assist with as they constantly review the latest "Mark IIs" or at least make mention of such changes, giving some idea of whether any improvement is significant or not

7. Finally, avoid Saturdays like the plague! Most hi-fi shops are about two-to-four times busier on a Saturday and trying to get a decent demonstration may be difficult. Demonstrations usually have to be shorter on a Saturday, and staff aren't usually at their most relaxed, which can rub off on you. A home demonstration could get round this if attendance during the rest of the week is a problem.

And finally don't panic - or be panicked! A perfect system doesn't exist yet. Even fabulously expensive ones can be idiosyncratic in their sound and not to everyone's liking. There are as many different sounds as there are paintings that please people. Choose the one you are happy with over a long period of time and let no one rush you, or force you to go along with their view. Remember, it's your choice ●

Win Tube Technology and a pair of Castle

Ever wondered about the magic of a valve amplifier coupled to a pair of high quality, efficient transmission line loudspeakers? Well, here's your chance to experience one of the very best sounds around for free, because this month we're giving away a superb Tube Technology Unisys integrated valve amplifier and a pair of the excellent Castle Howards, which feature 1/4 wave bass loading.

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drive, allowing the Unisys valve amplifier to give its very best. We're even throwing in a set of super high purity Ortofon SPK300 bi-wire loudspeaker cables to make sure that the system performs to the highest standards.

The Tube Technology Unisys is a minimalist integrated valve amplifier complete with phono stage, so you'll still be able to play your favourite records as well as CDs. It has a total of four line-level inputs, so a tuner, tape deck and one other line level source can also be

used. Twenty eight watts of sweet valve power comes from two pairs of EL84 pentodes per channel - more than enough for the easy-to-drive Howards. Finished in exquisite chrome and gold, with a charcoal-black front panel, the Unisys really is a head turner.

The Castle Howards are a hybrid design, using a conventionally mounted 6.5inch doped paper driver and metal dome tweeter, plus a second top mounted 6.5inch cone which is 1/4 wave loaded for good bass. They give a fabulously open and spacious sound, with a clean midband, sweet treble and fast, deep and musical bass.

This is one of the very best amplifier and loudspeaker combinations money can buy, and it could be yours for the price of a stamp.

To enter this fabulous competition for the Tube Technology valve amplifier and Castle Howard loudspeakers, just complete the questions opposite.

Please send your entry on a POSTCARD, or the back of a SEALED ENVELOPE, completed in block capitals, to arrive no later than Friday 6th May 1994 to:

**TUBE TECHNOLOGY/CASTLE
Competition
Hi-Fi World Magazine,
64 Castellain Road,
Maida Vale,
London. W9 1EX.**

Don't forget to include your name, address and a telephone number so we can contact the winners promptly.

In the event of more than one entrant submitting all the correct answers, the winner will be picked by the Editor from the tiebreaker. We will endeavour to publish the results in the JULY 1994 issue. Purchase of the magazine is not a precondition to entry.

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 ●

COMPETITION ENTRY QUESTIONS

1) What valves does the Unisys use to get its 28W power output?

- | | |
|---------|---------|
| A. EL37 | B. EL34 |
| C. EL84 | D. EL81 |

2) Including phono, how many inputs does the Unisys have?

- | | |
|------|------|
| A. 2 | B. 3 |
| C. 4 | D. 5 |

3) What kind of loading is used for the bass of the Howards?

- | | |
|--------------------|-------------|
| A. Reflex | B. 1/4 wave |
| C. Infinite baffle | D. Isobarik |

4) Who makes the Howards?

- | | |
|-----------|------------|
| A. Church | B. Castle |
| C. KEF | D. Chateau |

THE TIE BREAKER (OBLIGATORY)

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The Castle Howards are hard to beat,
Together they offer quite a treat,
Why do you think they sound so neat?
.....

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Unisys Valve Amplifier Howard Loudspeakers

competition



MARCH ISSUE COMPETITION - THREE SUGDEN A21a CLASS A AMPLIFIERS

We offered three chances to win one of the very best integrated amplifiers available, the Class A Sugden A21a - and you responded by filling our offices with more entries than we've ever had! Noel, our Editor, just managed to pick three winners before disappearing forever beneath the pile. Here are the lucky three:

- 1) Mr D. Kelly of East Barnet
- 2) Mrs C. P. Gibbs of Isleworth
- 3) Mr P. Skelton of Gateshead

Thank you for such a great response. Who ever would have guessed that such a specialised - but admittedly superb - amplifier would have generated such a response. What enthusiasm!





Giovanni Dadomo

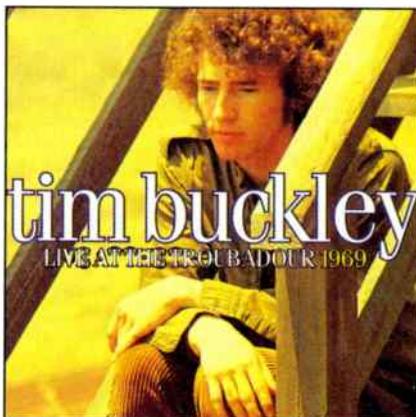
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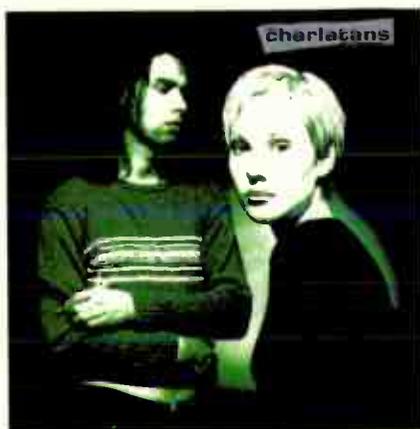
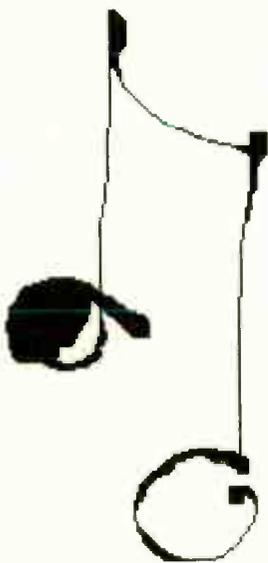
TIM BUCKLEY
Live at the Troubadour 1969
EDEL ED CD 400

● For someone who kicked the bucket in 1975, Tim Buckley's sure been productive of late. Edsel kicked things off with the brilliant two hour-plus live set 'Dream Letter' about three years past, then came the far briefer, but just as essential 'Peel Sessions' and now this.

At the risk of being tewwibly boring and/or repeating myself, I'll make the recap brief: Buckley came on the 'pop' scene in the late Sixties via a much-admired debut LP on the then hugely prestigious Elektra label (co-travellers including Love and The Doors). From a patently folksy start, he then proceeded, over a brief but busy nine-album career, to pick up on rock, jazz, soul, funk, and

sundry combinations of each before quitting this mortal coil at the unhealthily young age of 28. This new release catches Buckley during his jazzier, most experimental phase, ie. circa the studio albums 'Lorca' and 'Starsailor'. A lot of hardcore fans deem this to be among his best work - it's certainly Buckley at his most dangerous and border-crossing. For my part, I've found some of the studio stuff from this period a trifle vague and even self-indulgent, prey to the formlessness that then - as now - can so easily come about in the name of freedom.

If people meandered in the studio, you could be forgiven for thinking they'd ramble even more on a live stage. But - deliciously perverse to the last - the Tim Buckley heard here is anything but a wanderer. Even the long instrumental 'Venice Mating Call' (which Tim gives the tragically prophetic alternative title of 'Give Smack A Chance' - it was heroin that took his life before his twenties were out) is anything but a rambling mess, all sturdy rhythms and cogent warbling and with music to match. 'Strange Feelin' is just one instance where the man's breath-taking vocal range and melodic dexterity are allied to a tune to die for; 'Gypsy Woman' is heart churningly lovesome ... I can't find a clinker here and it's nothing to do with nostalgia: the man was a genius and to hear him is to love him, to learn something new every time, to miss his magic prescience all the more. Diamond stuff.



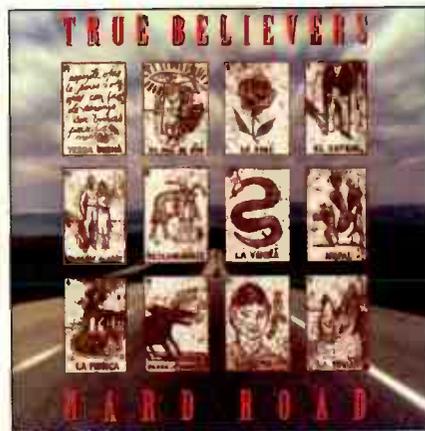
THE CHARLATANS
Up To Our Hips
BEGGARS BANQUET BBQ 147

● Most reviews of the third LP by this amiably jingly-jangly-guitar combo focus on the fact that their keyboard player's doing a bit of 'Bird' (and I don't mean Charlie Parker) for armed robbery when all he really steals is a few Ray Manzarek riffs. There are catchy toons aplenty, but singer Tim Burgess could vary his tonsil-work a bit more. Nice enough, but there's still no real contest when placed alongside the epochal 'Some Friendly'.



INSPIRAL CARPETS
Devil Hopping
MUTE DUNG 25 CD

● Inspiral Carpets are one of those 'Are they still around?' sort of groups, if you know what I mean. Less notorious or high-profile chart - and publicity-wise than most of their Mancunian cohorts (what price Happy Mondays or those geezers who used to be Joy Division and went soft?) the Carpets can pull off the admirable trick of waiting until you think they'd gone away and then coming up with a stone killer single in the shape of 'I Want You', their brill collaboration with living legend Mark E. Smith, and a song graced with the best drum track this side of Love's '7 and 7 Is'. It also happens to be the opening cut on this sturdy and very admirable selection of songlets, and if there's nothing else as immediately collar-tugging as this mini-masterpiece, it's easy to see why the band, with their penchant for steady and thorough tour work, are still alive and kicking after all these years in the saddle. Check their other chart fave (albeit less so) 'Plutoman', the clever 'Uniform', or the deliciously formed 'Just Wednesday'. Not the wildest band in the world perhaps, or the most unpredictable, but they hit the bullseye plenty, ring many bells.



TRUE BELIEVERS
Hard Road
RYKO RCD 40287

Great Lost Band No. 29053. True Believer, out of class rock spawning ground Austin, Texas (remember Doug Sahm, Commander Cody etc. etc.?) this was a bunch of good time rockers who cut a cracking stomp 'n' booze debut, got applauded by all and sundry and then - inexplicably - were dropped before their second LP was even issued. Shame and a sin, 'cause both discs - packed in one box here - will repay anyone with trad, impeccably retro lugholes. Time marches backwards, hoo-ray!

SHORT CUTS

LISA GERMANO
Happiness
4AD CAD 4005

● Hot on the heels of the much-loved 'Inconsiderate Bitch' EP (great title!) comes a bitter-sweet LP debut, the NYC girly-girl vox (move over Suzanne Vega) a perfect foil to those tart lyrics and wild, wild violin stuff - proving that good + unusual = unusually good.

MOTORHEAD
Live at Brixton Academy
ROADRUNNER 1009 1/4/2

● Scrambled brains anyone? I emmy can arrange this for you. Out takes from the 1988 'No Sleep At All' disc, lost but now found. Thank Hell for that, eh, pop pickers?

JOHN TRUDELL
Johnny Damas and Me
RYKODISC RCD 10286

● American Indian poet/singer Trudell bites the bullet - but hard. Sitting Bull's revenge and the red man's answer to Gil Scott-Heron. Great words, cool toons, big, big heart.

SAINT ETIENNE
Tiger Bay
HEAVENLY HVN 8

● Does Sarah Cracknell have a glorious voice or what? Crit faves come up with a third album which - when they're not trying to be instrumentally clever clogsy - finally justifies (most of) the brouhaha. Pure-ish pop for tomorrow people

Rock + Pop



**PRIMAL SCREAM
Give Out But Don't Give Up
CREATION CRECD I46P**

● They say ignorance is bliss. A cliché, for sure, but have you ever really sat down and thought about what this tried and trusted favourite means? Me neither. That is until I sat down and listened to this latest Primal Scream opus and tried to make sense of my feelings about it.

Fact: Primal Scream are the most blatantly derivative rock'n'roll band in the world, shamelessly regurgitating every Rolling Stones cliché known to man. This was patently obvious a couple of years past when, after a couple of fairly mediocre, take-it-or-ignore-it LPs, they finally entered the premier league with the by now classic 'Screamadelica' album. Produced to a large extent by Jimmy Miller, who twiddled the knobs for the Glimmer Twins for the bulk of their Golden Years, i.e. circa 'Sticky Fingers', 'Exile on Main Street' and all points adjacent, the disc nonetheless seemed to hit the jugular with a generation who'd only experienced Jagger and Co as their mam and pa's music or something they heard occasionally popping up on Capital Gold. It was, unashamedly, a stroll through pastures old. And yet, for all that, the record won both critical and public acclaim, garnering rave reviews, hit singles and LP status. Even weirder, the band - and front man Bobby Gillespie in particular - managed to get through his (their) copious press interrogations - I recall one particular Gillespie piece that focused totally on his encyclopedic love of and interest in all things poppy -



her other copious talents - on hearing the new album for the first time, was heard to remark how, track by track, this was a 'Best Of ... the Rolling Stones' LP by another name. As in, "Yeah, Honky Tonk Women". and "Isn't that just like Wild Horses ... again?"

My darling was quite correct of course (as usual) but that's another 'Women - can't live with 'em, can't live without 'em' story. Still, there's just no way this record, this band, could possibly exist had there been no Rolling Stones. But then there have been legions of copycats trying to work the same furrow as old rubberlips and Co., so why should this particular aggregation get away with it while scores of others fell by the wayside? Well, for a start, not all the copyists of yore exactly crapped out. There's at least one instance here - the admirably plangent mid-tempo soul

without even the most glancing reference to Mick 'n' Keef's little combo. And all this despite the fact that, adding emphasis to suggestion, the group even went so far as to enlist the aid of the aforementioned 'Screamadelica'. How much bigger could things be spelt out?

Despite all this even the most cynical a-hold in the world couldn't fail but come away from even two or three listens of 'Screamadelica' impressed and overwhelmed. It was - and is - just one of those, um, GREAT, pop discs.

And so it is that, suitably impressed and chastened, one comes to the latest Primal opus. It is, as one could justifiably have predicted, very much in the nature of a sibling to its predecessor. My partner, the very loveable and wondermost Ms. L - hardly the biggest Primal Scream fan in the world, for all

slobber 'Cry Myself Blind' that carries equally strong echoes of prime-time Rod Stewart and The Faces as it does them other geezers. And what were The Faces except a good Stones rip-off with (maybe) a better singer?

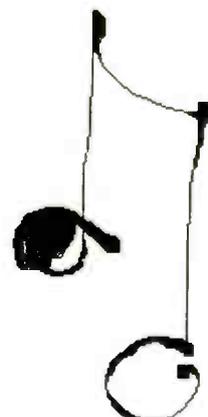
And surely that's another reason why Primal Scream get away with it - in Bobby Gillespie they have one of the most odds-on powerfully charismatic front-men seen in yonks. The guy has it - class, style, front ... and a fair pair of tonsils, to boot.

Not to mention that the band's musical roots are, of course, nonpareil, witness only the presence here of the impeccable and solid gold Memphis Horns - on, er, horns, ditto the equally fabled Atlanta Rhythm Section. Plus the whole thing was mainly cut at the rightly legendary Ardent Studios in Memphis

(where-at the entire Stax-Volt, Otis Redding, Booker T etc. etc. funky Southern soul shebang first exploded) and - crowing glory - the production is largely down to one Tom Dowd, a Soul vet with more credits than a Francis Ford Coppola movie, while latterday funk is represented by the far from grizzled and ever welcome George Clinton, who manages to elbow his vox on to the self-explanatory 'Funky Jam', for one.

Most importantly, and for all the salad dressing that is superficially regarded as style, this band write cracking tunes. 'Rocks' has done its bit already, chart-wise, but it's a sure bet that laff riots like 'Big Jet Plane', the sensuous 'Free' or the aforementioned 'Cry Myself

Blind' - it hurts so good, as they used to say - will enrich airwaves and jukeboxes across our spotty little globe before too long. No big surprises then, but Primal Scream are still something to shout about.



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K5881 costs just £395 as a kit of parts and £595 fully built from our own 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.

SPECIFICATION

Power	20watts/ch.
Frequency response	16Hz-40kHz
Distortion	0.02%
Separation	60dB
Noise (CCIR)	-103dB
Sensitivity	240mV
Dimensions (mm)	400w,300d,180h
Supply	110/120V or 220/240V, 220VA
Weight	16kgs(34lbs)

Here's a superb, Class A, 20watt stereo power amplifier that uses the inexpensive Russian 5881 output valve, a military version of the regarded American 6L6, designed for low distortion audio work. It has super-quality output transformers (4/8/16Ω selected internally) to minimise distortion and the input stage uses triode working. A rugged, sixteen-gauge, all-welded steel chassis is provided, together with protective bottom plate for safety; a protective top cover is an optional extra.

VALVE LINE LEVEL PRE-AMPLIFIER

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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.



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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.

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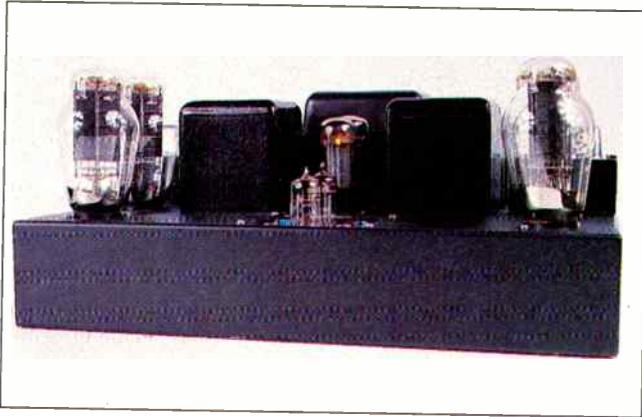
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Our 300B runs in Class A, giving one of the most sweet, open and neutral sounds possible today. Matched with good loudspeakers, it is unsurpassed.

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 bi-wiring, or heavy gauge bare cable. Output options of 4/8/16Ω 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).

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	110/120V or 220/240V, 220W
Weight	20kgs(44lbs)

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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

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- 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 4/8/16Ω. Drop through fixing.
- 3) Choke (1 off) 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 x 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 4Ω, 8Ω and 16Ω. 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 4/8/16Ω. Drop through fixing.
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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 £729.

