

Hi-Fi WORLD

JANUARY 1993 £2.00

**ARE MIDI SYSTEMS HI-FI?
we review four**

**SYSTEMDEK & SME 309
superb quality from LP**

**TANNOY 605 LE
loudspeaker revealed**

FIRST REVIEWS !

NAD 302 Amplifier

Pink Triangle CD Convertor

**DPA Digital CD
Transport**



**BUDGET
HI-FI SECTION**

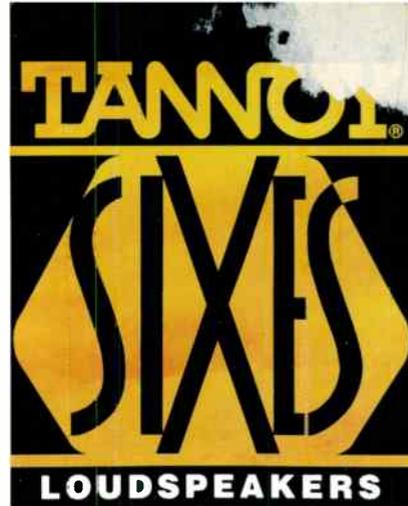
COMPETITION

QUAD Remote Control
SYSTEM

New 66 Tuner, 66 CD, 66/306 Amp, ESL-63 Electrostatics



Review your options



THE SUCCESSFUL TANNOY SIXES RANGE

In every aspect of sonic performance, unique cabinet design and finely detailed construction, the Tannoy SIXES have won consistent praise from the international hi fi press.

Tannoy dealers have SIXES for you to audition now. If you'd like a second opinion however, we'd be delighted to send you a copy of the Press Reviews book which we assembled some months ago and to which we've added many more equally complimentary reviews which have appeared recently.

You'll read, for instance of the compact 603, **'A speaker of this size simply should not sound that good'**. Stereo Review, (USA, February '92).

Of the 605, the U.K's 'What Hi Fi?' wrote in March '92 **'Unrivalled ability to reproduce details of musical expression'** and **'eyestopping good looks'**.

Audio Video in February '92 also said **'The 605 Tannoys positively shine with almost any kind of music,**

delivering with an enthusiasm and fullness that can make even the most jaded reviewer sit up and listen'.

Hi Fi News (in October '91) wrote that the 607 provides **'detailed sound', 'vivid imagery'** and are **'value for money speakers which perform well across a wide range of musical programming'**. Hi Fi Video of France (in October '91) said much the same - in French of course. Australia's Audio Video Lifestyle, in January '92, placed the 609 **'streets ahead of the competition'** with **'quite stunning'** performance.

Australian journal Hi Fi Review, in their January '92 issue, praised the 613 - **'Midrange was excellent'**, their reviewer adding **'nothing had prepared me for the depth of bass the speakers are capable of producing'**.

These, plus many more recent reviews are yours for asking. Please ask - we'd like you to.

Please send me the SIXES 'Press Reviews' book and other recent SIXES reviews. I'd also like a brochure and price list.

Name

Address

Postcode

Telephone

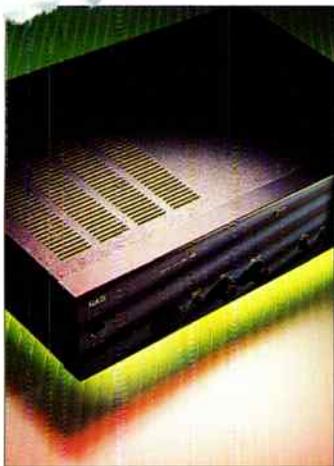
Daytime

Evening

City

State,

Country



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FIRST REVIEW!

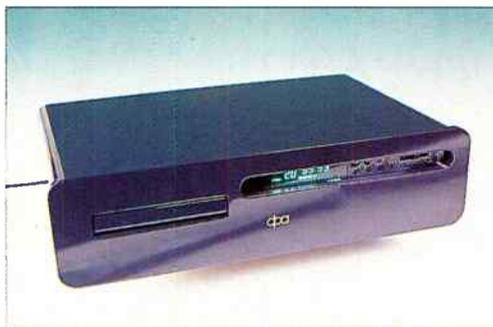
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Look at this...I told you there'd be a new improved version of the DM620!

Talk about speakers

Indeed, we could talk for hours. Because after 25 years making some of the world's finest domestic and professional monitors, we believe that the 600 series is our best yet.

All models in the range are fitted with a new magnetic-fluid cooled metal dome tweeter, first developed for our world famous 801 studio monitors and capable of handling the high level transients of today's digital systems. Careful attention has been paid to the bass/midrange drivers which have excellent powerful magnets



coupled with low mass, helping to provide faster dynamic response. Each 600 series model has been styled by Kenneth Granger to ensure that their looks match their high performance. With this careful attention to detail each model in the range represents the ultimate in contemporary acoustic design.

The 600 series is at your local B&W now. So call in for a demonstration, once you've heard them there's really little left to say.

B&W
LOUDSPEAKERS
THE 600 SERIES
World Radio History

THE WORLD

BUDGET EQUIPMENT GUIDE

Broken by the bank at Monte Carlo? Never fear, our budget guide will still leave you with pennies in your pocket.



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QUAD COMPETITION

...for hi-fi? This month, an...
...to... full remote-...
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Hi-Fi World produces the majority of reviews in-house, using our own lab facilities and listening rooms.

You couldn't get closer than this.

You are together, sharing the same sounds, the same emotions. It's your song, and it always will be. This is music as it's meant to be heard. The KEF experience. Superb loudspeakers; beautifully constructed for unerringly faithful reproduction. What else could be as pure or as natural?



Thanks to KEF Uni-Q technology the Q80s broad and solidly focused stereo spread provides depth and clarity, wherever you are in your room.



THE EXPERIENCE OF SOUND

KEF Audio (UK) Limited, Maidstone, Kent ME15 6QP.
For further information please telephone 0622 672261



World Radio History

**“Genuinely convincing music that lives and breathes”^{*}
is now positively alive and kicking.**

Every CD player designed and built by NAD has quickly built up a glowing reputation.

From the flattering comments made by reviewers in the past, we hold our breath wondering what they will say about the new NAD 502.

Because, quite simply, it comes closer to reproducing music as it should be reproduced from compact disc than ever before.

It encompasses all the latest advances made in CD technology since its conception. One-bit MASH digital-to-analogue converter restores the warmth to the music sometimes lacking in other, much more expensive players.

It's also very easy to use. Improved operational logic/ergonomics and full function remote control with direct track access means your favourite music is at your fingertips.

Furthermore, NAD-link connectors also allow control to and from other units, such as the NAD 701/705 remote control receivers.

An audition at your local hi-fi dealer will quickly show how the new NAD 502 breathes new life into the reproduction of music.

Miss the experience and you'll be kicking yourself.

^{*} Hi-Fi Choice talking about the NAD 5420 CD player.