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OLIVIER MESSIAEN
Visions de l'Amen*/Piece pour le Tombeau de Paul Dukas/Fantaisie Burlesque/Rondeau/Petites esquisses d'oiseaux
 Peter Hill, Benjamin Frith*, pianos
UNICORN-KANCHANA
DKP(CD)9144 DDD/79.04)

● With this release, Peter Hill completes his six-volume survey of the piano music of Olivier Messiaen and it is, by any measure, a hugely significant

contribution to the discography of twentieth century music. It is wryly amusing that the greatest commitment to the music of this French master has come from a British record label - Unicorn Kanchana - both through the work of Peter Hill and through the superlative recordings of the organ music by Jennifer Bate. It is difficult to imagine the French company, Erato, embarking on a similarly-sized Benjamin Britten project for example.

Despite titles such as Visions de l'Amen, Messiaen was not a religious composer in the sense of say, Palestrina or Victoria. True, the majority of his compositions are inspired by - and, indeed, prefaced by - Catholic theology, but Messiaen was as much stimulated by terrestrial nature as he was by the spiritual divine. The two are reconciled because, for Messiaen, the natural world is God's creation.

Messiaen continued to compose large-scale, liturgically inspired works for organ right to the very end of his life; indeed, the epic Livre du Saint Sacrament is almost certainly the longest single work ever written for the instrument. His two great masterpieces for piano, however, both date from the 1940s. At the apex of his piano compositions stands the series of twenty sublime contemplations, Vingt Regards sur l'Enfant Jesus of 1945.

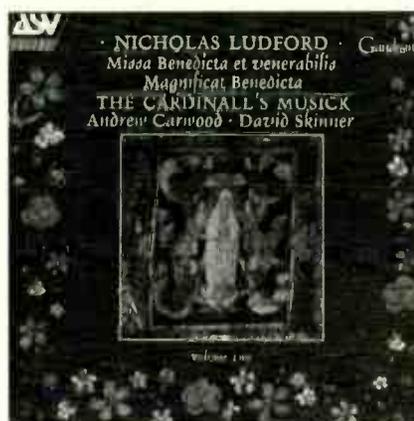
Two years earlier, much impressed by the talents of one of his pupils at the Paris Conservatoire, Yvonne Loriod, he wrote a seven-part work for two pianos whose first performance was given by teacher and pupil on May 10, 1943. In Visions de l'Amen, each piano is given a quite different personality. The first - played by Yvonne Loriod at the premiere - is full of passion and brilliance: it chimes, it sings, it dances it indulges in glittering cascades of decoration. The other piano is consistently more restrained and contemplative, content to present the themes and maintain the underlying harmonies. The result, as can be heard in Peter Hill's collaboration with Benjamin Frith, is both compelling and illuminating.

The colours of the instruments are used to powerful effect to underline the implications of each section, from the harsh, even brutal terseness of Amen de l'Agonie de Jesus to the ecstatic tenderness of Amen du desir and the glorious chorale, with its pealing harmonies, which brings the work to a conclusion with Amen de al

Consummation. But this is not 'programme music': the theology is merely the launching pad for Messiaen's imagination and virtuosity. Included alongside Visions de l'Amen, in what is a generously-filled

CD, are three early pieces, including Messiaen's tribute to his teacher, Paul Dukas, and one of his very last compositions, the Petites esquisses d'oiseaux. Exhausted by the effort of completing not only the Livre du Saint-Sacrament, but the even more vastly-conceived opera St Francis d'Assise, Messiaen declared himself finished with composition. But his wife, the aforementioned Yvonne Loriod, persuaded him to accept one further commission.

It began with a musical sketch of a robin and was subsequently extended to embrace some other feathered creatures. Modestly conceived and spare in its writing, it is nevertheless a most engaging piece. It was also Messiaen's last work for solo piano and, therefore, an ideal way to round off a superlative recording and a quite superlative-conceived series.



NICHOLAS LUDFORD
Missa Benedicta et venerabilis Magnificat Benedicta
 The Cardinal's Musick; director, Andrew Carwood
ASV GAUDEAMUS CDGAU132
(DDD/79.39)

● The term 'major discovery' is one to be used warily and sparingly, but - for once - it is not only appropriate, but indisputable. Nicholas Ludford is one of those shadowy figures of the Tudor period in England. He is thought to have been born around 1485 and he died in 1557. No tributes appear to have been paid to him, no biographies written, no monuments erected.

One of the reasons for this obscurity may lie in the fact that, unlike many of his more famous contemporaries, his place of employment no longer exists. Tallis's Waltham Abbey is still there, as is Byrd's

RECORD OF THE MONTH

The stature of Georg Philipp Telemann has suffered from the fact that - even by eighteenth century standards - he was a prolific composer, leading to him being seen as more a composer of quantity rather than quality. Stravinsky's mischievous comment on Vivaldi - "the same concerto written five hundred times" - has been echoed in some assessments of Telemann.

In some ways, Telemann's reputation today is inevitably compromised by his dates: he was born four years before J.S. Bach and lived for another seventeen years after his death. Comparisons have been made - mostly in Bach's favour - and it is only comparatively recently that Telemann has been allowed to emerge from the giant shadow cast by his contemporary. I now know of one leading music critic who considers Telemann at least the equal of Bach (he

also adjudges C.P.E. Bach to be a finer composer than his revered father).

Ironically, though now out-of-step with the received wisdom, such a view would have met with general approval in eighteenth century Germany; as a Kapellmeister in various cities, Telemann was ranked higher than his compatriot. He was born in Magdeburg in 1681 and held a large number of posts throughout northern Germany, including Frankfurt, Hamburg and Bach's home town of Eisenach.

Telemann was something of an eclectic: the influence of the Italian and French styles of the day is readily apparent, not least in his use of programmatic titles for many compositions. He also responded to the music originating from countries east of Germany, especially the folk music of Poland, and elements of this are

discernible in his work.

In all, Telemann composed forty settings of the Passion, a similar number of operas and no less than six hundred orchestral works. Some of his finest compositions are to be found in the *Tafelmusik*, a collection of overtures and concertos published in Hamburg in 1733, and in his version of *Water Music*. He is also thought to be the first composer to produce a complete cycle of cantatas for the church year, a feat later emulated by Bach. However, it is a measure of his pre-eminence that - unlike Bach's - Telemann's cantatas were published.

It is encouraging to see several ensembles now exploring Telemann's prodigious output and, like the period-instrument Drottningholm Baroque Ensemble from Sweden, coming up with some veritable jewels.

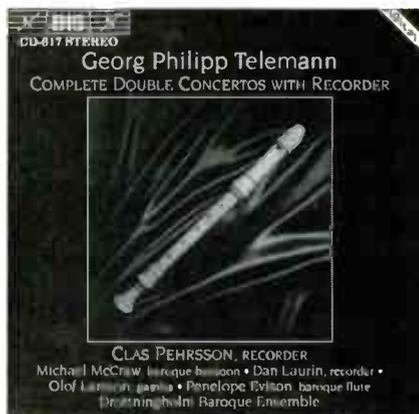
**GEORG PHILIPP TELEMANN
Double Concertos: in F
major for recorder and
bassoon; in B flat Major for
two tenor recorders; in A
minor for recorder and
gamba; in A minor for two
tenor recorders; in E minor
for recorder and flute**

Clas Pehrsson, treble recorder;
Michael McCraw, baroque bassoon;
Dan Laurin, treble recorder; Olof
Larsson, viola da gamba; Penelope
Evison, baroque flute; The
Drottningholm Baroque Ensemble;
leader, Nils-Erik Sparf

BIS CD-617 (DDD/60.22)

● A recording which bursts from the speakers with all the freshness and vitality of a crisp spring day. The sound is translucent, lively, and naturally projected, pleasingly enhanced by the acoustic of the Petras Church in Stocksund, Sweden. The programme, a collation of tapes made between 1983 and 1993, offers a selection of Telemann's double concertos for what are unusually spicy combinations of instruments: the rich tones of the bassoon, for example, in sharp contrast with the piercing warble of the treble recorder.

Telemann was an accomplished performer on several instruments so it is unsurprising that he was one of the composers pre-eminent in evolving the Baroque solo concerto out of the



consort music of the Renaissance. The works here are fine examples of both his musicianship, and his invention. In the concerto for recorder and viola da gamba, for example, Telemann allows the gamba to join the orchestral strings in the tutti sections, so bringing a distinctly darker and richer character to the music. He then lightens the proceedings with an idyllic third movement pastorale.

The E minor concerto is remarkable for bringing together the old and the new: the former in the form of the treble recorder, the latter in the shape of the transverse flute which, ultimately, was to sweep the recorder into virtual obscurity. Both are given ample opportunity to demonstrate what they can do and the soloists here, Clas Pehrsson and the New Zealand-born Penelope Evison do not disappoint. Pehrsson appears in all the works here and, in the concertos for two recorders is joined by the equally proficient Dan Laurin. These works are very much in the vein of a concerto grosso, with - as well as their solo roles - the recorders used to add a piquancy to the orchestral tutti.

But it isn't simply the skilful playing of the often taxing virtuoso solo parts that makes this recording so enjoyable and invigorating, nor the buoyant playing of the Drottningholm strings led by Nils-Erik Sparf. It's more the feeling of spontaneous, spirited music-making with everyone relishing their role. Telemann's concertos may not be the most cerebral of music - they were, after all, written to entertain - but, my goodness, they're fun to listen to. And I would guess they must be even greater fun to play!

Continued From Page 85

Lincoln Cathedral and the Oxford colleges which employed the likes of Tavemer and Sheppard. Ludford's Royal Chapel of St Stephen's, Westminster, was destroyed in the fire which also engulfed the old Houses of Parliament in 1834. His music, though, survived and his Mass settings were copied into a huge

choirbook now in the care of the library of Cambridge University.

And there it might have remained, undiscovered, but for the efforts of David Skinner and Andrew Carwood, founders of The Cardinal's Musik (after Cardinal Thomas Wolsey). What a treasure-trove the researches, especially by David Skinner, have yielded. This is sacred

polyphony of the very highest quality, accomplished in its craftsmanship, inventive in its word-painting, exhilarating in its soaring eloquence. Nicholas Ludford's stature as a composer, until now largely unrecognised, is evident in virtually every bar of this magnificent and inspired music.

But, of course, that only becomes

evident through the performances which succeed in combining depth of expression with an immaculate line and, to my ears, great stylistic accuracy. I should also add that the sound, engineered by Martin Haskell, in All Saints, Petersham, Surrey, is near-ideal: airy, lucid and with an involving presence. And how pleasing to hear the high voices so clearly reproduced.

This is the second volume of Ludford's music to appear on ASV's Gaudeamus label and offers the Assumption-tide Mass setting *Benedicta et venerabilis* and a complementary setting of the Magnificat. The Mass is especially noteworthy for Ludford's imaginative use of two bass parts which gives the music a darkly potent gravity. We have no dates for either work, but the more mature part-writing of the Magnificat suggests it may be the later work. More on the background to Ludford's music can be gleaned from Messrs Carwood's and Skinner's scholarly booklet notes; indeed, the whole presentation of this sumptuous, spellbinding music is very fine. I earnestly recommend discovering so for yourself.

JOHANN SEBASTIAN BACH
Sinfonia to Cantata No42 Am
Abend aber desselbigen
Sabbats

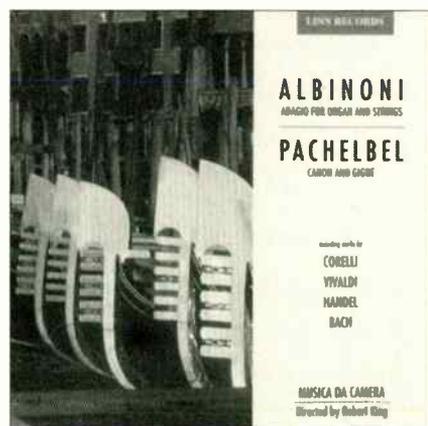
ARCANGELO CORELLI
Concerto Grosso Op6 No8
('Christmas Concerto')

JOHANN PACHELBEL
Canon and Gigue

GEORGE FRIDERIC HANDEL
Concerto Grosso in B flat
Major Op3 No2

ANTONIO VIVALDI
Concerto in D minor Op3 Noll
TOMASO ALBINONI (attrib.)
Adagio for organ and strings

Musica da Camera; director, Robert King
LINN RECORDS CKD012 (DDD/53.40)



● Taking time out from his mighty Hyperion project to record all the church anthems of Henry Purcell, Robert King here directs an agreeable pot-pourri of Baroque favourites - and less familiar items - for the Linn label. Those old standbys, Pachelbel's Canon and Gigue and the lugubrious adagio wrongly but nevertheless

persistently attributed to Tomaso Albinoni, are spiced with more interesting fare in the shape of the splendid *sinfonia* from Bach's Easter-tide cantata *Am Abend aber desselbigen Sabbats*. I can but agree with the Bach scholar, W. Gillies Whittaker who is quoted in the booklet note thus: "Why this *sinfonia* has never been placed among the world's concert masterpieces is a mystery. It is a heavenly picture of evening!" And that was in 1959.

Arcangelo Corelli (1653-1713) was a key figure in the development of the concerto grosso and his opus six set is one of the landmarks of the musical Baroque. The eighth work in the set has long been popular as the 'Christmas Concerto' and, if you are seduced by its charms - and this sparkling performance could well have that effect - then you may well feel investing in the entire Op6; Trevor Pinnock and the English Concert on Archiv is the version to go for.

The two other concertos featured on this recording also come from major sets of such works. From Handel's Op3, a diverse collection of pieces published in 1734, Robert King has chosen the second concerto, one which gives Paul Goodwin plenty of scope to demonstrate his deft and fluent oboe playing. And from Vivaldi's Op3, the collection known as 'L'Estro Armonico' published in Amsterdam in 1711, we are offered a sprightly performance of the eleventh concerto.

After this bright and enterprising fare, the 'Albinoni Adagio' comes as something of a let-down: rather like being offered semolina pudding after salmon en croute. The work is allegedly a 'completion' by the twentieth century Italian scholar, Remo Giuzotto, using a fragment of Albinoni's music which he was fortunate to discover. The problem is that no-one has ever been able to locate said fragment.

As ever, Robert King obtains a high standard of playing from his musicians and the recording, made in London's Henry Wood Hall, has been finely produced and engineered by Ben Turner and Philip Mobbs. If I have one cavil - and it may seem churlish when we used to tolerate fifteen minutes a side on LPs - it is that under fifty-four minutes is less than generous on a full-price CD these days.

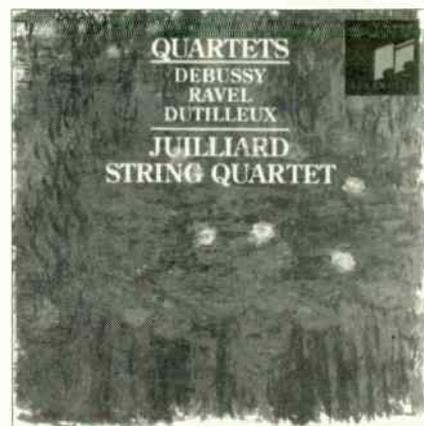
CLAUDE DEBUSSY
String Quartet in G minor
Op 10

MAURICE RAVEL
String Quartet in F Major
HENRI DUTILLEUX
String Quartet 'Ainsi la nuit'

Juilliard String Quartet
SONY CLASSICAL SK52554
(DDD/74.26)

● Debussy and Ravel wrote but one string quartet each and, given their shared nationality and shared dates, if not shared styles, the two works have become an automatic pairing on LP and now CD. To their credit, the American Juilliard Quartet has augmented this

familiar coupling with another, more recent composition by a French composer, the string quartet entitled 'Ainsi la nuit' by Henri Dutilleux. At the outset, I can affirm that the inclusion of the Dutilleux, written in 1976 to a commission from the Koussevitzky Foundation, is not as a makeweight; it is the perfect contemporary complement to the Ravel and the Debussy and, in many respects, is their linear descendant.



Henri Dutilleux was born at Angers in 1916 and was in charge of music at ORTF, the French national broadcasting network, from 1944 until 1963. He then became a teacher, most importantly at the Paris Conservatoire. His music fuses many diverse influences into an entirely idiosyncratic whole. It is sometimes readily approachable - his delightful Violin Concerto, for example - sometimes less so. But it is never less than fascinating in its structures, textures, colours and atmospheres.

'Ainsi la nuit' ('Thus the night') is made up of seven linked sections each, according to the composer, conveying a particular poetic or spiritual atmosphere. Each section has a title but, emphasises Dutilleux, none are to be interpreted literally. It is a beautifully-constructed work, its organic cohesion becoming more evident with every hearing. Dutilleux makes full use of the delicious sonorities available from the four string instruments and the effect is often mysterious, haunting and even disturbing. The Juilliard Quartet meets the challenges of the score with evident understanding as well as consummate technique.

As in the Dutilleux, atmosphere plays its part in the quartets of Debussy and Ravel, especially in the dreamy slow movement of the latter. The Juilliard Quartet is again responsive and eloquent and, throughout, benefits from a warm, tonally rich recording made with Sony's 20-bit high definition SBM system. I don't pretend to understand the technicalities, but I like the end result! The Juilliard Quartet now offers an excellent option in the 'basic library' quartets of Ravel and Debussy, with the Dutilleux as a valuable and significant bonus.

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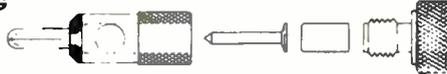
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Sonic Link Violet £80

Verdict ★★★★★☆

Violet cable works well in high quality systems- where information retrieval is a priority. Despite having warmer, fatter bass than Pink or Red, it remains exceptionally clear and detailed,

especially in the mid range and treble. Music's upper registers are very delicately portrayed but instruments nonetheless have a reassuringly solid feel. Not suitable for ragged-sounding systems

Sonic Link Pink £25

Verdict ★★★★★☆

This ultra-slender cable looks unconventional and home-brewed, but it does offer a respectably detailed and cogent sound. Pink's tonal balance is rather light, due to its lean, dry bass, but it doesn't sound too forward in a well balanced system thanks to very refined treble and good overall clarity. In fact this cable's fast, rhythmically urgent sound is very appealing.

Sonic Link Red £45

Verdict ★★★★★☆

Just like Pink, Red is also skinny, but packs loads of musical information into its slim and modest diameter, recommended as a CD to preamp link, red is vividly detailed with a vibrant and lively tonal balance, which is aided and abetted by good dynamic contrast and slick timing. Provides bass with far more substance and weight than the less pricier Pink leads

Sonic Link Blue £120

Verdict ★★★★★☆

Blue uses Sonic Link's rhodium plated plugs, which are claimed- and certainly seem able to out perform the more common gold plated variety. Blue has a very clean and spacious sound that captures low level detail very well. Like the Violet cables though, it can be too revealing for a system.