THE NEW 502 CD PLAYER FROM NAD

NAD

BRITISH BY DESIGN

NAD MARKETING LTD. ADASTRA HOUSE, 401-405 NETHER STREET, LONDON W11 1QG. TELEPHONE 081-342 3240

World Radio History

3



AMC NEW POWER

AMC, who have just announced a Compact Disc player to partner their hybrid integrated valve amplifier, have also released a new 2x100watt power amplifier which can also be used for surround sound or multi-room applications. Price is £289. Coming soon will be the AV81 remote control Audio Video preamplifier, also pictured here. Campus International Ltd., P.O. Box 496, Amersham, Bucks. HP7 0SA. Tel: (0494) 431460.

ULTIMATE LUXMAN

First of the high-end 'Ultimate' range from Luxman to appear in this country is the £3,490 D-500 X's (no, that's not a printing error) Compact Disc player. A wedge-shaped top-loader, finished in champagne gold, the transport is a solid CD-ROM mechanism. It is remote-controllable, with functions - including Favourite Track Selection - also accessed via small buttons on the sloping top panel. Luxman's stylish player is very heavy, using a variety of anti-vibration materials in its construction, audiophile components and a copper-plated chassis which is divided into separate mechanical, electrical and signal sections. A sensor is fitted to indicate correct mains polarity.

We heard of - and listened to - this player some time ago before it was available in this country. Highly rated in Germany, we found it was a superbly detailed player with a great sense of elegance well deserving a place among top-ranking CD players.

Contact Path Premier, Unit 2, Desborough Industrial Park, Desborough Park Road, High Wycombe, Bucks. HP12 3BG. Tel: (0494) 441736.

trade winds

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



STEREO PLUS

Lecson Systems of Cambridge have introduced a new £289 integrated amplifier. The Stereo Plus is based on the Lecson Stereo, but now offers 70watts per channel. Two sets of binding posts at the rear make bi-wiring simple and the amplifier offers a headphone output available through a high-grade relay. Five inputs, including MM and MC, are provided.

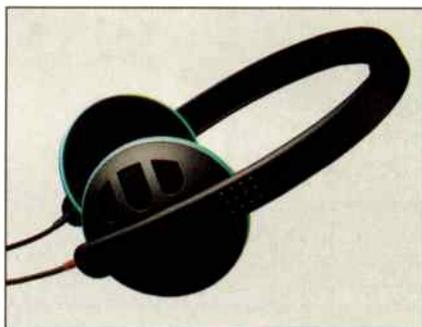
Lecson Systems Ltd., St Ives, Cambridgeshire. Tel: (0480) 441736.

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SENNHEISER CAN . . .

Sennheiser have launched a successor to the HD 40 headphone. A new colour scheme of black and turquoise for the HD 440 II marks it out from its predecessor's yellow. An open-back lightweight design with a claimed frequency response of 20-20,000Hz, the HD 440 II retails at £29.95.

Sennheiser UK Ltd., 12 Davies Way, Knaves Beech Business Centre, Loudwater, High Wycombe, Bucks. HP10 9QY. Tel: (0628) 850811.



MOREL TAKE A STAND

After the launch of the Bassmaster loudspeaker, drive unit manufacturer Morel has produced a stand. The ST50/20 costs £149. Designed for use with the Bassmaster, but suitable for other loudspeakers which will fit the very thick

280mm x 190mm top plate, a pair of stands arrives in flat-pack form. The two thick mild steel top and bottom plates are bolted together by four threaded steel rods running through the two vertical MDF pillars, forming a rigid platform. Spikes are adjustable from the top of the base plate using an Allen key which is provided in the pack and locked by gold-plated knurled nuts. For the tweakily-minded, the steel rods can be damped using Black-Tak. First impressions - Hi-Fi World has already acquired a pair, of course - are that the ST50/20 is certainly rigid, easily adjustable and neutral sounding, but listening is still in progress.

Morel (UK), 11 Foxtail Road, Nacton Road (Ransomes) Industrial Estate, Ipswich IP3 9RT. Tel: (0473) 719212.



DENON BUDGET AMP FOR THE NINETIES

Six years after first venturing into changing the PMA707 "into quite a good silk purse" - so the press release says - with British design input Denon have come up with the £149.99 PMA-250/III. The latest amp to receive the treatment after the PMA-450 (reviewed this issue) the new baby has also been flown back and forth between here and Japan for fine-tuning. Power output is 30watts, with four line inputs and a moving-magnet disc stage.

Contact Hayden Laboratories Ltd., Chiltern Hill, Chalfont St. Peter, Bucks. SL9 9UG. Tel: (0753) 888447.

STUDIO 6

Latest offering from Monitor Audio is the prettily-finished stand-mounted miniature Studio 6 loudspeaker. Using a 170mm alloy metal cone main driver and gold anodized alloy tweeter, the Studio 6 is a reflex design with power handling capabilities of 20-200watts and sensitivity of 89dB. Price is £799 in pair-matched Rosewood or Black Oak, £999.99 for Piano Gloss finish.

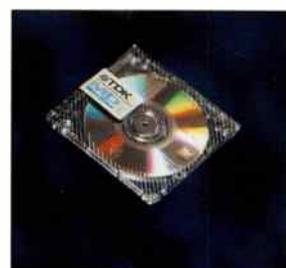
Monitor Audio Ltd., Unit 34, Clifton Road, Cambridge, CB1 4ZW. Tel: (0223) 242898/246344.



NEW THORENS TURNTABLE

A new replacement for the Thorens TD280/UK, the TD280/IV at £199.90 offers auto-lift off at the end of an LP side. Supplied with a new upgraded Thorens arm, the TP35, an Audio-Technica AT95E cartridge is an optional extra.

Portfolio Marketing, 67 New Road, Little Kingshill, Gt. Missenden, Bucks. HP16 111. Tel: (0494) 890277.



TDK UP TO SCRATCH

TDK are offering five hundred prizes to purchasers of Chrome and Metal tape multipacks. Inside the packs of SF, SA, SA-X and MA tapes is a scratchcard which will reveal whether the buyer has won. Top 150 prizes feature Aiwa SX-N330 mini hi-fi systems, car radio/cassette players, portables and personal stereos. There are also 350 £10 CD vouchers to be won. If you don't win, the packs all have a minimum of three CD tokens - twelve tokens will earn a free £5 CD voucher. The offer closes May 31st.

TDK have announced digital recording media - Digital Compact Cassette and MiniDisc - to be available during the first quarter of this year. DCC cassettes will be available in 60 and 90 minute lengths, MiniDiscs in 60 and 74 minute lengths.

TDK UK Limited, TDK House, 5-7 Queensway, Redhill, Surrey RH1 1YB. Tel: (0737) 773773.