Sonic Link Black £150

Verdict ★★★★★☆

A heavyweight, even by Sonic Link standards, this cable uses silver plated cable and rhodium plugs. Its sound is weighty too, but bass sounds over bloated, slowing lively music right down. We still prefer the cheaper Blue cable, which gives bass lines more intonation and flow, resulting in the music seeming faster and better articulated overall.

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AUDIBLE DIFFERENCE, The Norfolk/Suffolk High End dealer, near Diss, Norfolk. Audio Research, Audion, Art Audio, ATC, Audio Innovation, Audio Note, AVI, Chord, Concordant, Copland, Croft, Dawn Audio, DPA, EAR, Impulse, Lyra cartridges, LFD Audio, Magnepan, Militek, Orelle, Pink Triangle, Roksan, Sugden, SME, Sonus Faber, Tube Technology. At this level of equipment we believe that the highest level of service should be offered. We will book only three demonstrations a day to ensure that you have ample time to evaluate the options YOU have chosen. Demonstrations in our listening room or your home. Equipment loan service available. Tuesday to Friday, 12 to 9pm, Saturday 9 to 5pm. Please ring for an appointment on 0379 740227

PROTECT-A-DISC, Unit 4, Elvin Way, Sweetbriar Industrial Estate, Norwich, NR3 2BB. Tel: 0603 482193. Producers and suppliers of finest quality card record and CD sleeves with taped edges, poly-lined or unlined, mailers and cruciforms etc. Please send SAE for full current price list. Trade enquiries welcomed. Tel: 0603 482193.

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LISTEN INN, 32 Gold Street, Northants NN1 1RS. Tel: 0604 37871. Fax 0604 601430. Naim, Linn, Rega, Audiolab, Arcam, Cyrus, Royd, Nakamichi, Mission, Denon, Rotel, Nad, Heybrook, Marantz, Chord Co. etc. etc., Open 10.00 - 5.30 (Closed Thurs)

DEFINITIVE AUDIO, Tel. (0602) 813562. For a carefully considered approach to building a true high fidelity audio system with components derived from the following manufacturers: Audio innovations!, Wadia, Micromega, Deltec, E.M.T., Horning, Voyd, Systemdek, SME, Revox, Impulse, Ortofon, Pioneer. Also the remarkable Living Voice Air Partner loud speaker system. Demos by appt. Please phone for further details, install. free of charge. Mon-Sat 10.00-7pm. Closed Wed a.m.

PETER ELLIS AUDIO, 29 Kirkgate, Newark, Notts NG24 1AD. Tel: 0603 704571. QUAD, Castle, Arcam, QED, Sugden, Tannoy, Threns, Marantz, Denon, Teac. Demo room, free install. Service dept. Access, Visa. Mon-Sat 9-5.30. Closed Thursdays.

CHANTRY AUDIO, 18-18a Eldon Street, Tuxford, Nr Newark Notts, NG22 0LH. Tel: 0777 870372. Pink Triangle, DPA, Rotel/Michi, Micromega, NVA, Alchemist, Michell, Monitor Audio, Lumley, SME, Audion, and much more! Three dem rooms, home trial, free installation, service department. Access & Visa, credit facilities. Mail order, Mon-Sat 9.30-6.00, Sun and evenings home dem by appointment.

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AUDIO T, 19 Old High Street, Headington, Oxford, OX3 9HS (0865) 65961. Fax (0865) 60415. Great Hi-Fi from Arcam, Audioblab, Cyrus, Denon, Epos, KEF, Marantz, Meridian, Mission, Musical Fidelity, Rotel, Sony, Yamaha & many more. Mon-Fri 10-6. Sat 9.30-5.30. 3 year guarantee on Hi-Fi. Free delivery & installation. 30 day upgrade scheme. Home demonstrations. Part exchange. 2 listening rooms. Home Cinema specialists. BADA Bonded.

WESTWOOD & MASON, 46 George Street, Oxford. Tel: 0865 247783. Creek, Marantz, Naim, Arcam, Rotel, Rega, Epos, Tannoy, Mission, Nakamichi, Denon, Awa, Quad, Yamaha, Monitor Audio. Open 9.30-5.00pm. Dem room. Closed Thursdays.

ASTLEY AUDIO LTD, 3 Marketplace, Wallingford (3 miles from Berkshire border). 0491 839305. Aura, B&W, Technics, Panasonic, Pioneer, Kenwood, Sony, Yamaha, Denon, Dual, Marantz, Mission, Tannoy. 1 listening room. Home trial, free installation. Service department. Access, Visa, Amex, Diners. Instant credit. Tues-Fri 9-5.30, Sat 9-5. Records & CDs stocked.

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AVON HI-FI, 12 Barker Street, Shrewsbury, Shropshire, SY1 1QJ. Tel: 0743 355166. Awa, Beyer-Dynamic, NAD, Quad, B&W, Mordaunt-Short, Kenwood, Bose, Nakamichi, Dniso, Teac, Sennheiser. Dem room. Home trial. Free install. Service dept. Access/Visa. £1,000 instmt credit. Mon, Tues, Wed, Fri, Sat 9-5.30.

SHROPSHIRE HI-FI, St Michael Street, Shrewsbury, Shrops. SY1 2ES. Tel: 0743 232065. Stockists of Musical Fidelity, Mordaunt Short, Sony, Kenwood, Pioneer, Rotel, Denon, B&W, Proac. Audio Visual. Products available. Open 9.30 - 5.30pm Mon-Sat.

SOMERSET

MIKE MANNING AUDIO, 110 Middle Street, Yeovil, Somerset, BA20 1NE. Tel: 0935 79361. Fax: 0935 32923. Mobile 0850 325965. Naim, Roksan, Pink Triangle, A&R (Icom) ION, NAD, Pioneer, Rotel, Denon etc. Dedicated listening lounge, for relaxed and unpressured demos. Appts not necessary but best to telephone first. Home trial facilities on request, free installation and service dept. Instant credit, Access/Visa etc. 9-5.30, closed Mondays.

STAFFORDSHIRE

ACTIVE AUDIO, 95, Stafford Street, Hanley, Stoke-on-Trent, Staffs. Tel: 0782 214994. Fax: 0782 283346. We

have four studios including a dedicated Audio Visual studio for the demonstration of quality equipment from the largest range in the Midlands. Open six days per week. Own service department. Free local delivery, home trial facility. Current special offers and buyers fact pack and quotation service on request.

MUSICAL APPROACH, Unit 7, Woodings Yard, Bailey Street, Stafford, Tel: 0785 55154. Also branch at 37 High Street, Aldridge, nr Walsall. Tel: 0922 57926. Linn, Rega, Arcam, Rotel, Royd, Heybrook, Marantz, Teac, Celestion, Apollo, Target. Mon-Sat 9.30-5.30. Home cinema equipment stocked. 2 single speaker dem rooms. Service dept and free install. Credit facilities. We are now agents for Rega products. Stafford branch only.

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ACTIVE AUDIO, 29, Market Street, Tamworth, Staffs. Tel: 0827 53355. Fax: 0827 59513. We have two studios including a dedicated Audio Visual studio for the demonstration of quality equipment from the largest range in the Midlands. Open six days per week. Own service department. Free local delivery, home trial facility. Current special offers and buyers fact pack and quotation service on request.

SUFFOLK

AUDIO IMAGES, 7 All Saints Road, Pakefield, South Lowestoft, Suffolk, NR33 6JL. Tel/Fax: 0502 582853. Quad, Triangle, Arcam, Castle, Rotel, Moth, JPW, Finlux, Audio Innovations, plus the amazing ROTHWELL range. Separate dem room, no appts nec. 10-6-30 Tues-Thurs, 7pm Fri, 6pm Sat.

SIGNALS Martlesham Heath, Ipswich. Tel: (0473) 622866. Audio innovations, Fuller's Audio, Goldring, Heybrook, Impulse, JPW, Micromega, QED, Soniclink, Sumiko, Alphason, Apollo, Audioquest, Ixos, Project, Soundsbyte, Stirling, Townshend, Tricord, Sugden and more! Monday to Saturday 10 till 6

BURY AUDIO, 47 Churchgate Street, Bury St Edmunds, Suffolk. IP33 1RG. Tel: 0284 724337. Arcam, Audio Alchemy, Heybrook, Marantz, Michell, Meridian, Nakamichi, Pink Triangle, Quad, Rotel, Sonus Faber, Stax, Tube Technology. Single speaker dem room. Free install. Credit facilities. Mon-Sat 9.30-6.00, closed Wed. Evening dems by appointment.

EASTERN AUDIO, 41 Bramford Road, Ipswich, Tel: 0473 217 217. Fax 0473. 215705. Quad, Arcam, Audioblab, Meridian, Mission, Denon, Rotel, Marantz, NAD, Sony, Rogers, Nakamichi, Systemdek, Technics, Celestion, B&W, Tannoy, Morel Thorens and Top Tape. Also stock a wide range of accessories. usual credit facilities. A BADA dealer.

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PJ HI-FI, The HI-FI Shop, 3 Bridge Street, Guildford, Surrey GU1 4RY. Tel: (0483) 504801. 9-6 Mon-Sat. Linn, Meridian, Rega, Arcam, Quad, Revox, Musical Fidelity, Rotel, NAD, Nakamichi, Marantz, KEF, Reference etc.

ROGERS HI-FI, 13 Bridge Street, Guildford, Surrey, (0483) 61049. Awa, Creek, Denon, Dual, JPW, Marantz, Onix, Pioneer, Systemdek, Ruark, Tannoy. Teac. Dem facilities available, no appts necessary, free installation, service dept. Access/Visa. Instant credit upto £1,000 subject to status. Monday-Saturday, 9.30-6pm, later by appt.

SURBITON PARK RADIO, 48 Surbiton Road, Kingston-upon-Thames, Surrey. (081) 546 5549. QUAD, Castle, Denon, Dual, Kenwood, Mordaunt-Short, JBL, Rotel, Pioneer, QED. B&W and Tannoy. Demo facil. Access, Visa and Switch. 9.30-5pm.

SURREY HI-FI, 45 High Street, Godstone, Surrey, RH9 8LS. (0883) 744755. Specialist Hi-Fi outlet, demonstration room and parking available. Quad, Audioblab, TDL, Tube Technology, Rel Acoustics, Nakamichi, Kef, Thorens, Magnum, Rotel, Marantz, Denon, Michell, Furukawa, Van den Hul, Musical Fidelity, Tannoy, Target, JPW. Lumley Reference in stock. Single speaker dem rooms. Free installation service dept. Access/Visa/Mastercard. Open 9-6pm Closed all day Wednesday.

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J.O. BROWN, 28-36 Castle Street, Dundee DD1 9NZ. Tel: (0382) 26591. Rotel, Denon, Pioneer, Technics, Awa, Mission, Castle, Mordaunt-Short, Monitor Audio, Bose, Infinity. All equipment ready for demonstration, No appt. nec. free installation service dept. Open 9.30-6pm six days a week, (close 5pm Sat).

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COVENTRY HI-FI, 126, Church Lane (off Walsgrave Road), Coventry, CV2 4AJ. Tel: 0203 440529. Quad sales & service agent, Pioneer Reference Point, Kenwood, Aiwa, T.D.L. B&W, Tannoy etc. Private listening room. 2 year guarantee on all new hi-fi. Open 9.30-5.30 Mon-Sat. Closed Thursdays.

ELECTRO CENTRE, 244 Soho Road, Handsworth, Birmingham, Tel. 021 554 1878. Full range of HiFi, Pioneer, Technics, Kenwood, JVC, Sony, Aiwa, Akai, "Guaranteed the lowest price in the UK". 24 hour mail order facility available.

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MUSICAL APPROACH, 37 High Street, Aldridge, nr Walsall. Tel 0922 57926. Linn, Arcam, Rotel, Royd, Heybrook, Marantz, Teac, Celestion, Apollo, Target, and others. Mon-Sat 9.30 - 5.30. Closed Thursdays. Home Cinema equipment stocked. Dem rooms, service dept. Free installation and credit facilities. Free parking at rear of shop.

SOUND ACADEMY, Just off the high Street, Bloxwich, Walsall, W. Midlands. (Ample free parking). Tel. 0922 493499. Albarry, Art Audio, Acoustic Energy, Arcam, Audiolab, Audioquest, B&W, Bose, Chord, Cyrus, Cable Talk, DPA, Ensemble, Epos, JPW, Kef, Reference, Marantz, Meridian, Mission, Moth, Musical Fidelity, Nakamichi, Ortofon, Project, Quad, Roksan, Tube Technology, Triangle and many more. Open 6 days a week. Mon-Sat. All major credit cards taken. Part exchange, enquiries welcome.

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SCARBOROUGH HIFI, 14 Northway, Scarborough, North Yorkshire YO11 1JL. Tel. 0723 374547. Albarry, Aura, B&W Matrix, Cyrus, Pioneer, Philips, Marantz, Cabasse, Bose, Tannoy, DCC wide screen and lazer vision. Home trial facilities and free installation, service dept. Access/Visa, Credit charge, £1,000 instant credit/ Amex/Diners.

THE SOUND ORGANISATION (YORK) 2b Gillygate, York, YO3 Tel. (0904) 627108. Linn, Meridian, Micromega, Naim, Rega, Arcam, Creek, Nakamichi, Mission, Denon, Epos, Royd, Rotel. 3 single speaker dem rooms, appts preferred, home trial facilities, free install, service dept. Credit facilities on request. Access/Visa. 10.00am-5.30pm. Tues-Sat. Sony dealer award nominated '86, '87 and '88.

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SCOTLAND

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ABERDEEN

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IRELAND

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Jazz

Simon Hopkins



PRAXIS
Sacrifist
SUBHARMONIC SD7002-2

● So it's album No. 2 for Praxis, an ad hoc New York group assembled by bassist and producer Bill Laswell. Last year's debut was genuinely one of the records of the year - I said so then and still think so - but *Sacrifist* leaves it standing.

The core line-up remains the same: San Franc-iscan avant metal guitar wunderkind and theme park conceiver Buckethead; funkateer bassman Bootsy Collins; and the latter's longtime P-Funk colleague, keyboardist and organ maestro Bernie Worrell. But this time out they're joined by some extraordinary talent: alto saxist John Zorn - no introductions necessary here, surely; former Napalm Death drummer (not to mention Zorn and Laswell's chum in the awesome power trio Painkiller) Mick Harris; Yamatsuka Eye, vocalist with Japanese dadaist pop-thrashers Boredomes and with Zorn's own Naked City group; and

Andy Hawkins, Gabe Katz and Ted Epstein AKA funk-dub-thrash trio Blind Idiot God.

I have to confess that when I first clapped my eyes on this expanded line-up, my heart sank a tad. What originally appealed about Praxis was their compactness, cohesion and discipline. Like Naked City, they were a small bunch of guys summoning up a city's worth of sound. Any such reservations were blown away - along with my head - by the pulverizing onslaught of the opening track, *Stronghold*.

The group slam from speed metal to dub reggae to screaming noise-for-noise's-sake to superfly funk; from gibbering tortured vocals to virtuoso psychedelic bass solo to jaw-drop HM guitar freak-out (someday, I swear, Mr Buckethead will be a hero to a generation of pale, skinny adolescent boys who all wear waste paper buckets on the bonce and play billion mph guitar). Yet despite this willful cut-and-paste - better make that slash-and-bolt - genre-pillage and despite an expanded line-up - expanded to over twice its original size, that is - Praxis still have a discipline, a leanness that's quite lethal. This music is the essence of "future shock". One day all pop records will sound like this; what will Praxis do then?

KAZUYUKI K NULL/JAMES PLOTKIN
Aurora
SENTRAX STC43 CD

● The world's economic base has moved firmly to the Pacific Rim, we're told by our elders and betters. Yeah, well, maybe, whatever that really means... I do know that a good third of the finest records I get to hear these days - and that's "finest" as in "most inventive, shocking, enjoyable and astonishing" - have some kind of Japanese connection; either made by a Japanese group or

appearing on a Japanese label of featuring the startling contribution of some Japanese musician.

The pummelling grind of Zeni Geva, the absurdist dada-thrash of Boredomes, the mesmerising punk-pop of Shonen Knife - surely the most engaging pop group to emerge - anywhere - since The Sugarcubes, the genuinely scary, desolate landscapes of Haino Keiji's *Fushitsusha*, the all-consuming gumbo served up by producer-composer Seigen Ono... this is some of the most exciting music being made anywhere in the world. This is the voracious, can't-beat-em-then-absorb-them, consumerism-as-existentialism culture that gave us manga comics and anima films and the best monster flicks ever. The next few records reviewed here (and to some extent, with Y Eye's contributions so vital, the Praxis album should be included too) cover a huge range of styles and sounds and are no more truly jazz than they are metal or pop or ambient, but they've all critically absorbed the central spontaneity-aesthetic at all jazz's heart, and that, for my money, gives them greater claim to the mantles of Miles and Coltrane and Free Jazz and the best Jazz-Rock and The New Thing than all the world's respectful, but tired, dead-at-twenty, jazz-as-ad-soundtrack practitioners.



First up, KK Null and Jim Plotkin's beautiful *Aurora*. Null leads the group Zeni Geva, a monstrous vehicle for his noisier leanings, reviewed elsewhere this month. He's also the creator of some pretty ravishing improvised ambient music. I talked last month about Zorn's foray into ambient, the quite frightening *Absinthe*, and about the slow but surely unstoppable growth of a sort of anti-rave ambient, an ambient music which, if it could be equated with a trip at all, would certainly be with a bad one. Check out the music of Thomas Koner, Lull, Final, Techno Animal and PGR for further evidence - if you truly need it - that the early, beautiful experiments of such genuine mavericks as La Monte Young, Terry Riley, John Cage and Morton Feldman could be taken in a more involving and meaningful - if terrifying - direction than the tedious sub-Floyd doodles of the Orb and co.

Null turned in a fine example of this

close your eyes and see



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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".⁸

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.

ARCAM

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World Radio History

kind of music last year on *A New Kind of Water*, an album of duets with Australian guitar player Jim O'Rourke. On *Aurora* he's joined by James Plotkin, of American improvising prog-thrashers Old (and check out their two albums - on Earache Records in the UK - for satisfying evidence that the legacy of King Crimson isn't lost to the world - thank the Lord). The really extraordinary thing here is that two musicians capable of such obliterating, ferocious music as that of Zeni Geva and Old can invest music as minimal as *Aurora's* with such beauty. By turns eery, bleak, lush and even industrially harsh, the blasted drones that sweep through this record, at times underscored by throbbing pulses and at others simply hanging in air like some mesmerising sound sculpture, at once recall three decades of minimal and ambient experimentation and yet sound so damed fresh. Fantastic, highly recommended stuff.

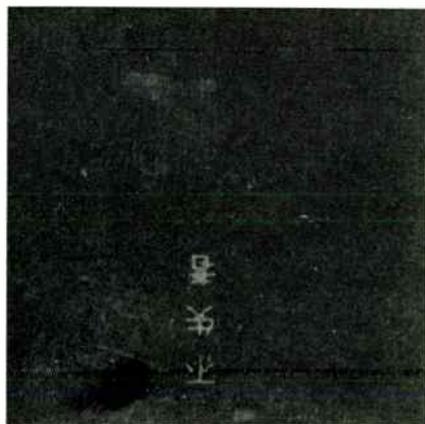
FUSHITSUSHA

Fushitsusha

PSF RECORDS PSFD 15-15

● I touched on this group a couple of months back, in a review of their appearance on Zom's Jap based Avant label. Fushitsusha is the realm of guitarist Haino Keiji, of whom I can tell you regrettably little. This double CD comes with a beautiful black 20-page booklet printed on rice paper, written entirely in Japanese; the sleevenotes may well be incredibly illuminating, but somehow I suspect not.

So the stories, the rumours... Keiji never appears without his shades (black, of course). Keiji's albums come pretty much exclusively packaged in black, with the black type often simply in relief or spot gloss. Keiji's been kicking around the Japanese music scene for a good twenty years, in the process building up a fantically adoring following, many of whom record every concert. Keiji hates



recording studios, so pretty much all his records (this double is a case in point) are live recordings. Last year's album on Avant was a studio record and Keiji ain't happy about it. Keiji listens only to Mediaeval music and 70s hard rock. Keiji plays live through eight Marshall stacks.

And above all Keiji is an obsessive; obsessive about his clothes, obsessive about his music, obsessive about his album artwork, obsessive about Christ knows what else.

I can't confirm or deny any of this. To be honest, I'm not much bothered. I can say this: Haino Keiji is the most extreme improvising rock guitar player to emerge since Robert Fripp (see - I said we'd get round to Crimson again). The thirteen pieces on this set will scare the pants off you. The band lurch from scratchy punk riffing to bludgeoning metal to chilling ambient droning. Through it all Keiji moans and screams and coaxes from his guitar (not to mention, I guess, his eight Marshalls) horrific chords and the odd fifteen-or-more-minute solo that's mind-boggling in its range of ideas and sounds: a grab-bag of Fripp and Derek Bailey and Bitches Brew-period John McLaughlin and Fred Frith and Hans Reichel and Lord knows what/who else.



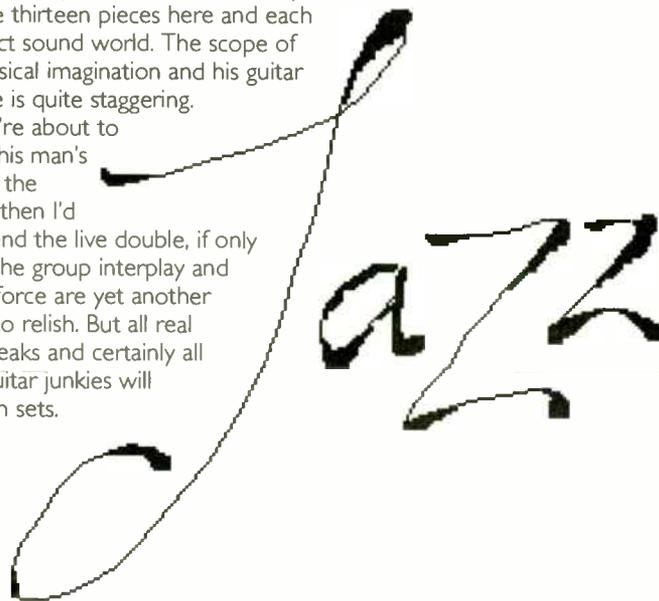
HAINO KEIJI

Live

PSF RECORDS PSFD-38

● And this is Keiji live and solo, "just" guitar and vocal, no overdubs. I could say that it's more of the same, but of course nothing's ever quite the same with Keiji. There are thirteen pieces here and each is a distinct sound world. The scope of Keiji's musical imagination and his guitar technique is quite staggering.

If you're about to explore this man's music for the first time then I'd recommend the live double, if only because the group interplay and its sheer force are yet another element to relish. But all real improv freaks and certainly all serious guitar junkies will need both sets.



**SUN RA
Outer Spaceways
Incorporated**

BLACK LION BLCD 760191

● An essential CD reissue of a 1968 session by the late and very great Mr Ra, spiritual godfather - acknowledged or otherwise - of so much of the other music reviewed here. Ra's leading a thirteen piece band, whose style is pitched somewhere between his more wildly psychedelic work and his later, more traditionally swinging records. The music veers from hard bop to screaming Free Jazz, with the usual fantastic contributions from altoist Marshall Alan and tenorist John Gilmore.

There's masses of Ra out there, so god knows where the beginner should jump on - given the vast range of Ra's music this would depend a great deal on your own predilections. But *Outer Spaceways* is cracking stuff throughout and highly recommended to Ra neophyte and fanatic alike (but then, the fanatic won't need me to tell them that).

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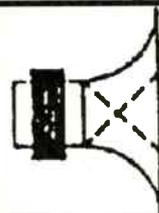
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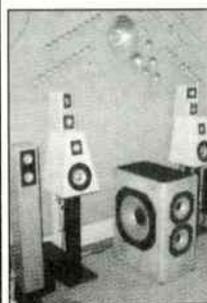
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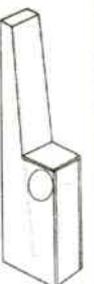
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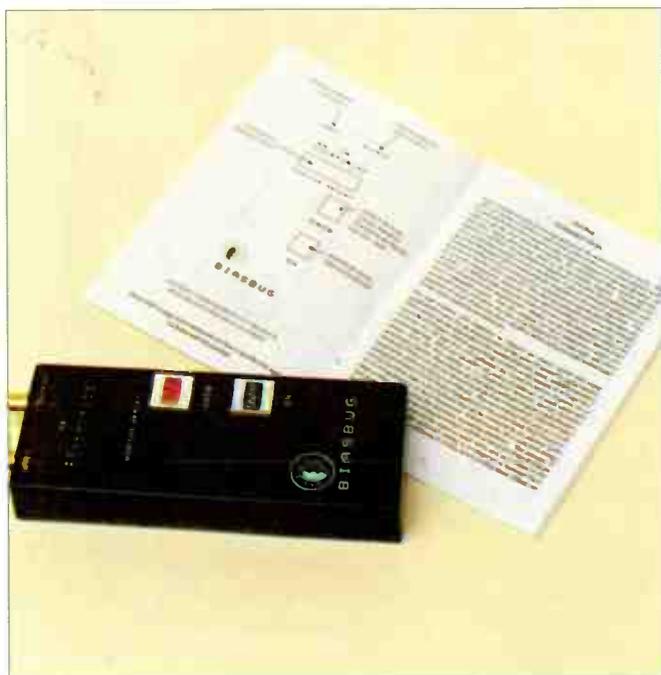
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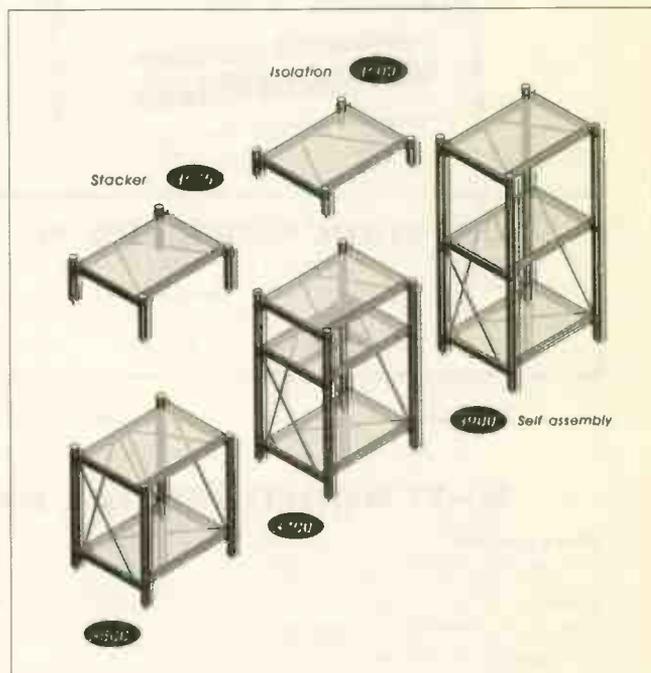
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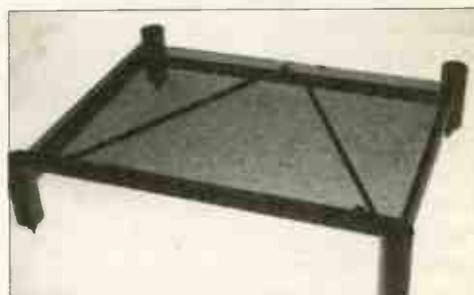
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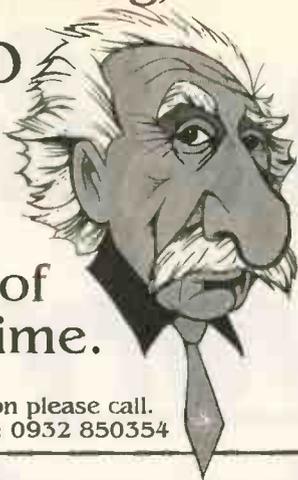
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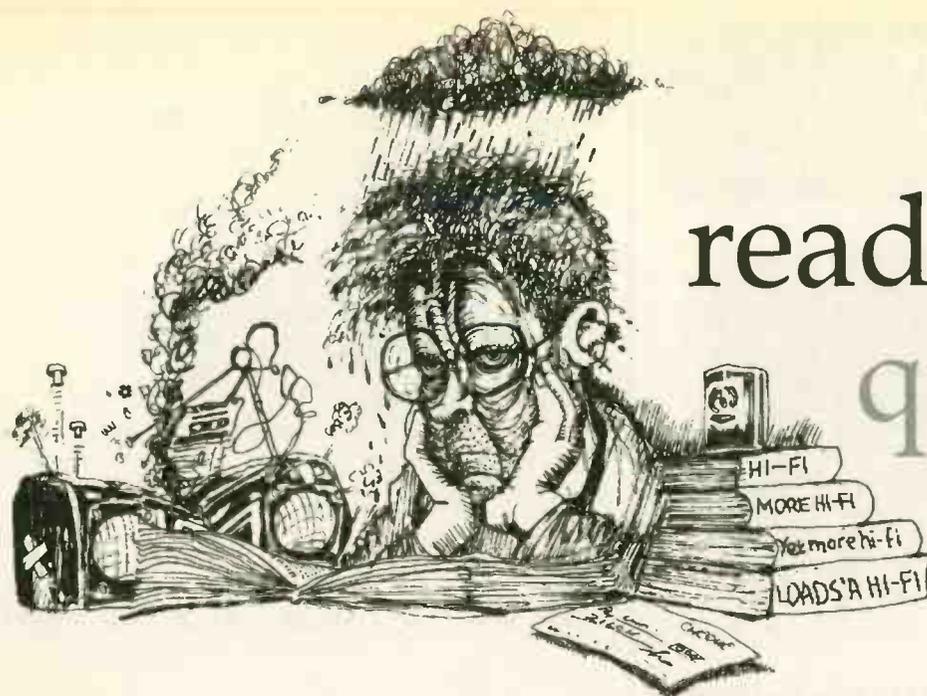
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readers' queries

UPGRADING A STUDENT SYSTEM

As a former student with limited means, my enjoyment of music was derived from hi-fi which was cheap and good value for money. To this end, over the last few years I have put together a simple CD system comprising:

Rotel RCD865 CD player
Leak Stereo 70 amplifier
KEF Coda III loudspeakers

After many hours fiddling to extract the best sound performance from the equipment I finished up using the CD player on a paving stone and the loudspeakers on Sound Organisation stands filled with sand and set on flag stones. I use 2.5mm solid-core mains for 'speaker cable (6m lengths) and 0.5m long Sarek interconnects. Home made mains clamps are used on the power supplies to the CD player and amplifier.

I am very satisfied with the sound of the system - it is detailed with a warm and open sound stage. The bass is very extended with superb timing and control. The reproduction of string instruments is truly superb and vocals are well related. The weakness of the system arises when the music becomes very busy. Sometimes the mid-range

Write in with your problems to Hi-Fi World, 64 Castellain Road, Maida Vale London W9 1EX. Our panel of experts will endeavour to solve them or at least offer some practical advice

becomes less controlled during complex percussion and/or electric guitar sections of music.

Now that I am more affluent than in student times, I wish to purchase a better system. In my attempts to do this I have auditioned a Denon PMA350II amplifier with KEF Q60s and a Linn Intek amplifier with Rega Kytes. In both cases the source was a Rotel RCD965. The sound of these systems was well liked, but neither offered substantial (if any) performance improvement over my current set-up. The sound of a Linn Intek driving Linn Index loudspeakers was definitely not liked.

My music tastes vary from Red Hot Chilli Peppers to REM to Pearl Jam to

Beethoven and Tchaikovsky. I have approximately £1,000 to spend on the CD system and would appreciate any comments or help you can offer.

Also, I have a Leak Troughline mono tuner which has a wonderfully smooth and relaxed sound. Is there any way to add a stereo decoder for a reasonable price?

**Richard Ellis
Swallownest,
Sheffield.**

A modern Class A amplifier will not only give you the detail and open soundstage you like, but will also sound a lot cleaner and faster. I'd recommend you audition the superb Sugden A21a in combination with a pair of Epos ES11s. This is a combination I haven't tried, but I can see no reason why it shouldn't give excellent results. Find a dealer who will demonstrate such a system by 'phoning Sugden (0924-404088/9) and Epos (0705-407722).

This will be a vast improvement over the transistor Stereo 70 with Coda IIIs and should retain all of the qualities that you like about your existing set-up. The Sugden A21a has a highly detailed and strongly etched sound and the ES11s are rich and smooth, they've

provided me with many hours of enjoyment in the past. They have enough energy and boogie factor for Red Hot Chili Peppers and REM, but also subtlety and neutrality for Beethoven and Tchaikovsky. They'll certainly be a vast improvement over the KEFs which are now a bit long in the tooth.

The ES11s do tend to be quite room and placement sensitive, so I'd recommend you try and get a home demonstration first, and use the proper open frame stands, since they're the best match for them by far. The Sugden is quite low powered - so should the Epos not suit your tastes be careful to choose alternative loudspeakers that are high sensitivity - around 87dB or more. These include Heybrook Quartets, Snell Ks, Harman Kardon 0500s, Triangle and Cabasse speakers, and most horn loaded designs.

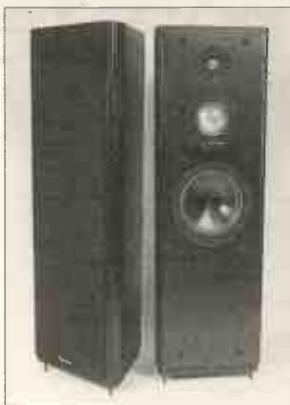
Whilst you're upgrading the rest of the system it would be worthwhile to look at the CD player. Fortunately, there is a very cost effective upgrade path open to you, but you'll need to do a bit of grovelling. If you ask Rotel's service

Continued on page 105...

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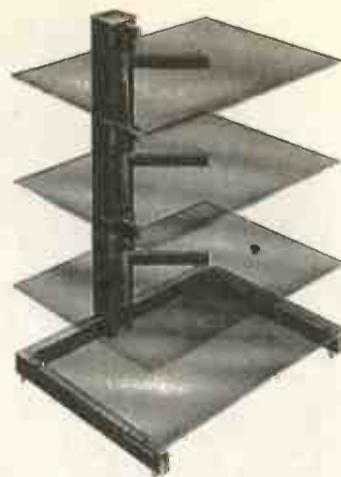
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.... Continued from page 103

department (Tel: 0908 317707) very nicely, they can fit a Discrete board into your 865 to bring it up to 965 Discrete performance. This is quite a complicated upgrade and not a standard service, but for £125 or so is extremely good value for money. This has the additional advantage of raising the rather low 0.9V output of the 865 up to a full 2V, the Philips standard.

GT Audio can service, align and fit a stereo decoder to your Troughline. This again will increase the output enough to better suit a line level amplifier. Contact: GT Audio, tel. 0895 833099, or Radlett Audio, tel. 0923 856497. **DB**

FINAL UPGRADE

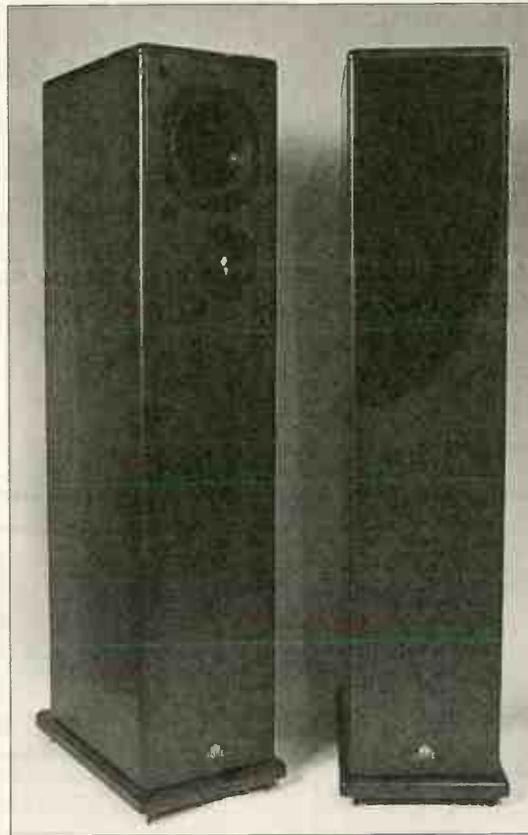
After many years of upgrades I have arrived at a point where I don't know what to do next. My next is possibly my last so I have decided on a final upgrade for the speakers and CD. My present system comprises:

Marantz CD 52 + Arcam Black Box, Audio Innovations 200MM pre + AI series 800 III power amp. (QED interconnect), Celestion DL 4 speakers on Partington Pro 24 stands. (Cyrus Solid Core Cable)

I am pleased with the treble to midrange detail since upgrading the amp from a Mission Cyrus I, but the overall sound has a lack of enthusiasm. The bass quality is precise, but lacks drive and substance. My previous amp (which I've still got) seemed to be better for getting my feet tapping with rhythmic tracks, but doesn't have the refinement and detail that I listen out for. The emotion doesn't seem to exist with the transistor amp. This is why I changed to the AI valve amp, but this doesn't offer

quite the drive that I want from rock and dance tracks. Is there a solution that allows me to have the best of both worlds? My main taste in music is around 80% soul/easy listening and 20% rock/dance. I have thought of many ways to overcome this problem and it is this that is causing me so many sleepless nights. The question is which options shall I take and in what order?