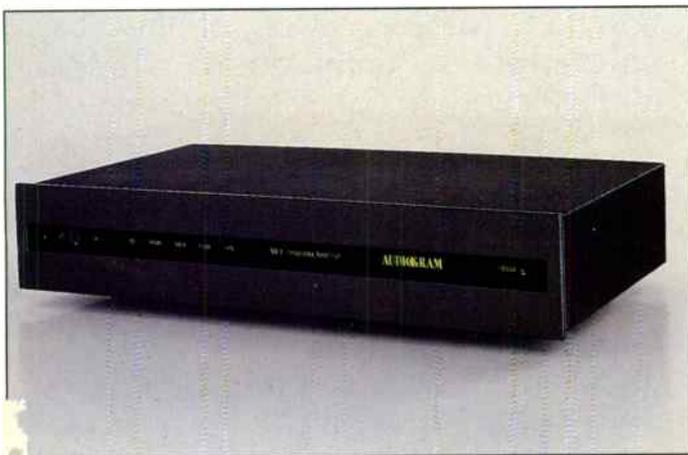


REVOX EVOLVE

Revox have evolved a 'lifestyle' system called the Evolution, with spectacularly different looks, partly attributable to the company's new management head, Dr Ernst Thomka, the man who relaunched the Swiss watch industry with the 'Swatch'. Fully remote controllable, the LCD screen that makes the Evolution resemble a Supercomputer displays the system's operational status. The basic system includes a powerful 150watt per channel amplifier, Radio Data System-equipped tuner and CD player. DCC and conventional cassette players are optional extras. Speakers are not included in the £2000 asking price. **Studer Revox U.K. Ltd., 1 Berkshire Business Centre, Berkshire Drive, Thatcham, Berks. RG13 4EW. Tel: (0635) 876969.**

FULLER RANGE

Fuller's Audio launched a range of electronics and loudspeakers recently including the three-way Sphinx which uses a Peerless soft-dome tweeter, a 6in mid-range driver and downward-facing 8in bass driver. Retail price will be £999. Other speakers are the three-cabinet Pharoah at £2499 and the Sultan, which combines three full-range Bandor drivers at £649. Electronics include the £899 Mosfet b1 and £999 Class A a1 stereo power amplifiers, the £549 pre1 preamplifier and finally a i1 integrated line amplifier at £399. **Fuller's Audio, 20 Tonbridge Road, Southend-on-Sea, Essex SS2 6LT. Tel: (0702) 612116.**



AFFORDABLE AUDIOGRAM FROM ITALY

With controls apart from a power switch on the amplifier itself, the £400 Audiogram MBI integrated from Pisa in Italy is entirely remote-controlled. This 40watt amplifier utilises a double-sided circuit board, selected components and a custom-designed toroidal transformer. **Cor. MPI Electronic UK Ltd., Wood Lane, Manchester M31 4BP. Tel: (061) 777 8533.**

TDL ON THEIR METAL

TDL Electronics have produced two new loudspeakers using aluminium metal-coned drivers for both the bass and mid-range units. The first of the two new models is the Studio 0.75m at £749, with a 13.5cm



bass unit and a claimed frequency response of 30Hz to 20kHz. Also new is the TDL Studio 1m at £849, with a larger 16.5cm bass unit. Both designs use a 2.5cm black anodised aluminium metal dome tweeter. Finish is real wood veneer - walnut or black ash - with others to order. **TDL Electronics, P.O. Box 98, High Wycombe, Buckinghamshire HP13 6LN. Tel: (0494) 441191.**

LINN'S KARTRIDGE AND KEILIDH

Linn have announced the availability of the new K18II moving magnet cartridge - distinguished by a red stylus-locking knob - and Keilidh loudspeakers. Linn say changes to the cantilever suspension result in improved tracking and lower surface noise. Price is £169. The floorstanding Keilidh, supplied ready for bi-wiring, can also be used tri-amped. Linn call it a two-way design, but there is a ceramic tweeter and two bass/mid drive units. Linn's new speakers can be placed near a rear wall. Price is £492.

Linn Products Ltd., Floors Road, Waterfoot, Eaglesham, Glasgow G76 0EP. Tel: (041) 6445111.



PINT-SIZE TITAN

Titan loudspeakers have brought out the first loudspeaker in a new range. The Titan Mini measures a mere 350mm high, 255mm wide and 285mm deep. A two-way speaker, it uses a 50mm aluminium cone tweeter and a 100mm anodised aluminium bass driver. Made to order and guaranteed for five years, the Titans retail at £500 and are available in a variety of matched veneers. **Titan Loudspeakers, Hockley, Essex. Tel: (0702) 206870.**



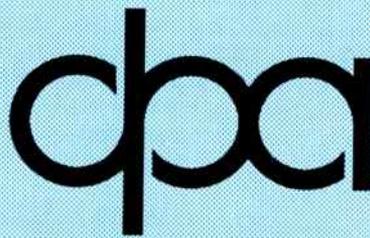
simply the best

An overused advertising statement? After all, "Simply the best" is such a cliché in today's marketing run world. No, it is something we at DPA believe in and are justly proud of.

Our revolutionary new T1 transport, DAC's, amplifiers and cables are the best for numerous reasons, which start at the design stage. Uniquely DPA designs are heuristic in nature - with each design an incredible number of factors is taken into consideration and carefully balanced to produce the most transparent performance. We believe everything can make a difference to the sound quality and everything is rigorously explored and examined to an unprecedented degree. This approach, of making no assumptions, leads to radically unique designs.

This unrivalled passion and care are not just the province of the design stage; this passion is carried through to the production of the unit. Unique production methods with advanced surface mount technologies are employed again with the ultimate care. Final assembly is carried out unhurriedly by one technician, with fully automated testing of each unit, so that each parameter that can affect performance is tested.

So why should you believe us? After all, we could be accused of bias. Throughout the world, fair but discriminating critics have been universal in their praise for DPA products. Take for example a recent review in Australia's High-End magazine Stereo Buyers Guide where the PDM2, in a group test of 27 DAC's, was quoted "...you get a sound that can't be matched by any other. Only for those that demand the very best." Hi-Fi Choice Dec '91 also states that "..."(the PDM2) goes on to redefine many areas of CD sound quality."



However, rave reviews are not just the exclusive domain of DPA's PDM2. Hi-Fi World, on the PDM1 S3 said "Any enthusiast who wants the best from CD at a reasonable price

should consider (the PDM1)." What Hi-Fi, Nov '91 said "...the Bigger Bit is set to destroy all its competition." Our amplifiers are equally well respected with Hi-Fi Choice saying of the 50S pre-power "...unmatched detail resolution, control and transparency."

Why should you believe the Hi-Fi critics? After all, it's your money and your Hi-Fi. Visit one of our dealers and ask for a demonstration of DPA products. If you value music and not distortion we think you will agree with DPA - simply the best.

dpa digital Ltd

Unit 7, Willowbrook Lab Units, Crickhowell Road, St. Mellons Cardiff CF3 0E

tel: (0222) 795621 fax: (0222) 794267

1993

Trade winds



CELESTION SOUND FOR VISION

Celestion have produced two 'Home Theatre' systems. The HT One consists of a processor which sits between the video or Laserdisc machine and a stereo pair of Celestion I speakers. The HT Three has a more sophisticated processor with remote control and a third Celestion I for the centre or 'dialogue' channel. The HT one costs £299 and the HT Three £499. Both are available from Celestion Hi-Fi dealers, Dixons and Currys.