1. I have considered changing the speakers for something



Castle's Howards - a good match for valve amplifiers.

with a bit more emphasis on the bass to compensate for the amp. The speakers must be used against the wall in a room 10x20ft & 10ft high and look visually reasonable. (i.e. no Snell/Audionote/Fuller speaker look alike). Budget approx. £700.

2. Changing the source to a Roksan ROK or Micromega CD.3, possibly with a Pink Triangle Ordinal to give a more aggressive edge. Budget approx. £2000

3. Buying a transistor power amp to drive the bass unit of a suitable bi-wire speakers to

create a hybrid system. I could use the two outputs from the preamp, one for the tweeter using the Series 800III valve power amp and the other for the bass unit. Can this combination give me what I require and can it work? How about an Alchemist Kraken power amp to give this rocking factor? Budget approx. £500

What I have listed above are my plans for my system. I will upgrade the components one

at a time, but keeping my amp. As I am reasonably young, 22 next year, I want something that will last. Can you also suggest some cables and interconnectors which aren't too expensive as I don't really believe there is a big difference between a good quality one and a super deluxe silver FPS Teflon insulated one.

**T.K.Wong
Brandon Hill,
Bristol.**

The DL4s, as I remember, have a rather soft mid and not the most dynamic and punchy bass around, so I

think that these may be part of the problem. Also, rather than change your amplifier, or adding a transistor amp to drive the bass, I'd stick with the Series 800 and find a loudspeaker that matches it really well. Finding a good amplifier and loudspeaker combination is half the battle, but the most difficult part.

If you're after a little more power in the bass and some attack in the midband, then Castle Howards might be ideal, especially as you have a good sized room. These £995 floorstanders have average sensitivity, but offer a very easy impedance load to the amplifier - important for valve amps. They should give you a deep, but well controlled bass with a clear and spacious midband and sweet treble. They're also beautifully made and elegantly styled, so they should suit you especially well. Insist on a home demonstration first though, because they can be a little room sensitive.

With these speakers you'll need a new CD convertor and with a Pink Triangle Ordinal - the one I would recommend - your system should really start to sing. The system can then be fine tuned with careful selection of cables. I'd use Campaign Audio Design's silver plated copper interconnect, which for £28 is a bargain, and Ortofon's £5/m SPK200 high purity copper stranded loudspeaker cable designed for bi-wiring. **DB**

You could also try the Triangle Norma, since this is a very sensitive speaker, yet can be stood against a wall to augment its bass. **NK**

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Continued on page 107... ▶▶

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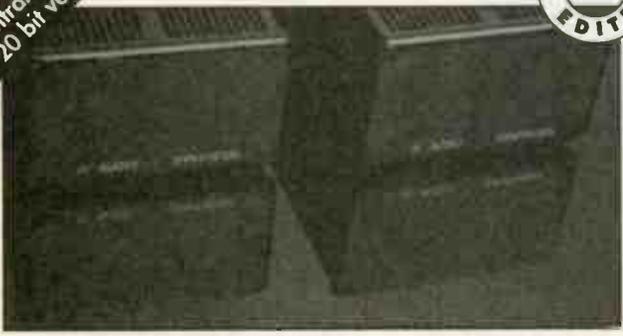
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the new year. What are the best speakers for my system within my £1000 budget? The system comprises a Teac VRDS 10, Sugden SDA1, Concordant Excelsior preamp (an early model with just 1 ECC 83 per channel), a pair of Audio Classic's Leak TL 12+ and a pair of TDL Studio 1s. I also have a Townshend Avalon/Rega 250/AT-F5, Yamaha CT 7000 and a Denon DRM 500 tape deck, but the bulk of my listening is done using the CD.

I listen almost exclusively to classical music, especially choral and song. As a singer myself, I enjoy the clarity of the current set up and its ability to reproduce deep bass. However, I've always felt that the TDLs leave a bit of a "hole in the middle" and as I listen to so much vocal music, I'd like to improve matters in this area without sacrificing imaging, real bass, and treble clarity. Recently I've also noticed a slight hardening of male vocal and choral music at higher volumes. My room presents a problem in that being a through lounge/dining room, the speakers fire across the width of the room and can't be more than 6" from the wall. I sit about 7 feet from each speaker. The new speakers musn't be much bigger than the TDLs as my wife is very forgiving - but only up to a point!

There, I said it was straightforward didn't I? Thanks in anticipation.

**Paul F. Roberts
Westhoughton,
Bolton.**

Unfortunately, this is not straightforward at all. To get real deep bass, good vocals and enough sensitivity for your Leaks is impossible for £1000. The cheapest option I can think of is to swap the TDLs for a pair of Heybrook Quartets and a powered subwoofer - a REL strata for instance. This, with appropriate stands for the Quartets, comes to around £1300.

The problem is that high sensitivity and real deep bass don't go hand in hand. You are getting good bass from the TDLs, but I suspect that the 'slight hardening at higher volumes' that you've been hearing is the amplifier clipping and running into distortion. The Quartets are much more efficient and will be driven much more easily by the TL12+s, vocals won't harden at high volume and the whole sound will be much more energetic and detailed, but you'll miss the bass of the TDLs.

So you see, it isn't quite as simple as you thought. We discussed this at length in the office and thought of Snell Ks which would also have to be used with a subwoofer, but again take you past your budget being £799 without stands. The Castle Howards wouldn't need a subwoofer and might work, but they aren't as sensitive as the Quartets or the Snells, and they have a dry bass, rather than the rich bass quality you are used to with the TDLs. The Impulse H6s could also be worth an audition. These cost around £1350, are sensitive and have a good bass, but you'd have to arrange a home demonstration to see if they are your cup of tea.

I'm sorry not to be more definite in my answer, but you really are asking the impossible. Try the above options though, I hope that one will appeal. DB

A VINYL SYSTEM FOR ROCK

As a result of a lack of finance, work abroad and for various other reasons, my hi-fi has been sadly neglected over the years. Now I would like to bring it up to date and improve the sound quality. However, I face two dilemmas in deciding how to proceed, which I hope you will be able to resolve.

Firstly the turntable. This is a Linn LP12 which has not been updated since receiving

'Nirvana' mods years ago i.e. no Valhalla, no Lingo, no new suspension bits etc. It still has the 'S' shaped Basik arm with an A&R Cambridge P77 cartridge installed.

and to satisfy the wife a pair that 'blend into the surroundings' a bit more. I am afraid these factors may limit my choice somewhat.

The alternatives are



The REL Strata reproduces real deep bass.

I have about £800 to spend on the turntable, but the cost of bringing it fully up to date appears to exceed my budget. I was therefore wondering if I should consider junking the LP12 and going for a Gyrodec instead, as my 'final' turntable to play my 350 LPs on? The Gyrodec also has the appeal that I can keep it set up properly myself without having to have a dealer look after it as one does with a Linn. Does the Gyrodec really compare to a Lingo'd Linn?

My amp is a Naim 32/110 (old cases, 110 updated to 140 when in for repairs). The 32 pre-dates the Hi-Cap power supply and one day I may have it modified to work with a Hi-Cap, but not until my second dilemma is resolved: the speakers.

These are a pair of A&R Cambridge Arcam Ones. They are OK, if perhaps a bit thick sounding in the bass. They are mounted on open frame metal stands and my wife hates the sight of them.

Due to the room layout I need a pair of speakers that will work up against a wall

therefore small floor-standing units no larger than Tannoy 611/Naim IBL size or shelf (not stand) mounted miniatures. I would prefer the floor standing option as my taste in rock music demands more bass than one could expect from a miniature. It would also be an advantage if there was an alternative choice of finish to the usual Black Ash (again to keep the wife happy).

As to the sound I am looking for, the closer to a 'live' performance the better. I once heard a pair of Gale speakers sounding brilliant, but looking awful with chrome stands and metal grill.

Finally, looking to the future, all your articles on valve amplification have set me off wondering if, one day, I should take the plunge and go for the tubes as an alternative to having the Naim updated for a Hi-Cap, so the easier the speakers are to drive the better.

Perhaps with all the constraints of what the speakers look like/where they

Continued on page 109....





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.... Continued from page 107

must be positioned, am I asking too much to find a domestically acceptable efficient loudspeaker?

Budget for the speakers will be £600-£700. I know I could combine the budgets for the turntable and speakers giving enough cash to have the Linn fully updated but the speakers have got to go!

The rest of my system consists of a Nakamichi 480

modification consists of: new inner platter and spindle, main bearing housing, sub-chassis, arm board, replacement of springs, grommets and drive belt. This upgrade, which basically amounts to a whole new turntable, is a relatively affordable £285, but the old 'S' shaped arm should definitely go. The cheapest replacement would be a Rega RB250 at £100 or so. This would enable you to use a

The Gyrodec, as you point out, could easily be maintained by yourself and is a very 'fuss-free' turntable to use. The question of whether the sound could match that of the Linn is really up to you to decide on in a demonstration; it's really a matter of personal taste. Many believe that the Gyrodec is superior, but others believe the contrary. The Gyrodec would also suit the Rega RB250 + P77/DL304 combination, so you may be able to find a dealer who can do an A-B comparison for you. This combination comes to around £850 and you should get a reasonable trade-in on your Linn so both options will cost around the same.

As far as loudspeakers go Rogers' LS8a/2s are tall, floorstanding, have good, punchy, energetic bass for rock, are easy to drive should you want to use a valve amplifier in the future, available in a range of finishes and would leave £200 or so of your budget left over to go towards the rest of the system, say the latest Naim interconnects and loudspeaker cable, or some new records. They'll have to be moved out a few inches from the wall, but they should sound superb with the Naim amplifiers. **DB**

TDL BASS

My system consists of a Quad 67 CD player, Denon DRM-44HX cassette deck, Quad 34 and 306 combination for the amplification and TDL RTL 3 loudspeakers. The whole system is interconnected using Tandy gold patchcords (the ones Eric thought were good value) and Ortofon SPK200 bi-wire 'speaker cable (Dominic Baker recommended these on page 23 of the February issue).

The new speaker cables have been a recent addition after having experienced a rather boomy bass from the TDLs which strangely enough increases when listening 'off

axis'. I thought that if you guys at Hi-Fi World had got good results using this cable in your review, then why shouldn't I?

I have since purchased TDL's own spiking kit to try and isolate the boxes somewhat. The boxes themselves are quite close to a brick column which supports the fire place in the upstairs room (I live in the basement). The actual back wall is a few feet behind the rear of the speakers themselves. Could this be the cause of my over exuberant bass response? This room is also my living room and bedroom, so I don't want to have two great big speakers in the middle of the room if I can help it. The floor of the room is solid concrete and its dimensions are approx. 20ft by 15ft.

The whole tonal balance seems to improve when the bass tone control is sloped by one notch (100Hz position) on the pre-amp. This is, of course, not a perfect situation, having thrown out my graphic equaliser more than fifteen years ago. How else can I improve the bass quality of my system? Your advice would be welcomed.

After reading Dominic Baker's "Six steps to getting the best results from loudspeakers" in the February issue, I read his comment (Step 6) about 'running in' speaker cable and quietly laughed to myself at the thought of not taking the cable over 30 miles per hour on the way back from the shop. I couldn't believe how true this could be after just swapping my speaker cable from Cabletalk 3 to the forementioned Ortofon SPK200. To begin with the sound was really thin and lifeless and I began to wonder whether or not I had wasted my money. As the day progressed the sound balance gradually shifted and by switch-on the next day I was more than happy with the

Continued on page 111....



Rogers LS8a/2s offer excellent performance.

cassette deck, Creek 4040 tuner and a Sony CAR Discman, one day (who knows when) to be replaced by a 'proper' CD player.

Any advice you can give will be much appreciated.

**Mr. David E. Oddie
Saltney,
Chester.**

If you were to keep the LPI2, the money you have would be best spent in the following way. The Linn Cirkus

good, cheap moving coil, perhaps the Denon DL304, or if you want to stick with MM, your P77 is one of the best and it would be well worth getting it checked out and a new stylus fitted; both will work very well in the Rega arm. This route would cost you around £500, leaving a little spare for improvement elsewhere in the system, but as you say it'd have to be set up and regularly checked by a Linn dealer still.

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sound quality. It could have been me getting used to the sound but no, I think I trust my ears more than that.

By the way, when are you going to produce another one of those great CDs? Keep up the good work!

**J. Buckley
Wakefield,
W. Yorkshire.**

We had a quick word with John Wright of TDL on this

positioning be impossible, then there are some tricks that can be resorted to. Try putting a bipolar electrolytic (non-polarised) capacitor of 470µF-1000µF in series with each speaker to reduce the bass - you'll need to experiment with the value. Alternatively, remove the bi-wire links and take the signal leads direct to the upper treble unit terminals. Connect the red treble terminal to the red bass terminal below it through a

before you find the solution that suits your circumstances best. Specialised capacitors and resistors of the sort required can be obtained from The Speaker Co. (0625-500507) or Wilmslow Audio (0565-650605). **NK**

MATCHING AN AMC CVT3030

Unlike most of your correspondents, I have recently completed a near total upgrade of my hi-fi system (only the tuner remained the same). I am writing to you in the hope that you might be able to advise me on a sensible continuation path, as you seem to use the same sort of gear as I purchased.

The relevant equipment for my query is: Michell Mycro, RB300 am, Goldring 1012 cartridge; AMC 3030 amp; Ruark Broadsword loudspeakers (new crossover and set up to bi-wire). Speaker cable is Audioquest type 4.

As someone who cannot leave well alone, I am already considering how the system can be fine tuned. The cartridge is about a year old and ripe for renewal shortly. Any suggestions? Perhaps just a new stylus, or a full upgrade; I'd rather not go down the moving coil/pre-amps road just yet.

Of rather greater concern is the perceived response of the speakers; despite doing many of the 'right things' I cannot help but feel they are not ideally suited to the amp. The balance seems to be a little too heavily weighted towards the bass/mid range at the expense of a light, active top end. The amp also seems to have to work quite hard to drive them; there is a lack of 'ease' about the response. I tried a pair of Snell Ks (yes, really) and had the reverse problem of all top and no depth elsewhere. I can't have floorstanders as it is a low

ceiling'd cottage and feel that more sensitive speakers would suit the AMC better. I recently had the chance to audition a pair of Linaeum speakers and was impressed.

My tastes are almost exclusively jazz, with some classical and I'd rather not break the bank (say up to around £750). Any thoughts on system enhancement gratefully received.

**Rod Bushell
W. Wratting,
Cambs.**

We've heard good reports of the Linaeum, with its ribbon tweeter. They are imported by Absolute Sounds, who told us there would be no trouble with matching to your amplifier. The other speaker we recommend for valve amplifiers is the Heybrook Quartet, because its excellent balance of qualities have broad appeal. It's an energetic sounding stand-mounter with a revealing midband, easy soft-dome treble and fullsome bass. The price is about right for you too.

The simple answer to your cartridge upgrade query is to buy a new uprated stylus from Goldring, since the 1000 Series share the same body. **NK**

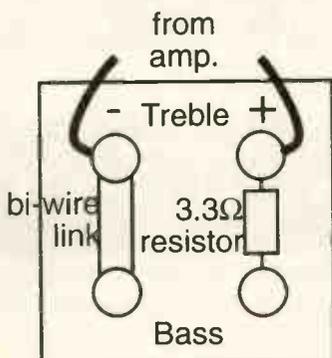
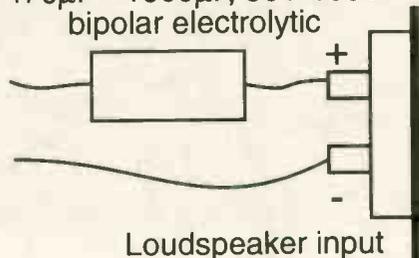
Not quite as sensitive as the Quartets, but excellent all the same, are the ProAc Studio 100s. They are a lively, bright sounding loudspeaker and image particularly well. They should perform superbly with the AMC. **DB**

TIME FOR AN UPGRADE?

I should be glad of your advice as to replacement speakers for my existing elderly 'set up' which comprises two Quad II amplifiers and control unit, a recently added Quad CD player and two Lowther Acousta speakers. Other than the CD player, these all date

Continued on page 113....

470µF - 1000µF, 50V-100V bipolar electrolytic



Bass output of the TDL RTL 3s can be reduced in two ways.

one, since he's been designing loudspeakers longer than most and knows the problems.

John felt that in your room a metre (3ft or so) between the loudspeaker and the rear wall was about right and that you should have them facing along the length (longest dimension) of the room. We both felt that your Quad 306 wasn't ideal for these speakers; it will not sound 'tight'. However, it does have light-ish bass, so at least you will not be suffering accentuation from this source.

Should optimal

3.3Ω, 7W resistor. This will reduce the signal to the lower bass/mid section by around 1dB or so, bass being reduced more than midband due to the rising impedance of the midrange unit. Don't worry about the electrical damping, as many people do, because there's an inductor with DC resistance in it in series in any case and, as KEF point out, the electrical damping component in any loudspeaker is of less influence than the acoustic and magnetic components.

The values quoted above are good starting points. You may well need to experiment

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.... Continued from page 111

Quad IIs have been serviced several times by Quad. The turntable is a Dual 1229 with Shure cartridge, but although I have a large collection of LPs my priority now is for my growing CD collection. My musical interest is exclusively classical.

I do not really want to replace my valve Quads which with the right speakers I feel can still give very acceptable results to a non-expert such as myself. The expense of a complete replacement is not worthwhile if an adequate improvement can be achieved by replacing the aged Lowther speakers, which I believe no longer give good enough performance by modern standards, especially in the bass range, although in their 'day' I have felt that they otherwise give a very 'true' sound.

Quad ESLs, which I understand have to be sited at a distance out from a back wall and against a side wall, would not fit into the sitting room environment where my set-up has to be located. The room measures approximately 24' x 18'. I am prepared to spend an equivalent amount on an alternative to ESLs, which preferably should be floor standing rather than on pedestals.

I have recently received a number of brochures from an apparently revived Lowther organisation relating to their new speakers in the Logic series, a copy of which brochure I enclose, and in the Fidelio series, the Fidelio and the Academy, the styling of which I prefer because they are floor standing. All are said

to be acoustic horn type, as are my present speakers, and appear to be the only speakers currently using this method. Is it perhaps now obsolete? Much play is made of their incorporating the Bico system and Hi-Ferric Coil Control.

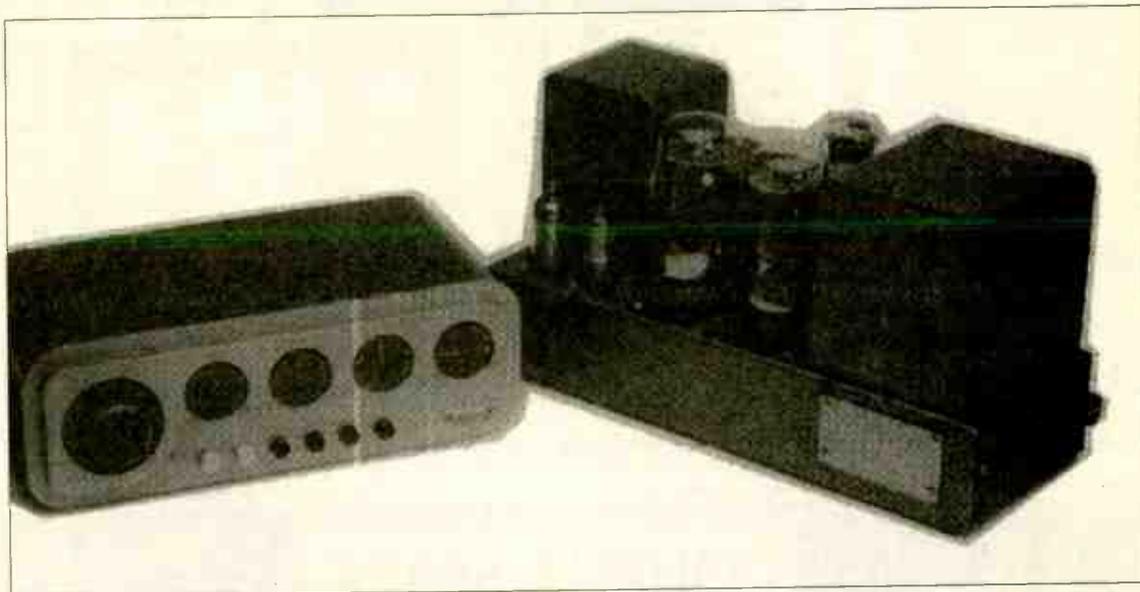
I have also obtained brochures of the ATC SCM 10 and 20 speakers by Bill Woodman, which however require stands, and the Monitor Studio Series, Number 20 of which is floor standing and which is

produces just 12watts. You cannot match an amplifier of such low output to ATC loudspeakers, for example, which are known for their insensitivity, especially in such a large room. You'll get very little volume.

A sensitive (90dB for 1watt) conventional loudspeaker that should suit the Quad II is the Cabasse Prao (£480). Ideally though, you need even higher sensitivity and there few options available. Our own KLS-2 (94dB for 1watt) was

sure you will find interesting. We'd suggest you try to get a demonstration before you part with your Lowthers and Definitive said they would part exchange them too. **NK**

The obvious starting point is to replace the drive units in your Acoustas with current PM7As (£440). This will then exceed the performance of most contemporary designs. The bass, if not extended, will be fabulous, and the 100dB/watt sensitivity will combine very well with the



The Quad IIs need sensitive loudspeakers.

therefore the most suitable in this respect.

I should be most grateful if you could advise as to which of these speakers is likely to provide the best replacement and upgrade for my existing speakers, or what other alternative you would suggest. I would be especially interested in your opinion of the new Lowther speakers in the present day even though they may not be the first choice now.

H.W. Garrod Woodton, Bungay, Suffolk,

The problem you face is one of limited power output from the Quad IIs. By all means keep it, since this power amplifier does provide a very sweet, if mellifluous sound, yet it

made just for this purpose, but is now available only as a kit (£195) comprising drive units and crossover components, without wood panels, so you would need to be handy with a saw.

That is about the limit of conventional speakers available to you. However, your Lowther Acoustas are highly distinctive in their sound and have some unusual strengths. In consequence, you may find conventional loudspeakers difficult to adjust to and possibly disappointing too, so tread carefully.

Definitive Audio in Nottingham stock a good range of valve amps and compatible loudspeakers, as well as making Living Voice speakers, which use Vitavox drive units. They provided the following view, which I'm

Quad II. This will leave funds for the Audio Innovations 200/L2 pre-amp to replace your existing control unit - a big improvement.

If the refurbished Acoustas fail to satisfy, you have a saleable design that you could part exchange against the wider bandwidth, more even 95dB/watt Horning Agathon (also using Lowther drive units).

Ideally however, you should throw caution to the wind and achieve the full concert hall experience with the Quad IIs driving the Living Voice 'Tone Scout' (104dB/watt), a three-way horn that will make the most of your 24ft x 18ft room.

Kevin Scott Definitive Audio, Nottingham. ('phone 0602-813562)

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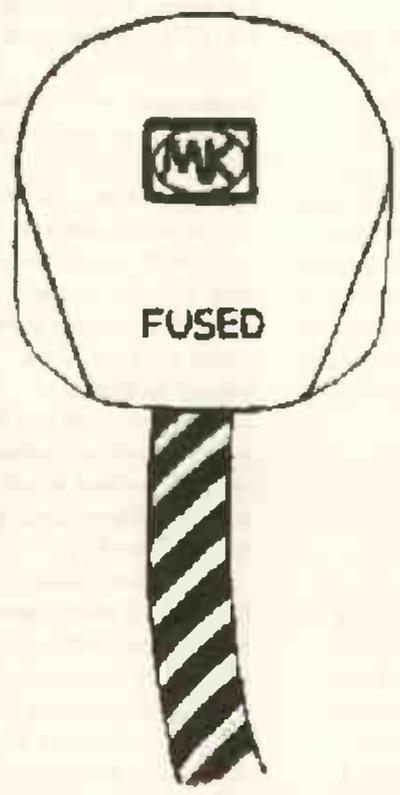
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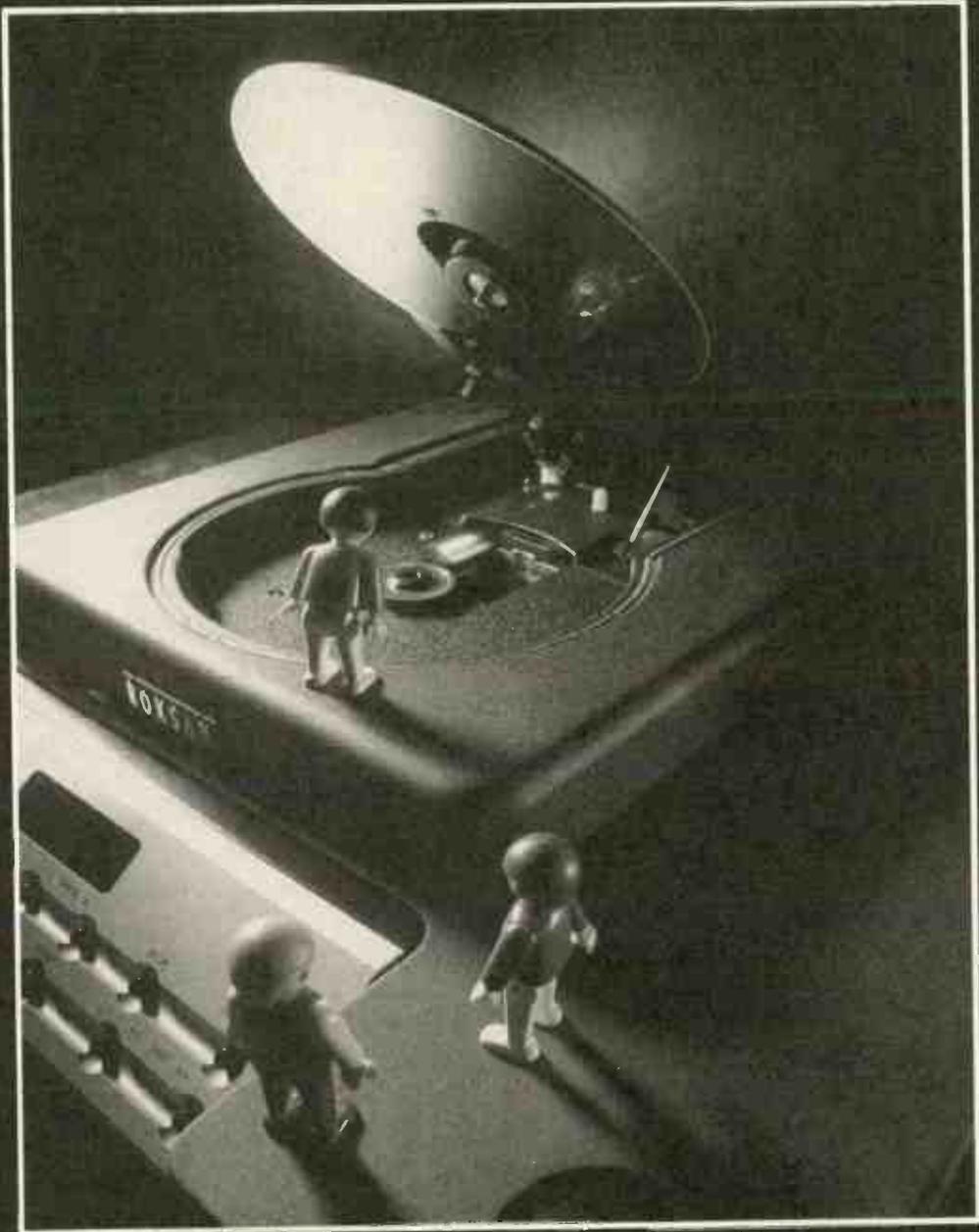
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TRIPODS

AUDIO NOTE

AUDIO NOTE AUDIO COMPONENTS PARTS & PRICE LIST.

We have decided to offer a range of the ultra high quality components used in most of the Audio Note amplifiers to the discerning "do-it-yourself" valve amplifier enthusiast. These components include specially made valve bases, paper in oil signal capacitors, copper & silver foil signal capacitors, Black Gate graphite electrolytic capacitors, acid/corrosive-free silver solder, audio output transformers, valves and many other useful bits for upgrading old or constructing new valve amplifiers.

All prices are excluding Vat, which, if you live inside the EEC will be added to your purchase, after the addition of postage and packing costs.

We accept VISA, Mastercard, Access, Diners, and Amex. to pay this way, we will need your address, card no. with start and expiry dates, you can also pay by bankers draft, Eurocheque or cheques drawn on a UK bank account. Please note that there is a minimum charge on credit card transactions of £20.00.

Delivery is normally about 7 days from receipt of cleared funds, but please allow up to 60 days for some items. If not stock at the time or order.

If any of you reading this have possession of any books which contain information relevant to the subject of Audio Design and which would be useful to share with others, please let us know either by fax or telephone. There is an award of £20.00 (payable in valves or other bits, post free) to anybody who sends us a book which contains useful information about valve amplifier design or theory.

Circuits, Valve Data & Basic Technical Information.

If you would like some suggestions to base a future project around, then we shall be happy to provide you with a circuit pack containing good circuits like ONGAKU, KEGON/KASSAI, NEIRO, GAKU-ON plus several other power amplifier circuits and the M7Tube pre-amplifier, which is the best pre-amplifier circuit we have come across. Just send a stamped self addressed A4 size envelope, together with £5.00 in small denomination, or if you live outside the UK a US\$ 15.00 in \$ bills will do, please do not send International Response Coupons or International money orders, as they cost more to cash than their value.

We can also supply a set of data sheets for the most commonly used valves, ECC82, ECC88/6922, 12AY7/6072A 7025/12AX7WA/ECC83, 6SN7, 300B, 211V14C, 845, EL34/6CA7, 2A3, 6X4, 5U4G, GZ34/SAR4, EL84/6BQ5, 6V6GT, 6L6G, 5881/6L6WG/CT66. Again send a stamped self addressed A4 envelope together with £4.00 in small denomination stamps or if outside the UK another US\$ 10.00 will suffice.

Since nothing really exists which gives a reasonable background to the subject of valve amplifier circuit design, Guy Adams and I have written and assembled a number of articles and extracts from old books which give some background to the subject, do not expect to become an instant expert, but it will serve as a useful reference, for the beginner as well as the more advanced, we have expanded this info-pack to include even more useful information, so if you have already bought the old pack, just send £2.00 or US\$ 5.00. For the full pack a small charge is required, this time £7.00 in small denomination stamps with a stamped addressed envelope, or outside the UK, please send US\$ 25.00.

We do accept a UK cheque or bankers draft in Pound Sterling for the above charges as well

SOUND PRACTICES.

If you are seriously interested in the subject of valve amplifier design, without the usual preconceived notions of what is "good" amplifier design and technology (the traditional view, which has brought us the blessings of the transistor amplifier, has obviously disqualified itself quite monumentally), then SOUND

PRACTICES is the magazine to read, here you will find articles about design parameters, DIY articles for amplifiers and speakers, reviews of new and old. In other words the very subjects that none of the self-serving, advertising led traditional press will touch as they do not enhance the business of their normal advertisers. You can buy SOUND PRACTICES from us at £5.00 per copy (there are currently 4 issues available) or by subscription from SOUND PRACTICES P. O. Box 19302, Alexandria, VA 22320, USA. A regular modern world bargain, and there are practically none of those in Audio today. With enough subscription support SOUND PRACTICES may just bring about the "sound practices" that the hi-fi industry has abandoned for so long. So get a subscription!

OUTPUT TRANSFORMERS.

Specifications.

PP = Push-Pull, PPP = Parallel Push-Pull, SE = Single-ended, PSE = Single-ended Parallel, UL signifies 43% ultralinear taps, as a general rule we do not condone the use of UL-taps, as we consider these detrimental to sound quality. ** Dynaco replacement.

All primary impedances are calculated for Class A operation the main consideration given to maximum dynamic power transfer ability and minimum distortion, rather than meaningless steady state sine- or squarewave conditions.

All our single-ended output transformers are airgapped, and the maximum standing current allowed before saturation is shown in column 5.

All our output transformers have a frequency response well beyond the audible range, typically 20Hz - 40KHz minus 1.5dB, all are IEC-cored with high grade silicon steel laminations, wound with oxygen-free copper wire and supplied with either bell-ends or frames, both with flying leads.

We generally overspecify our transformers by 50% power in Push-Pull (which means that a transformer stated as 25 watts will allow about 35-38 watt peaks, our single-ended outputs are generally over specified by 100%, which means that they will instantaneously allow peaks of double the given maximum power through undistorted.

We do not give any further technical information on our output transformers, as we do not wish to take part in technical competitions, our products are designed to criteria which are and will be understood once they are listened to!

In addition to the output transformers offered below, we offer a design service, where we can supply almost any requirement for wideband transformers, whether for microphones, moving coil cartridges, line input, phase splitter, interstages, driver or power output, we design and manufacture prototypes in-house, the cost for the paper design is £200.00, prototype cost is calculated on a per case basis. We can also produce production quantities.

Sizes are given as Width/Height/Depth, where depth is the depth of the coil itself and width is the length of the core.

PAPER IN OIL SIGNAL CAPACITORS

These handmade signal capacitors are sonically superior to any of the plastic or other paper types we have come across. If you have never experienced the difference that a really good paper/oil capacitor can make in a valve amplifier, then you really should try. Our specially made paper/oil caps have a life, colour, lack of harshness and evenness of dynamic behaviour across the frequency range, which is guaranteed to brighten up your day! Recommended as replacements in old and new valve amplifiers alike (and even in the odd transistor amplifier), and essential for DIY projects. In line with environmental standards, all AUDIO NOTE paper in oil capacitors contain only non-toxic, biodegradable vegetable oil, the paper is specially treated and

impregnated by a method that ensures longevity and sound quality, to enhance optimum performance all round.

Value	DC Voltage	Size	Price ex. UK Vat
0.015mF	400volt	21x9mm	2.85
0.022mF	400volt	35x10mm	3.75
0.047mF	400volt	32x11mm	4.10
0.082mF	400 volt	33x14mm	4.25
0.12mF	400 volt	33x14 mm	4.75
0.18mF	400volt	32x16 mm	5.15
0.22mF	400 volt	35x18 mm	5.85
0.33mF	400 volt	43x18 mm	6.75
1.4mF	400 volt	70x24 mm	14.95
0.0015mF	630 volt	17x9 mm	2.85
0.022mF	630 volt	20x10 mm	3.25
0.082mF	630 volt	33x16 mm	4.55
0.18mF	630 volt	43x18 mm	5.45
0.22mF	630 volt	52x19 mm	5.75
0.33mF	630 volt	52x22 mm	7.25
0.39mF	630 volt	52x26 mm	7.95
0.47mF	630volt	52x26mm	8.85
0.22mF	1000 volt	56x26 mm	6.95
0.39mF	1000 volt	61x26 mm	11.65
1.2mF	1000 volt	72x40 mm	16.75
0.22mF	1600 volt	60x26 mm	9.65
0.22mF	2000 volt	70x29 mm	11.55

All Audio Note paper in oil signal capacitors are axial type. We are preparing a range of very small picolorad value paper in oil capacitors at the moment in addition to the above. The range of AUDIO NOTE paper in oil capacitors is steadily expanding, so ask for values that you do not see.

PAPER IN OIL COPPER FOIL SIGNAL CAPACITORS.

We are currently developing a range of paper in oil capacitors where instead of using aluminium foil as in the above paper caps, we use an oxygen free copper foil with 99.99% pure solid silver lead out wires, these copper foil paper signal capacitors are considerably better than standard offerings. Secondly to "bridge" the price-quality gap between the more standard paper/oil caps and the Japanese handmade silver foil signal caps, we will be offering our own 99.99% pure silver foil signal caps, which are pretty staggering in quality, even if I have to say this myself (as I am the only one to have heard the samples so far) the silver foil caps will also have solid silver lead-out wires. To start with there will be a few values/voltages available.

AUDIO NOTE SILVER FOIL SIGNAL CAPACITORS.

Best signal capacitors available, quality really speaks for itself, used in amplifiers like ONGAKU, KEGON, GAKU-ON and M7tube Silver, handmade in very limited quantities at Audio Notes facility in Tokyo, Japan.

Value	DC Voltage	Price ex. UK Vat.
0.02mF	500 volt	211.75
0.05mF	500 volt	346.75
0.1mF	500 volt	645.75
0.2mF	500 volt	995.75

AUDIO NOTE PAPER IN OIL RESERVOIR

CAPACITORS. Mainly for use in inductor power supplies, but have other uses.

Value	DC Voltage	Size	Price Ex. UK Vat.
2mF	400 volt	30x40x55 mm	26.75
2mF	630 volt	35x45x72 mm	33.65
2mF	1000 volt	45x45x72 mm	41.75
2mF	1600 volt	50x70x72 mm	45.95
4mF	1000 volt	45x45x120 mm	49.95
4mF	2500 volt	70x70x120 mm	265.75
10mF	1000 volt	70x100x100 mm	96.75
12mF	1000 volt	70x100x120 mm	109.95
12mF	1600 volt	100x100x120 mm	136.75
12mF	2000 volt	100x100x220 mm	159.75

AUDIO NOTE ACID & CHLORIDE FREE SILVER SOLDER.