Celestion International Ltd., Ipswich IP3 8JP. Tel: (0473) 723131.



KENWOOD BUDGET FOR REMOTE CONTROL

Kenwood have launched a budget remote-controlled amplifier for only £179.95. A 28-key remote handset will power this 55watt amplifier up, turn the motor-driven volume control up or down, mute the output and allow the user to select sources from the listening seat. It will also operate the main functions of other Kenwood separates. Sources can bypass tone controls and there are inputs for both moving magnet and moving coil cartridges.

Also new to Kenwood's product range are two new cassette decks, both under £200. Both offer Dolby B and C noise reduction, track search and powered cassette doors. The cheaper of the two, the KX-3050 at £149.95, offers automatic peak recording level setting in conjunction with Kenwood CD players. At £199.95, the KX-5050 also includes Auto Bias with a memory for three tape types. Both decks can be remote-controlled if linked to a suitable Kenwood amplifier.

Trio-Kenwood (UK) Ltd., Kenwood House, Dwight Road, Watford, Herts. WD1 8EB. Tel: (0923) 816444.

HOME TAPING TAX

An EC Directive may mean British consumers paying more for their blank tapes. In Holland, where a tape tax is already levied, the Home Taping Rights Campaign say prices of blank tapes have increased by 30%. If you've been confused of late by what 'Subsidiarity' - the latest Euro jargon - means, it's the right of individual EC countries to make their own choice as to whether to accept some Brussels-originated proposals. HTRC are hoping that public opinion can be mobilised to ensure the British government doesn't implement a tape levy.

Home Taping Rights Campaign, Number 10 Dean's Yard, London

IN BRIEF

BRISTOL IS BACK

The city didn't go away, but the Bristol Show did become homeless last year. It will be back in 1993 on Saturday 20th and Sunday 21st February at the newly renovated Marnott Hotel. Exhibitors already promised include most of the big names in British and Japanese hi-fi manufacturing. Hi-Fi World will be there, of course.

SONY SOFTWARE

With the launch of Sony's MiniDisc expected in December, the company has announced an initial launch catalogue of three hundred titles will be in the shops before Christmas. Record labels include EMI (including Capitol, Chrysalis and Parlophone), Factory, Sony (along with Columbia and Epic) and Virgin. Artists scheduled for the launch are Bob Dylan, Erasure, Michael Jackson, George Michael, Gary Moore, The Rolling Stones and Simple Minds among others. The first MD players to be available are expected to be a record/playback Walkman, a play-only Walkman and a car stereo model.

SHAMELESS INFIDELITY

Braving the recession, Simon Byles, once of Rega Research, Grahams and The Sound Organisation, has opened his own shop. Called Infidelity, it nonetheless sells real fidelity from Naim, Rega and Roksan, from Tuesday to Saturday between 10.30am and 7pm.

Infidelity, 9 High Street, Hampton Wick, Kingston upon Thames, Surrey KT1 4DA. Tel: (081) 943 3530.

VINTAGE WIRELESS '93

The British Vintage Wireless Society have set the dates for their 1993 meetings. They will be January 10th, May 9th and September 5th.

Anyone interested in becoming a member should contact Alex Woolliams, British Vintage Wireless Society, 11 Norton Road, Knowle, Bristol.

NEARER THE WODKA

Allison Acoustics are moving to where the vodka comes from: Unit 5, Bewsey Business Centre, Bewsey Road, Warrington, Cheshire WA5 5JU. Tel: (0925) 445600.

NEW BRYSTON DISTRIBUTOR

Systems Workshop in Coventry has been appointed UK and Eire distributor for the Bryston range of power amplifiers.

Contact Systems Workshop, 24 Church Street, Oswestry, Shropshire SY11 2SP. Tel: (0691) 658549.

SATELLITE WARNING

Philips have issued a warning to consumers about modifications made to their STU 902 BSB satellite receiver by Cheshire-based company Zeta Technology Ltd. The original receiver, designed to receive BSB transmissions, had full BEAB safety certification, while products modified to receive Astra signals do not. Zeta have been asked to remove Philips badges from the receiver and to point out to customers that Philips will accept no responsibility for the product or liability arising from its use.

WHARFEDALE BACK IN ELECTRONICS

After announcing the suspension of electronics manufacture last year, Wharfedale have come up with an integrated amplifier, the Wharfedale 2050A. The press release didn't say how much it would be, or offer any other details.

For more information, contact Eurotrade (UK) Ltd. Tel: (0582) 768560.

World

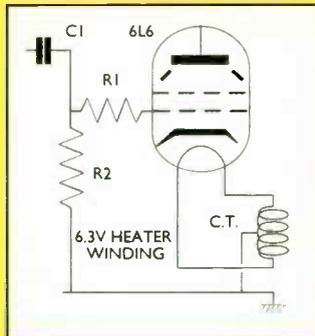


NOT FOR THE AMATEUR

It was with great interest that I read Recorded Message by Richard Brice in the September '92 issue of Hi-Fi World. I applaud you for publishing this and the circuit diagram which accompanies it.

There are, however, inaccuracies in the circuit diagram which make this design unworkable, and also in the text which could possibly cause problems to anyone attempting to implement the design. Firstly the heater supply must be earthed otherwise nothing but a loud hum will be produced. An earthed centre tap on the transformer winding is the best means of achieving this, resistive taps and 'humbucker' potentiometers also work, although the finite impedance ground path can sometimes give rise to related feedback effects which can be unpredictable and downright frustrating to sort out.

The control grid stopper resistors for the output 6L6's are shown in the wrong place and will not work. Also the grid resistors R20 and R21 are too low in value and can usefully be increased to 470k. This reduces loading and, therefore, distortion in the phase splitter, it extends bass response and very importantly it also reduces LF phase shift and stability.



The grid stopper resistor R1 prevents oscillation and is usually wired up hard against the valve base pin.

The grid bias resistor R2 was 100k in the original circuit, to prevent leakage from C1, a DC blocking capacitor seeing the anode potential of the previous valve, affecting the bias voltage on the control grid of the 6L6. Increasing it to 470k is possible.

The transformer heater winding should have a centre tap connected to earth.

And, as always, remember that the voltages in valve amplifiers are lethal.

In the text it is stated that the phase splitter is a conventional paraphase type, but it is not. It is a cathode coupled phase splitter.

Since the object of the article seems to be to give guidance to

those wishing to learn about these things, such duff information is counter-productive. Apart from these points I consider this an excellent article and I hope you publish more in the same vein. There's nothing like hands-on experience for understanding such things.

Personally I don't care for this type of circuit. I have found better results can be obtained by using triode voltage amps rather than pentodes and, although I cannot quite put my finger on why, the split load phase splitter always seems to sound better but has little gain.

Nor am I over the moon with 6L6s; I find KT66 to be sonically superior for Hi-Fi, although 6L6s are indeed good guitar amp

bottles as Richard Brice points out. The requirements are somewhat different though.

Ultralinear operation would be an improvement and cheaper, or triode operation if the forfeited power is of no consequence. E. A. Sowter Ltd. can supply suitable output transformers with screen taps; 43% taps are about right.

I can strongly recommend Sowter's products, they work really well. As I write this, I am listening to the CD50SE playing Supertramp's 'Crime of the Century' - a well recorded CD - through my home-built valve amp, using the excellent Golden Dragon EL34S beam tetrodes in

Letter of

CLASSIC REVIVAL

I was attracted by an article you published about Terry O'Sullivan's work on restoring old turntables.

As a music lover, my interest is primarily in hearing relaxed but accurate reproduction. I want to enjoy the full colour of a symphony orchestra without having the distraction of thoughts about minor shortcomings, which in my view are greatly exaggerated by hi-fi buffs.

Three years ago I was persuaded that my system, a Garrard 301, SME 3009 arm, Shure V15 cartridge, Quad amplification and the two Wharfedale omni-directional speakers, had been totally surpassed. Stupidly, I sent the speakers to the tip, put the rest of the equipment in the attic and bought a Linn system: LPI2, Lingo, Iltok arm, Karma cartridge, LKI/280 amplifier and top-of-the-range Monitor Audio speakers. I suppose that, in

all, the new system cost more than £5000. The sound proved analytical and dry. It lacked heart. I was deeply disappointed. The reproduction was taut and the system didn't breathe easily, as had my previous set-up.

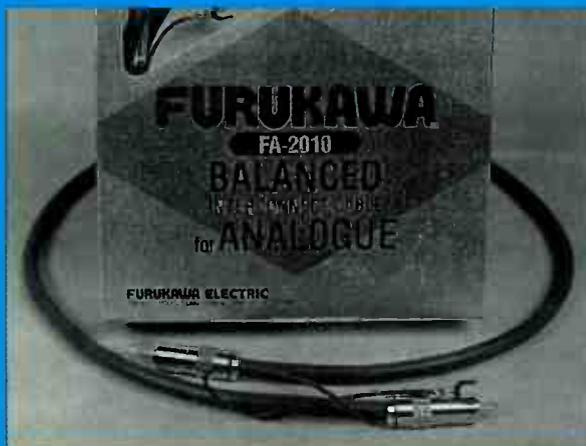
Following advice in your article earlier this year, I retrieved the 301 and the SME 3009 and commissioned Terry O'Sullivan of Loricraft to help build me a turntable unit. Both technically and aesthetically he made a superb job and could not have been more helpful. The SME/Garrard are now mounted on a really heavy base with Sorbothane damping. All are enclosed in a beautiful mahogany cabinet with a clear plastic cover.

In my view the result is a front end which is equally as good as the Linn system and much more relaxed. Certainly, it has, to use Linn's own word, 'musicality' in abundance. Furthermore, it is much less prone to going off song. The two decks stand side-by-side,

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writes

ultra-linear on 450 volts, courtesy of

Sowter's output transformers with just 14dB feedback. Playing into Tannoy DC 1000's (which I consider more musical than the 609's), this makes a very satisfying little system.

**David K. D. Dick,
Stockport,
Cheshire.**

I am very grateful to Mr. Dick for his comments on my article on constructing a valve amplifier. Firstly my apologies are due for two inaccuracies which crept into my re-drawing of the circuit for publication. I omitted to show an earthed centre-tap on the heater transformer winding.

2. The control grid stopper resistors were inaccurately drawn before, rather than after, the junction with the grid bias resistors. I do however disagree with Mr. Dick that as shown the stoppers will be ineffective, their function in securing h.f. stability in either position will be unaltered.

I am also grateful to him for correcting my description of the phase-splitter. The type shown was indeed a cathode coupled type and not a paraphase as stated.

I do not agree however that a triode amplifier and split-load phase-splitter could be used to replace the first two stages unless (as in the famous Williamson design) this was

followed by a differential amplifier to increase overall gain. In any case, I have had unhappy experiences with high level split-load phase-splitters due to the very large difference in source impedance seen by either output valve and, more importantly, due to eventual failure of heater-cathode insulation even when valves were operated within manufacturers' limits.

My cautious choice of 100k for the output stage grid bias resistors was based on similar real-world unhappy experiences where I have had to perform surgery on friends' amplifiers where, due to a choice of very high value bias resistors, the leakage across the coupling capacitors has dominated the bias conditions of the whole output stage. One particular patient was brought to me with both anodes glowing cherry-red due entirely to this reason!

Richard Brice.

GETTING WORSE

Why is Hi-Fi World my favourite magazine? Because all the others are even worse.

**Richard A. Francis,
Workington,
Cumbria.**

Gee, thanks. **EB**

(UN)REASONABLE QUALITY

I do not consider myself knowledgeable in Hi-Fi matters and have only recently invested in a budget system after many years without equipment. However, I am at a loss to understand some of the comments in Hi-Fi magazines which speak of certain items of equipment affecting the overall sound, e.g. "the amplifier has a deep and powerful bass", "this CD makes voices sound hollow", "the tape deck gives the piano a thin quality".

It would appear to me that the main source affecting the final sound is the quality of the recording, that is, assuming all the equipment is of a 'reasonable quality'. I have played many 'sampler' CDs and the sound quality varies enormously from

one track to another, depending on how well they were engineered and mixed and the actual location in which they were recorded. It is nothing to do with my equipment that the same group of musicians sound superb on one track and very poor on another. Perhaps you can enlighten me on the above, or am I on the wrong track?

**Michael Foden,
Southport,
Merseyside.**

Sorry, but, yes you're right and no, you're wrong. Our own systems reveal exactly the same effects. When we review equipment, however, we all use recordings of known quality. By and large, these are ones we have heard through a wide range of systems so we know them to be consistent. Hence, we can pronounce on the bass or treble quality of a single item of equipment, we hope, quite objectively.

To give an example, one of the recordings I use is of a band I heard in the studio in which the recording was made. As it happens, I heard the live feed straight into the control room, a 20-bit master-tape playback, the final 16-bit master and the CD, all with the engineer and producer present as well as the band. Therefore, I know exactly the sound that they all intended to achieve; if equipment falls short of that, then its shortcomings can be perceived. Conversely, if it reproduces some elements of the recording well, then its strengths can be discerned too. I also heard the same recording in a different studio though with the same monitor speakers, amplifiers and control desk, heard the criticisms of the engineers there of aspects of its sound quality, so I know the shortcomings of the recording itself, too, so they can be taken into account. **EB**

SOUND ENVIRONMENT

Thank you again for your advice on all my problems. I am delighted to see that you started changing the configuration and content of your World Favour-

Continued on page 50...