The best solder we have been able to find, does

not contaminate the junction, which over time increases junction resistance. Used in all our amplifiers from OTD to the GAKU-ON.

Weight/Measure	Price Ex. UK Vat.
50 grammes or about 8 meter 1 mm diameter	19.95
1 kilo roll of 1 mm diameter	210.65

AUDIO NOTE CABLES & WIRES.

We are proud to offer the AUDIO NOTE range of high quality copper and silver coax, speaker and wiring cables, which, depending on the overall price of the project will do justice to any hi-fi system, regardless of price.

Solid 99.99% Pure Audio Note Silver Wire.

Gauge	Insulation Material	Price per Meter Ex. UK Vat.
0.05mm	Polyurethane	16.75
0.2mm	Polyurethane	22.75
1 mm	ML	36.75
0.35mm	ML	24.95
0.6mm	ML	27.85
0.8mm	ML	31.75

The above solid silver wires are suitable for inductors for speaker crossovers, both active and passive or for internal wiring in tonearms, amplifiers etc.

AUDIO NOTE HIGH QUALITY STEPPED ATTENUATORS & SWITCHES.

These handmade attenuators and switches are manufactured by a friend of Mr. Kondo of AUDIO NOTE, and represent the best available volume controls and switches you can use in your pre-amplifier, the attenuator is 48 steps and with silver/rhodium plated contacts/brushes made with an array of tantalum film resistors. The switches feature silver plated contacts and self cleaning action.

Type	Value	Price Ex. UK Vat.
Stereo Potentiometer		
/Attenuator 50KOhms		198.75
Stereo Potentiometer		
/Attenuator 100KOhms		207.75
2 Channel switch	6 - way adjustable	78.75
4 Channel switch	6 - way adjustable	101.75

AUDIO NOTE HIGH QUALITY CERAMIC VALVE BASES

All of our valve bases are of the highest possible metal, made from steeltite and using the best metal parts from alloys which retain their spring tension around the valve pin for longer. They are recommended as upgrades to most old valve amplifiers and should be an essential part of any DIY project.

Type	Mounting	Plating	Price Ex. UK Vat	
4-pin UX4 for 300B				
/2A3/801A Chassis	Gold		8.25	
4-pin UX4 for 300B				
/2A3/801A Chassis	Nickel		7.25	
4-pin UX4 WE-type for 300B/2A3/801A Chassis	Silver		14.75	
4-pin Jumbo 4 for 211/VT4C/845 Chassis	Silver/chrome		159.95	
5-pin UY5 for 807	Chassis	Gold	9.75	
7-pin B7 for 6X4, OA2	PCB	Silver	6.15	
7-pin B7 for 6X4, OA2	PCB	Gold	7.85	
7-pin B7 for 6X4, OA2	Chassis	from above	Silver	6.75
7-pin B7 for 6X4, OA2	Chassis	from above	Gold	7.95
8-pin UX8 for EL34, 6550, 5U4G, GZ34, 6L6G, etc.	Chassis	Silver	5.65	
8-pin UX8 for EL34, 6550, 5U4G, GZ34, 6L6G, etc.	Chassis	Gold	8.65	

9-pin B9 for ECC83, ECC88, 5687, 6350, etc.	PCB Silver	3.85	
9-pin B9 for ECC83, ECC88, 5687, 6350, etc.	PCB Gold	5.75	
9-pin B9A for ECC83, ECC88, 5687, 6350, etc.	Chassis from above	Silver	4.45
9-pin B9A for ECC83, ECC88, 5687, 6350, etc.	Chassis from below	Silver	4.95
9-pin B9A for ECC83, ECC88, 5687, 6350, etc.	Chassis from below	Gold	7.15
9-pin B9A for ECC83, ECC88, 5687, 6350, etc.	Chassis from below	Nickel	9.75

You may want to start your project with less overall cost, and for this purpose we can offer the following industrial grade ceramic valve bases.

Type	Mounting	Price Ex. UK Vat.
8-pin for EL34, 6550, KT66, 6L6G Chassis with bracket		1.45
9-pin for ECC83, ECC88, 5687, 6350	Chassis with shroud	1.85

AUDIO NOTE SELECTED AUDIO VALVES.

Our valves are selected from the best available sources and are tested to the same stringent standards that we apply in the production of our own amplifiers, they fall into two categories, standard production items and rare, mostly NOS (New Old Stock) valves which are no longer in production. We have compiled a special list of the NOS items, which is available on request, beware the valves on this list are NOT cheap.

Standard Stock Items,

Type No.	Type	Price Ex. UK Vat
ECC835/12AX7WA/7025	double triode	2.95
E88CC/6922/6DJ8WA/7308	double triode	3.95
EF86/6267/2729	pentode	2.45
ECC82/12AU7/61 89W	double triode, mill spec	5.75
65N7	double triode, UBX base	1.75
65L7GT	double triode, UBX base	2.85
65J7	pentode	1.75
5687WA	double triode	4.55
6350WA	double triode	4.75
EL84/6BQ5	small power pentode	1.55
EL84M/6BQ5WA	small power pentode, mill spec version	4.75
6V6GT	small power pentode	2.45
6L6G	medium power pentode	2.75
5881/KT66/6L6WGC	medium power tetrode	4.95
EL34G	power pentode	7.45
6550/KT88	large power tetrode	12.45
6C33	powerful regulator, indirectly heated triode	24.65
6A57/6080	strong regulator, indirectly heated triode	6.45
2A3 4pin	directly heated small power triode	17.95
300B	directly heated power triode	57.95
5U4G	HT-rectifier	3.25
5Y3GT	HT-rectifier	2.25
5V4GT	HT-rectifier	2.25
GZ34/SAR4 6X4	HT-rectifier, very good for pre-amplifiers	8.75

RESISTORS

Beyschlag

We offer three quality levels of resistor quality, all are 1%, starting with the Beyschlag metallfilm, which are slightly magnetic (as are the vast majority of other makes of metal film resistors), but nonetheless very good sounding, as used in all our UK-made amplifiers, up to quality level 3 (the MEISHU/P3) no-feedback triode amplifiers.

Beyschlag 1 watt, 1% resistors up to 500KOhm, E 0.11, above 500KOhm £0.13 each.

HOLCO.

Better sound quality can be achieved with the H2, 1 watt, 1% non-magnetic resistors, which we regard as the best "industrial grade" metallfilm resistors available. They have one small drawback, as they are quite fragile, and require careful handling, do not bend the legs too close to the body, they may become noisy.

HOLCO resistors type H2 50PPM cost £0.36 each from 1000hm to 500KOhm, higher and lower values are all £0.63 each.

SHINKOH Tantalum Film Resistors.

This is definitely the best sounding resistors available, forget the VISHAY, which may be ok in high feedback transistor amplifiers, but in our opinion quite uncomplimentary to the qualities of real Audio Amplification (i.e. directly heated triode amplifiers running feedback free in single-ended Class A), this is where you will need the tantalum film resistor for the best results.

Up to now the tantalum film resistors have been extremely difficult to get however, after much persuasion and against a minimum quantity guarantee from AUDIO NOTE UK, the manufacturers have agreed to widen the range of 1/2 watt and reintroduce the 1 watt range, I consider this to be a major breakthrough, since without a reasonable range of values at the 1 watt rating it is pretty difficult to get the very best out of our best circuits. As with most handmade specialist items.

Anyway, the 1/2 watt, 1% tantalum resistors are non-magnetic and cost £2.06 each for all available values. There is long delivery on all values, so be prepared to wait if a value is not stock.

BLACK GATE ELECTRON TRANSFER, High Performance, Graphite Electrolytic capacitors.

There are very few audio parts that promise a guaranteed improvement when replacing practically any other part, but this is what the BLACK GATE capacitors actually do. Exchanging any electrolytic capacitor anywhere in the circuit of an amplifier or in the crossover of a speaker will greatly improve sound quality. We are working on some guidelines as to where, how and which types of Black Gates to use in different circuits, the first such technical guideline is available now and is called "Improving your CD-Player" and can be obtained by sending a stamped addressed envelope to us requesting this leaflet. It is very important to note that all BLACK GATE capacitors take time to charge-up or stabilize, when first put in circuit, depending on type and application this "maturing" time can be between 100 and 300 hours.

Value	Voltage	BG-Type	Suggested Use	Price Ex. UK Vat
0.47mF	50volt	PK	Anywhere	1.05
1 mF	50volt	PK	Anywhere	1.25
2.2mF	50volt	PK	Anywhere	1.55
4.7mF	50volt	PK	Anywhere	2.15
22mF	50volt	PK	Anywhere	3.35
100mF	100volt	Standard	Anywhere	7.75
1 000mF	50volt	Standard	Anywhere	24.55
220mF	1 6volt	Standard	Anywhere	4.35
470mF	1 6volt	Standard	Anywhere	6.35
2200mF	50volt	standard	Anywhere	13.45
10,000mF	80volt	Standard	PSU smoothing	234.65
4700mF	1 6volt	Standard	Anywhere	14.25
47mF + 47mF	500volt - 550v surge	SK-Type	PSU filter capacitor	85.95
100mF + 100mF	500volt - 550v surge	SK-Type	PSU filter capacitor	101.95
100mF	500volt - 550v surge	SK-Type	PSU filter capacitor	72.75
220mF + 220mF	350volt - 400v surge	SK-Type	PSU filter capacitor	92.65
100mF + 22mF	350volt - 400v surge	SK-Type	PSU filter capacitor	75.35
220mF	350volt	VK-Type	Decoupling or filter capacitor	18.95
220mF	1 6volt	F-Type	Low ESR version	6.75
220mF	1 6volt	FK-Type	Ultra low ESR version, comparable to film caps	9.95
			As above use anywhere	43.95
			As above use anywhere	98.85
			For circuits with DC potential difference	3.35
			Bipolar for use in negative feedback circuits etc.	4.95
			as above	5.75
			as above	6.95
			as above	13.75
			as above	18.95
			For loudspeaker crossover networks	8.95
			as above	10.85
			as above	17.45
			as above	27.95
			For super low noise PSU's	24.65
			as above	28.95
			as above	99.95
			as above	423.35

On the next page is a list of all BLACK GATE capacitors available, together their sizes, best usage etc. Lastly, we can supply a range of more modestly priced components, still good quality, but more industrial grade, if you like.

AUDIO QUALITY OUTPUT TRANSFORMERS.

Single-ended Circuits.

Suggested Valve VAT	Max Cl. A Power	Prim-Sec. Impedance	Size/Weight Max.	Current	Price ex. UK
EL84/ECL86/6V6	20 watts	2K6 - 4/8 Ohms	117x98x90 mm	110mA PEE	07.00
300B/2A3/6B4G	25 watts	2K5 - 4/8 Ohms	117x98x90mm	90mA SE	91.00
EL34/6550/KT88	30 watts	1K5 - 4/8 Ohms	115x98x95mm	180mA PSE	113.00
2A3/6B4G	30 watts	1K25 - 4/8 Ohms	98x82x95mm	130mA PSE	97.00
5881/KT66	30 watts	2K1 - 4/8 Ohms	115x98x95mm	140mA PSE	106.00
211/VT4C	30watts	10K - 4/8ohms	117x98x100mm	150mA SE	124.00
211/VT4C/845	50 watts	10K - 4/8 Ohms	112x134x150mm	150mA SE	114.00
300B	50 watts	1K25 - 4/8 Ohms	135x115x125mm	180mA PSE	151.00
845	50watts	2K5 - 4/8 Ohms	137x114x130mm	180mA PSE	172.00
211/VT4C	75 watts	5K-4/8 Ohms	137x115x145 mm	240mA PSE	237.00

New SE Product

EL34/6550/KT88	20 watts	3K - 4/8 Ohms	117x98x92 mm	130mA SE	104.00
6L6G	30 watts	3K - 4/8 Ohms	115x98x95 mm	140mA PSE	107.00

Push-Pull Circuits

EL84/ECL86/6V6	15 watts	8K - 4/8 Ohms	80x67x68 mm	PP	42.00
EL34/6L6G/5881	25 watts	6K - 4/8 Ohms	88x73x80 mm	PP	59.00
2A3/6B4G/300B	30 watts	5K - 4/8 Ohms	88x75x80 mm	PP	63.00
KT88/6550	50 watts	6K6 - 4/8 Ohms	108x91x90 mm	PP	73.00
EL34/KT66/5881	50 watts	3K - 4/8 Ohms	98x82x83 mm	PPP	74.00
845	50 watts	6K8 - 4/8 Ohms	108x91x90 mm	PP	114.00

Pure Silver Wired Outputs.

300B/2A3/ 6B4G	25 watts	2K5 - 4/8 Ohms	11 7x98x90 mm	90mA	SE	1,645.00
211/VT4-C/845	50watts	10K - 4/8ohms	112x134x150mm	150mA	SE	1,975.00

The AUDIO NOTE silver wired outputs listed here are designed and made in the UK, we can supply the AUDIO NOTE Japan manufactured outputs for the ONGAKU of the KEGON, but they are exceptionally expensive, as you would expect from items that take upwards from 100 hours each to make, for example an output transformer for an ONGAKU costs £16,500.00.

AUDIO NOTE CHOKES & INDUCTORS.

Value	Size	Price Ex. UK Vat
3H/1 00mA		14.00
5H/1 50mA		21.00
10H/125mA	63x74x76 mm	26.00
10H/200mA	98x65x83 mm	33.00
0.5H/400mA		18.00
3H/2250mA for ONGKU/Cu		24.00
5H/400mA		31.00
20H/50mA	68x56x58mm	24.00

Other values can be supplied by order, ask for quote.

AUDIO NOTE Coax Interconnect Cables.

Type/Colour code	Construction	Price per Stereo Meter Ex. UK Vat.
AN-A yellow	symmetrical 6N copper litz coax	15.32
AN-C red	symmetrical OFHC copper litz coax	29.79
AN-S dark grey with yellow stripe	symmetrical 99.99% silver litz coax	84.25
AN-V silver grey with yellow stripe	symmetrical 99.99% silver litz coax	152.35
AN-Vx silver grey	symmetrical 99.99% silver litz coax	382.98

It is recommended to use the internal twin silver wires in the AUDIO NOTE coax cables as internal wiring cable, this is what we do in amplifiers like the ONGAKU, M7Tube etc.

AUDIO NOTE COMPLETE KITS.

We are developing a range of complete kits; to give those of you who have the ability, but do not have the time to develop a project from the ground, so to speak. In order to be able to offer the best possible quality - price relationship the kits we offer will be good basic circuits with no-frills power supplies and components.

Kit One.

Based around the justly famous 300B directly heated triode, we see this kit as the introduction to real Audio Amplification, as it covers all the important aspects of design necessary, Single-Ended, No-Feedback, Class A, Directly Heated Triode, to become a member of this exclusive club of amplifiers.

Kit One has one 300B per channel running at 420 volts with 75mA current giving 9/10 watts of the cleanest power you will ever hear, the input stage consists of a 65N7GT with a 5687 double triode driver stage running in SRPP.

The powersupply is a capacitor-choke-capacitor with a 5U4G HT rectifier, the heaters are AC heated.

Component quality is similar to our Level 2 finished products, AUDIO NOTE paper in oil signal capacitors, Beyschlag watt 1% metallfilm resistors, good quality electrolytics (sorry NO Black Gates!) and a simple, attractive stereo chassis in grey paintwork. Protecting cover is extra.

Price £750.00 incl. Vat, which includes all valves (yes, also the 2 x 300B needed) but not postage/packing which to UK customers is £12.00, topcover is £99.00 extra. The Kit One is available now.

Kit Two.

Kit Two features a single 6550WA Sovtek tetraode running in Single-Ended mode, yielding some 17 watts of pure Class A, valve rectified HT for the output stage, stereo chassis, and 6SL7GT input and 6SH 7GT SRPP driver stage, componentry and chassis as Kit One. Price £600.00 incl. Vat, includes valves, but not postage/packing, cover is extra at £99.00. Available in March '94.

Write to:
AUDIO NOTE (UK) Ltd, Unit 1, Block C, Hove Business Centre, Fonthill Road, Hove, East Sussex, BN3 6HA, England. Telephone +44 0273 220511, fax +44 0273 731498. Direct Line to sales +44 0273 885511.

MAINS TRANSFORMERS

This range relates to our finished products, mains transformers are notoriously difficult items to offer as the number of permutations of HT and Heater voltages are almost endless. We shall be offering a more comprehensive range as opportunities arise.

Primary Voltages	Secondary HT Windings	Secondary Heater Windings	Price Ex. UK Vat
0v/100v/110v/120v	0v-230v at 350mA	0v-12.6v at 1 Amp	34.00
0v/220v/230v/240v	3.1 5v-0v-3.1 5v at 4 Amp		
120v/1 10v/100v/0v	0v - 230v at 0.4 Amp	0v-12.6v at 1 A	41.00
0v/1 00v/11 0v/1 20v	3.1 5v - 3.1 5v at 4 Amp		
0v/1 00v/11 0v/1 20v	0v - 290v at 40mA	1.2 6v-0v at 1.5A	26.00
0v/100v/110v/120v	0v- 6.3v at 300mA		
0v/100v/1 10v/120v	310v-244v-0v-244v-310v at 320mA	3.15v - 0v-3.15v at 4.5 Amp	72.50
0v/100v/110v/120v	0v-920v at 160mA	0 -10v at 4 Amp, 0v-6.3v at 12.6v at 1.5 Amp	98.00
0v/100v/110v/120v	150v-150v at 50 mA 1.5A.	0v - 5v at 2.5A	
120v/1 10v/1 10v/0v	390v-0v-390v at 200 mA	3.15v-0v-3.15v at 1.2Amp, 7v	86.70
0v/1 00v/11 0v/1 20v	20v1 70v at 50mAat 3A,	7v at 3A, 5v at 2A	
0v/1 10v/100v/0v	425v-0v-45v at 220mA	3.15v-0v-3.15v at 2.5A	95.60
100v/110v/120v		7.0v-0v, 7.0v-0v, 5.0v-0v for KIT ONE or 3.15v-0v-3.15v at 750mA "KASSAI" replica	

AUDIO NOTE Speaker & Wiring Cables.

Type/Colour code	Construction	Price per Mono Meter Ex. UK Vat.
AN-D green	single core 6N copper speaker wiring	6.85
AN-B blue white writing	double strand, screened 6N speaker	12.34
	wire	
	double strand, screened 6N litz copper	
AN-L blue black writing	single core 15 strand 99.99% litz	25.11
	speaker wire	
AN-SP silver	single core 20 strand 99.99% litz	106.38
	silver speaker wire	
AN-SPx silver	single core 20 strand 99.99% litz	382.98

silver speaker wire

PTFE Insulated Silver Plated Copper Wires.