The Month

but generally I use the Garrard, clear proof of my preference.

**R. B. Conell,
Alnwick,
Northumberland.**

The notion of the revitalised Garrard generated a considerable degree of interest here. It is something which Japanese audiophiles have maintained over the years, while us Occidentals forgot about it. Those readers who have

frequently asked us about the relative quality of Garrard and LP12 now have one man's answer, but not having made the comparison ourselves we cannot comment. It does seem however, that a Garrard 301 (or 401) well mounted to prevent rumble can provide very respectable results.



At left a Linn Sondek; to its right a Garrard 301.

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



NEW ACOUSTIC DEPARTURE

It may not be a radical departure in styling, but Eric Braithwaite discovers a new type of sound in NAD's budget 302 amplifier.

Whatever novel developments may be hidden inside the sheet metalwork of NAD's new 302 amplifier, anyone hoping for a radical departure in external styling is going to be disappointed. Even with the best will in the world, it's hard to describe the characteristic NAD style as much other than militarily workmanlike, with little relief from dark grey but for white legends and logo, darker grey control knobs and buttons and a dull green on/off button and power-on light. A friend who dropped in during the listening sessions felt it looked elegant beyond its price bracket all the same.

Still, as my grandmother would say, always being one for the wise saw, you listen with your ears, not your eyes. In this direction, something interesting appears to be going on which is evident simply from manhandling NAD's £159.99 replacement for

the venerable 3020. Unprepared, a two-hand lift has it tilting alarmingly - there is a very hefty transformer indeed to be seen under the ventilation slots on the left of the casing. A typical NAD audiophile sense is already apparent; looking at the controls it becomes more obvious. Yes, there are tone controls for bass and treble; but they can be defeated. Round the back is a pair of speaker terminals with switchable impedance between 4 and 8ohms and the typical NAD external link which can be used to separate pre- and power-amplifier segments. Also on the back plate is the equally 'recognisable' 'Soft-clipping' switch.

Given the proliferation of sources these days, inputs are less extensive than some of the amplifiers hailing from Far Eastern designers, but, given that Tape 1 has a monitor circuit, the low number is probably adequate all the same. Excluding the phono stage,

there are two tape inputs and three other line level ones marked Tuner, Video and CD. NAD are not, since they are appealing to a mass-market, donning a hair-shirt, since apart from the tone and volume controls there is a balance control too.

So far, so NAD. Plugging in the sources brought about the surprise that the 302's looks had not. For a dozen years or more, NAD amplifiers have typically had a warm, gentle manner, a little soft in focus, a bit too subdued for some tastes. The new model is quite different: forward, pushy, up-front and noticeably brighter. In fact, it was one aspect of this brightness which brought about some doubt. Before I delve into this, let's deal with the 302's strengths, with which it is very well supplied.

While the 302 may seem a little low-powered next to the Japanese power houses, it doesn't sound it. It has plenty of sinew and muscle,

evenly spread over the full frequency range. Drummers display more than enough energy, for example, for even the deafest Rock fanatic not to feel short-changed in this department. Quite unlike earlier models, the 302 has vocalists and soloists striding out big and beefy onto the carpet in front of the loudspeakers.

It's this aspect - a credible impression of life-like size - that very successfully draws attention away from a failing that's minor in the context of a £160 amplifier. Peering into a pleasantly deep, broad and well-extended soundstage it became evident that imagery was less precise than relaxed listening would lead you to believe. A flute in a Jazz quartet, for example, was a little hard to pin-point; rhythm and bass guitars in Paice Ashton Lord's live Hammersmith Odeon concert recording, clearly left and right, were less than sharply outlined. Stop concentrating, lean back in the chair, however, and the 302 becomes a performer. Whether it's heavy Rock, Jazz, or full-scale Classical, the music expands into the room filling every corner.

This is one of the new NAD's greatest and most appealing qualities. Music - whether it's Mary Black, Lou Reed or the London Philharmonic - is involving and emotional. I listened to the Barbirolli recording of Otello. In the last act, Desdemona utters a spine-chilling scream as she suddenly realises Otello is about to strangle her. It should make you cringe in horror - like the approach of the unseen killer in Hitchcock's Psycho. With the NAD between my source and ESL-63s, both I and my fellow listener found we had shut our eyes trying to close off the vision the 302 put in front of us extremely successfully.

Street Cred

For a budget amplifier to recreate powerful emotions is rare. For one to cope with sources and loudspeakers that are a dozen times its price and keep its street cred is astonishing.

One problem, which is the blot on an otherwise supremely attractive landscape, however, will show up. It became noticeable at first on female vocals and later on violins. In the upper reaches of the scale, voices take on a sandpappy coarseness and violins a hard, shouty quality. Given that the rest of the tonal range is brightly coloured with a bass and mid-range that's full and firm, it doesn't take long for this to become intrusive. If the wick is turned up, this coloration can sometimes be almost painful. While Mary Black's 'Columbus' has all

the intonation and nuances present, her voice as a result is thinner than it should be. In orchestral recordings, the effect is to make first and second violins less distinguishable than they ought to be and flutes harder in tone. Switching on 'Soft-clipping' diminishes its apparent impact at high volume, but the general effect of applying it is



Behind the 302. Both impedance and 'Soft Clipping' switches are visible. Also to be seen are the links which separate pre and power sections of the amplifier.

to unfocus the sound and harden the mid-range and treble: best avoided.

While you might expect that the upper treble would be sharp and bitter throughout - even spitty - that's not the case; even close-miked vocals don't display any obtrusive whistles or screeches. Woodwind is splendidly sweet and lower strings superbly resonant, which does much to counteract the problem.

Overall, the 302's strengths far outweigh its weaknesses for its price. One of its particular strengths is its disc stage, which is of a quality matched by few even at fifty pounds more. While there are some compromises evident - a degree of strain in the upper mid and treble when pushed - for tonal accuracy and veracity it comes very close indeed to the line stages. Focus is a little softer, depth of field flatter comparing the same recording off CD and vinyl. All the same, it shares all but the last fraction of vigour and definition of the

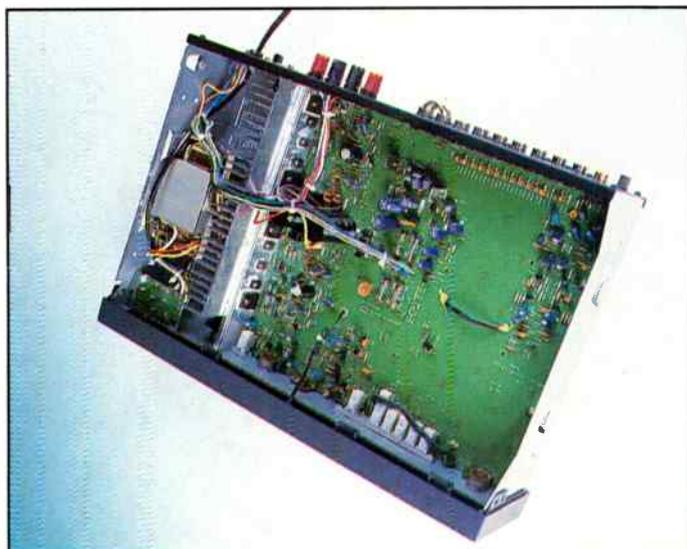
line level inputs.

It stands up extremely well against the competition. It also has a point in its favour that the rivals lack. Remove the links joining 'Pre-Out' to 'Power In', find a power amplifier, and a magic wand is waved over the 302 turning it into a very respectable pre-amplifier, dispelling almost all the reservations about it as an integrated. It has to be one of the bargain potential upgrades of the year.

It was clear immediately that the coarseness of texture in the upper registers was much more a quality of the 302's power stage. As a pre-amplifier, the edginess was smoothed over. The music expanded, not in scale - it would be difficult for the 302's staging to become wider - but in quality. A vocalist's or instrumentalist's key changes were suddenly unmistakable; dynamic transitions gained an extra degree of control. The benefits were profound: Mary Black's voice was more realistic; Paice Ashton and Lord's concert snapped into much sharper focus. Whereas, as an integrated, the 302 had a little difficulty in maintaining a driving rhythm and keeping a close eye on a melody as well, as a pre-amplifier there was no difficulty in focusing on, and following, any individual player. Violins lost their scrapy quality; tonal colour everywhere bloomed and filled out.

A Cleaner Window

It was remarkable how much more fulfilling it became. Still evident was the big presence of vocals and instruments that made the NAD sound so involving as an integrated amplifier. Also still there, but visible through a cleaner window, was the depth and breadth of the stage, the positions and movements of players requiring less concentration to



◀ Inside the 302: note the large transformer and heatsink at right.

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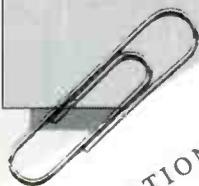
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pinpoint. Even the bass end of things became tauter, a drummer acquiring that extra degree of whipcord in the wrist. Over its performance as an integrated the 302 as a pre-amp gained a distinct edge; even more coherent and a few per-cent more on the ball in the rhythm and timing department.

Despite the reservations, in terms of insight into a recording, fine detail and credible tonal quality, the NAD is well up in the budget ranks. It takes a very brave stance. Whereas much of the competition has opted for a

cooler sound, the 302 goes all out for full-frontal force and realism, refusing to opt out of hard-rocking bass, avoiding smoothing over potential cracks. It won't deafen the neighbours, but for practical purposes it has more than enough dynamic range for a listener to believe it goes much louder than in fact it does.

As a pre-amplifier, NAD's 302 won't supplant pricier designs. It still shows signs of strain in the upper mid-range, and can still demonstrate a small degree of uncertainty when the music is complex, but it makes the

upgrading path to a pre-power combination one of the most cost-effective on the market. It's good enough, intrinsically, to partner power amplifiers well beyond its price. It brings out all its virtues and retains none of its vices. Buy it and the potential for an extremely satisfying future pre-power system will be sitting there waiting for the next decrease in interest rates. In the meantime, it's an amplifier that won't disappoint, as long as you are careful about choosing the speakers and sources to partner it ●

MEASURED PERFORMANCE

In the welter of differing design philosophies used to justify and distinguish hi-fi products, NAD have consistently remained conservative; it's a stance that has served them well. From the very outset NAD amplifiers have turned in a high standard of measured performance. It's a source of satisfaction to their creator and NAD's chief designer, the retiring Eric Edvardsen, that this can be obtained from simple, elegant and inexpensive circuits. Their amplifiers manage to combine this with a sound quality that is distinctive and widely liked, especially by first time hi-fi buyers fleeing from the horrors of a decrepit midi-system.

Superficially, the 302 doesn't depart from the NAD 3020 series I know and have tested over the years, yet inside there are some significant changes. In particular, the old and 'slow' output transistors, which had the advantage of being rugged, have been replaced by new Sanken output devices that are faster, yet even more rugged, NAD say. Being easier to drive, they put less stress on preceding stages too. These changes will affect sound quality quite significantly. Power output into eight ohms is now 36watts on the standard '4Ω' setting. An interesting and useful option is an '8Ω' setting for high impedance loudspeakers. This increases output to 52watts, I found, and since most British loudspeakers suit this setting, having a nominal impedance of 10ohms or more, it is an option that will be of practical value.

Other improvements concern the line output of the preamp, which has been biased more into Class A, and detail tweaks to disc equalisation to improve accuracy. The power supply has a better transient capability NAD claim and there is a tone control defeat button, which improves response flatness.

There are some notable characteristics in the measured performance of the 302, inherited from the 3020i, that do directly have a bearing on sound quality. Low levels of high frequency distortion under steady state measurement and very low noise (hiss) are two. Some bandwidth limiting remains, but less so than before. The practice comes from 'seventies thinking about a phenomenon termed 'transient

intermodulation distortion', thought to be a major factor affecting sound. The cure was to bandwidth limit the amplifying chain early on, to prevent troublesome high frequency signals passing through. Practice has never accorded with theory though; Harman have consistently ignored this piece of theory and their amplifiers have not conspicuously suffered as a result.

The CD input of the 302 reaches up to 50kHz before rolling off. Earlier designs rolled off just above 20kHz, but this low limit has been pushed upward. I suspect it is to help lighten the sound, because the consensus view was that NAD amplifiers lean toward sounding soft and warm, even a bit murky, in comparison to the best modern designs. Extending the high frequency limit can lessen this, as can using faster output devices.

The low frequency limit remains a bit higher than the specification of CD: 5Hz. The 302 reaches down to 15Hz, which is plenty low enough for budget loudspeakers, whose output plummets below 80Hz or so. Bigger amplifiers do need to go lower, but the 302's role in life isn't to drive massive loudspeakers or subwoofers. With low noise, low distortion and plenty enough sensitivity, the CD input of the 302 measures well for its role. All the other inputs, except phono, share these characteristics, by the way.

The disc stage is as quiet as ever; NAD don't use the ubiquitous 5532 op amp, but an all-discrete stage of their own design. It's quite a surprise to look inside an amplifier and not see op amps (silicon chips) these days. Equalisation has changed to alter frequency response slightly, reducing the lower limit from 40Hz to 20Hz. This will add a bit of extra weight to bass from LP. The equalisation curve was accurately followed right through the audio band, ensuring correct basic tonal balance. The tone controls must be switched out however, since they do affect performance even when set to zero. With normal sensitivity, very low hiss and correct input conditions, the disc stage has no detectable problems.

The bass control provides lift and cut below 200Hz at low-ish settings, so it doesn't upset frequencies other than those perceived as bass. The treble

control is a little less discriminating, but in this it differs little from most. All frequencies above 1kHz are lifted or lowered equally at low settings. At least it works at low settings, unlike many I have tested on budget amplifiers.