We can also provide less expensive wiring wires for hard wiring circuits, these PTFE insulated silver plated copper wires are 19 strands of 0.15 mm wire and come in brown, black, blue, pink, red, green, orange, violet, white and red/white, they cost £1.60 per meter in any colour

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1100 Series. LH80W "Audio Design" Mosfet Power Amplifier.



Another masterpiece from the drawing board of John Linsley Hood and another opportunity to give a system mega sound performance for only a few hundred pounds cost. A host of advanced features, in the hands of the skilled designer, give this amplifier a performance that really is only equalled, not exceeded, by the 4 or 5 figure price tagged exotica.

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To give an idea of the measures taken to achieve ultimate quality and linearity in this amplifier each of the four output devices is only called upon to work at one NINETY-SIXTH part of its ultimate power rating.

We are proud to offer this latest John Linsley Hood masterpiece, the flagship of our range, which we believe is truly the ultimate design for the perfectionist, combining as it does the best circuit design, the best engineering and the best components, surely the only recipe for REAL sound fidelity. The HART KIT concept also makes it possible to build an amplifier with the facilities YOU want and we offer no less than three variations with options on the basic theme to suit your needs. One of these versions will, we feel sure, cater for your requirements. Should your requirements change at a later date then upgrades or alteration to a different version are no problem, try doing that to your High St store amplifier!

The Standard version has a passive input selector circuit with Alps Precision Low-noise volume and balance controls, switchable CD, Tuner and Pre-amp inputs and an optional stereo bargraph output level display. The 'Slave' version has stereo power amplifiers and standard power supply. The 'Monobloc' version again has the standard power supply but since it is only driving one power amplifier higher than normal output power is achieved with total channel separation. The slave and monobloc versions enable very sophisticated bi-amping and active crossover systems to be constructed.

K1100 Complete STANDARD Amplifier Kit, two power amplifier channels and one power supply module, direct input passive signal selector stage, Construction Manual and RLH11 Reprint.
SPECIAL DISCOUNT PRICE FOR COMPLETE KIT IS ONLY **£395.21**

A1100 Factory Assembled **£499.21**

K1100S Complete SLAVE Amplifier Kit, as above but without passive input stage.

SPECIAL DISCOUNT PRICE FOR COMPLETE KIT IS ONLY **£333.62**

A1100S Factory Assembled **£422.62**

K1100M Complete MONOBLOC Amplifier Kit, consists of all parts for one power amplifier channel and one power supply module and all chassis parts.

SPECIAL DISCOUNT PRICE FOR COMPLETE KIT IS ONLY **£261.20**

A1100M Factory Assembled **£329.20**

All HART kits are designed for easy home construction to the very highest standards, and can be built by anyone of average manual ability. If you are still not convinced how easy it is to build it yourself with a HART kit you can order the Instruction Manual to read for yourself and we will refund the cost when you buy your kit.

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For those who love the vinyl medium the listening pleasure can only be enhanced by using the very best phono preamplifier available. The Hart range of phono preamps feature a special shunt feedback circuit topology and are designed by John Linsley Hood. This circuit format gives audibly superior sound to the standard series feedback system normally used and gives a performance that will exceed or equal that given by the best of the mega priced offerings. Our range includes units to suit everyone from the occasional user to



the serious audiophile. All can be changed to suit moving coil or moving magnet cartridges at the flick of a switch.



K1500 Series. This is an integrated circuit version of the shunt feedback concept, using so little power that it may be run from batteries. An ideal "first kit" project as it is very simple to put together and no mains voltages are involved.

K1500 Complete Kit With Full Instructions (Battery Powered) **£73.76**

A1500 Factory Assembled **£118.76**

K1450 Features a totally discrete component implementation of the Shunt Feedback concept. Audiophile grade components fitting to an advanced double sided printed circuit board make this a product at the leading edge of technology that you will be proud to own. Nevertheless with our step by step instructions it is very easy and satisfying to assemble. Due to the higher current consumption this unit is powered by our mains driven K1565 Audio Power Supply, itself an advanced piece of technology in a matching case. This supplies the superbly smoothed and stabilised supply lines needed by the preamplifier and features a fully potted Hi-grade toroidal transformer along with a special limited shift earth for hum free operation. Suitable for all moving coil and moving magnet transducers this unit is especially recommended for, and will extract the very best from the modern generation of low output high quality transducers.

K1450/1565X. Complete RIAA Phono preamplifier, Power Supply and power connect cable **Kit form £196.29.**

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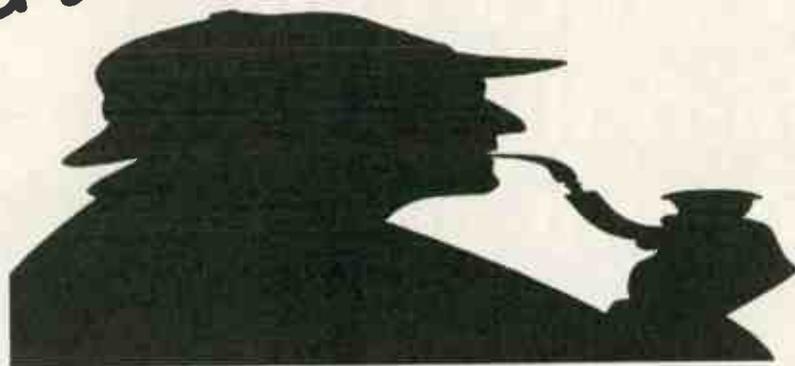
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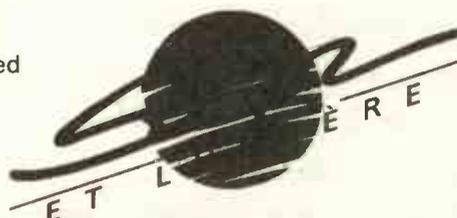
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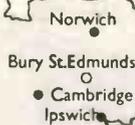
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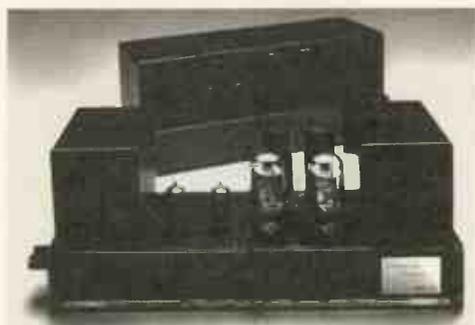
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CHORD SPM 1200	£2995	Massively powerful, dynamic and detailed sound. Among the best of solid state.	Mar'93
E.A.R. YOSHINO	£25,000	Single-ended valve design. Noel is still suffering withdrawal from this product.	Jul'93

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HARMAN LS 0300	£200	Glass fibre woofer gives a forward and open mid with good bass kick	Nov'93
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H'BROOK QUARTET	£555	Sensitive enough to work with low power valve amps. Fast and detailed sound.	Jul'93
JPW RUBY I	£500	Metal driver speaker with an exciting and lively presentation.	Aug'93
TANNOY D100	£650	Believable 3D images produced by this small dual concentric speaker.	Jan'94
PROAC Studio 100	£699	Excellent monitors with detailed, natural sound and plenty of atmosphere	Feb'94
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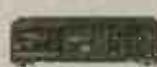
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Echoes from the past

There are so many new brand names in the hi-fi world these days it's reassuring to find some old favourites re-appearing in the British market. One of these is SUGDEN, who have been doing well in export markets for many years but are now getting back into the U.K. market. These hand built units are superb to look at, particularly the '51' pre-power units, and produce some of the sweetest sounds around. Also worth an audition is their SDT-1 CD player.

Then there is ELECTRO COMPANIEET amplifiers which many of you may remember from the late 70's when their 25 watt amplifiers won rave reviews and a wide following. Their new range from this Norwegian company include phono stages to 250 watt dual mono balanced power amps plus a 20th anniversary limited edition pre-power combination with rare blue stone facia at £4,972; only 400 available world wide, so don't delay!

Another old favourite of our's was the American Dahlquist loudspeakers, which are now available here in an improved build standard as the ALON range produced by Carl Marchisotto-chief design engineer at Dahlquist for 15 years-of Acarian systems. The range starts at the ALON 1 for £1,300 and are now in stock with the ALON 2 at about £1,900 due shortly. Their top model, the Phalanx, costs a mere £25K, so we haven't got that yet!

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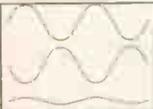
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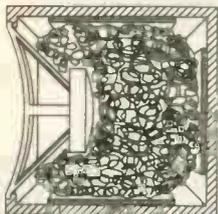
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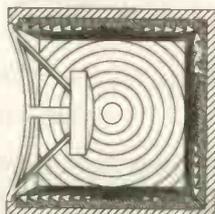


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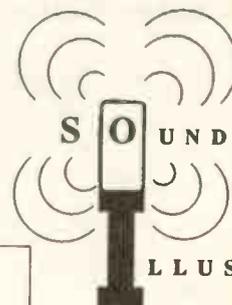
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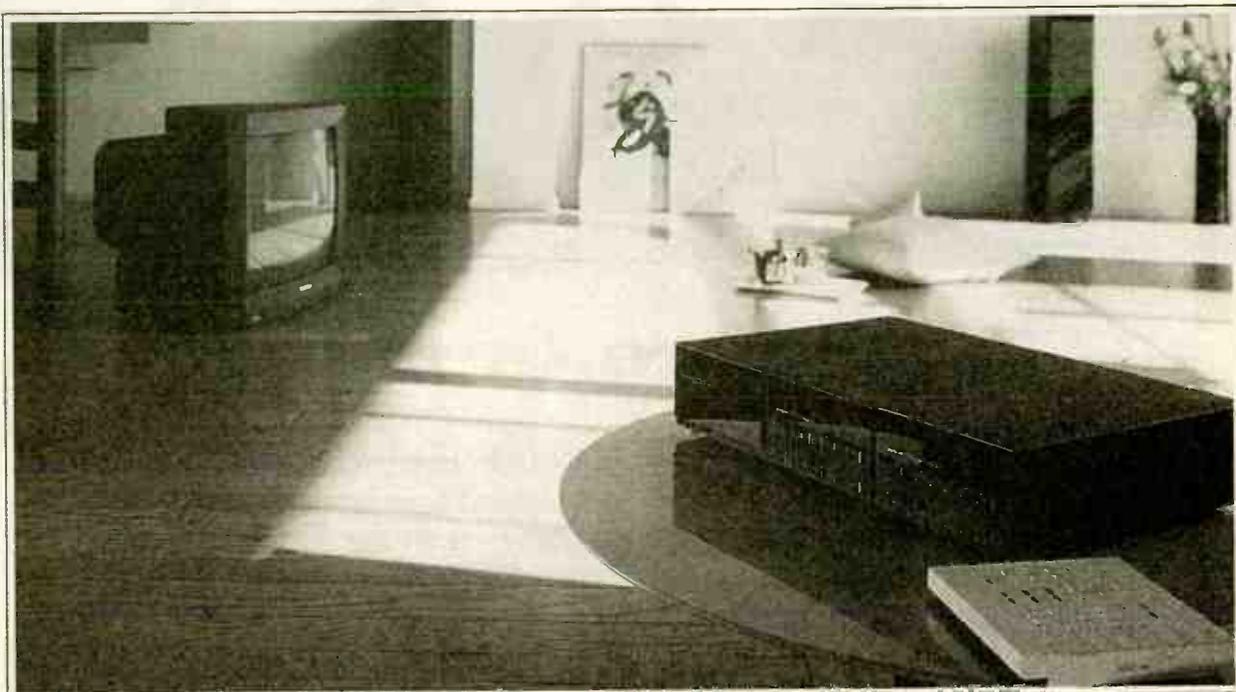
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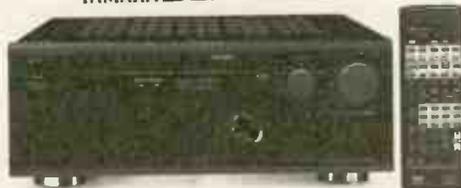
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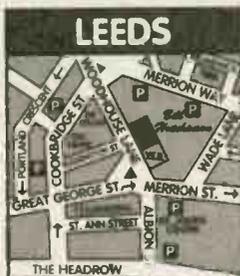


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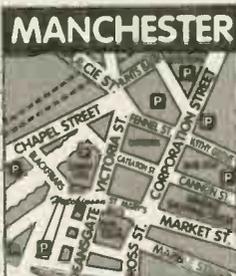
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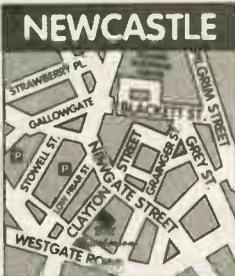
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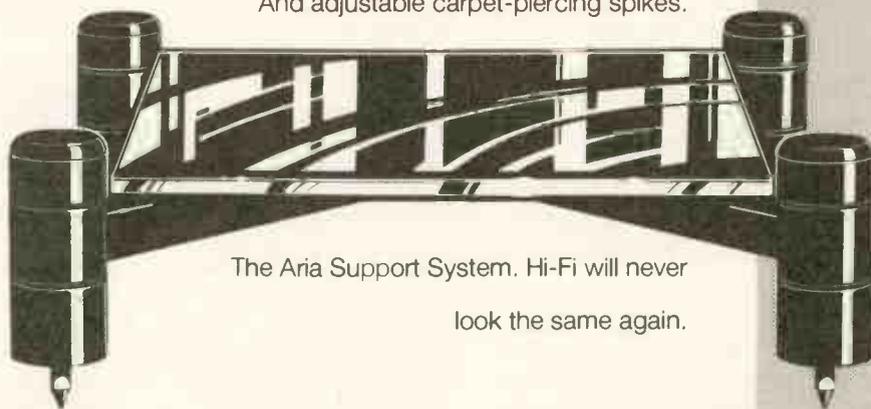
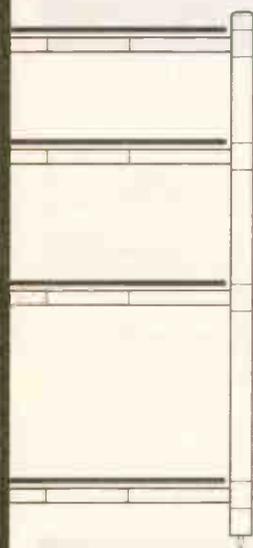
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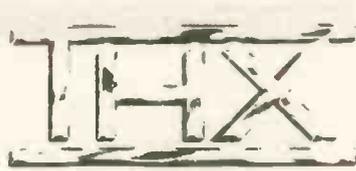
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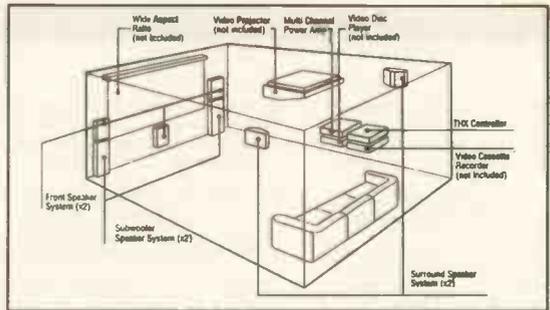
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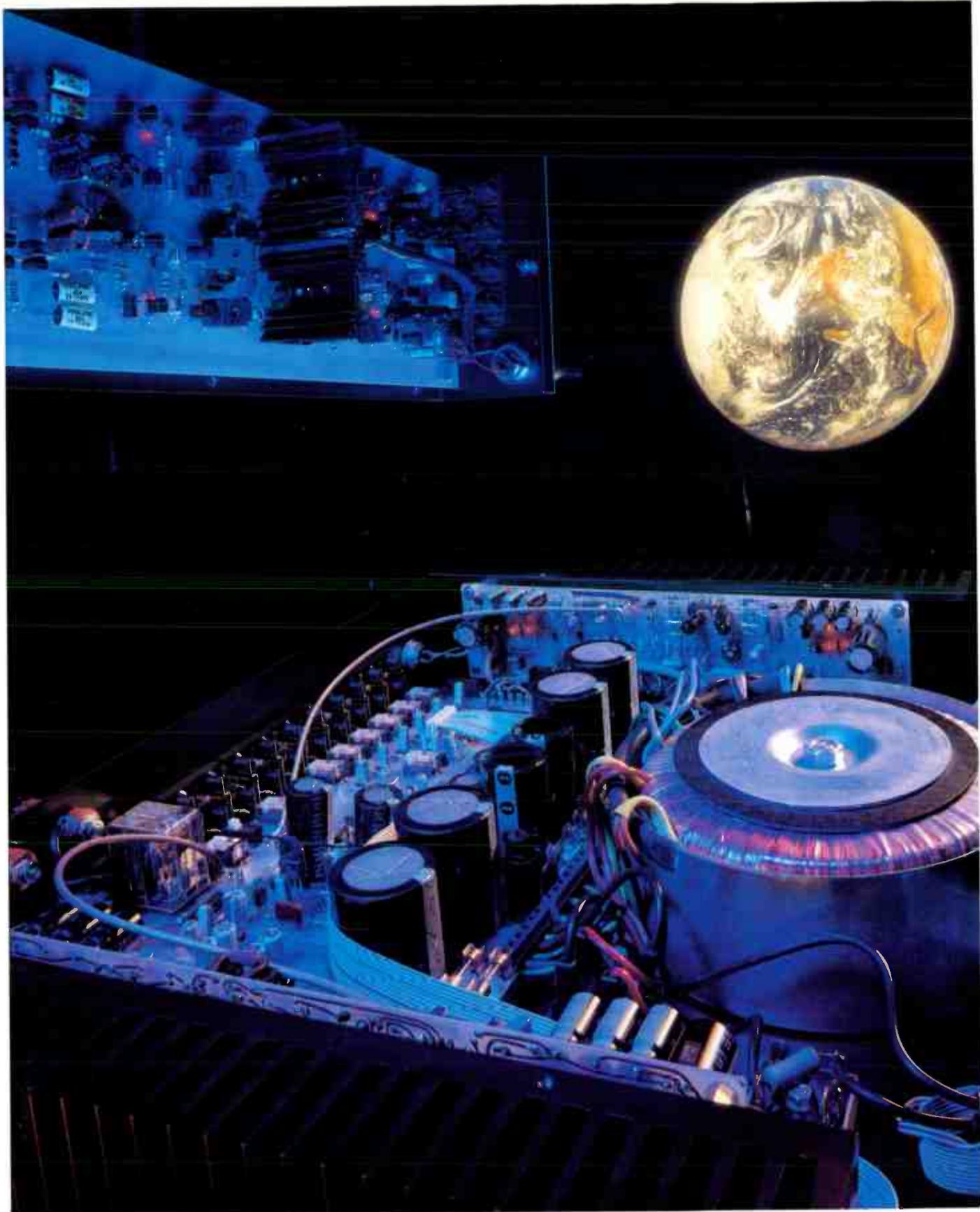
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