The steady state measured performance of the 302 differs little from the 3020i it replaces, both looking good on paper. I naturally listened to the 302 and was quite surprised to find that it has a notably forward and bright midband presentation, quite unlike all earlier NAD amplifiers. I was taken aback and very impressed by the enormous apparent insight; this amplifier has tremendous depth of analysis and it writes up the stereo picture in hard etched outlines. However, after a period of listening I did detect a little coarseness in the sound, but as budget amplifiers go the NAD's strengths outweighed its blemishes. **NK**

TEST RESULTS

Power 36watts

CD/tuner/aux.

Frequency response 15Hz-50kHz

Separation 89dB

Noise -103dB

Distortion 0.002%

Sensitivity 200mV

dc offset 11/10mV

Disc

Frequency response 20Hz-55kHz

Separation 58dB

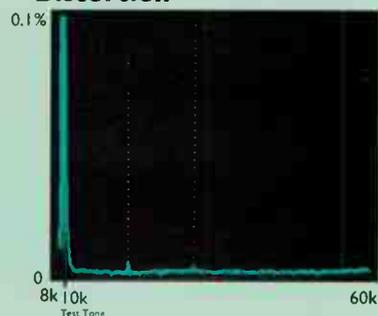
Noise -78dB

Distortion 0.003%

Sensitivity 2.8mV

Overload 250mV

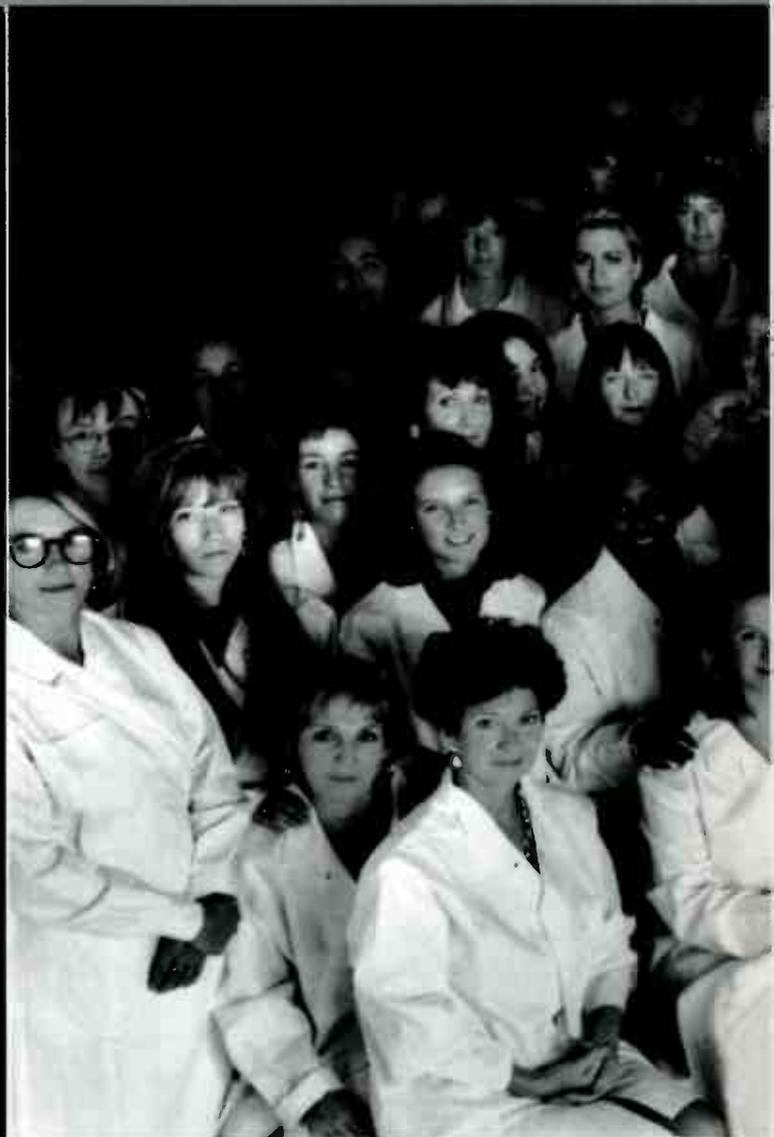
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n one factory. believe the noise.



sounds like the local alley cat?

The five band graphic equaliser, or the compact disc player with 20 programmable tracks and random play, if they don't sound just great?

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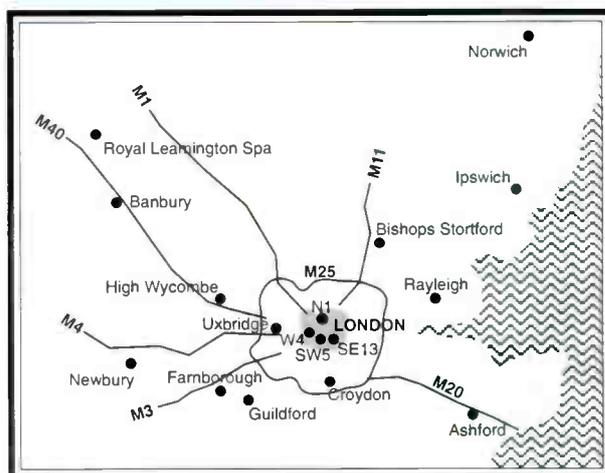
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ALL TOGETHER

A midi system includes everything from Compact Disc to loudspeakers in one package. Can it sound as good as budget separates? Dominic Baker and Alan Sircom find out.



Photographs by John Bruce: 071 625 6056

On the face of it, it is difficult to see why anybody should buy a budget hi-fi system, faced with the enormous opposition from the midi and component systems that dominate the market below £700. For the money the all-in-one system appears to offer many advantages over its specialist rival.

At this price, budget hi-fi gear is generally pared down, trading convenience and extra features for sonic performance. At the same time, the design rationale of a midi system is such that the sound quality can be sacrificed in favour of the current favourite function. The two camps have become more polarised over the years; so much so that they are no longer fighting for the same marketplace.

As the CD player-based system takes a hold, specialist separates look less and less attractive. Any decent midi or component system comes complete with full remote control that often controls cassette, tuner and even shifts the volume control from the comfort of the listener's chair. It will generally offer some kind of graphic display of the signal, have extensive signal processing controls and

even two tape machines that can record automatically from the CD player, sometimes even at double speed. The specialist system offers none of these facilities and looks drab by comparison.

It is only when you actually listen to the components system that the bargain starts to show its rough edges. Although it is a generalisation, it is still difficult to find a single mass-market consumer electronics company that excels in every branch of audio manufacture - company A may produce superb amplifiers and cassette decks, but their tuners and CD players are not as good as company B. Lumping all the products from one manufacturer together can tend to bring the system down to a lowest common denominator. In addition, all the component amplifiers in this test use power ICs, while the majority of specialist amplifiers use discrete components in their power amplifier stages. This makes a drastic difference to performance, especially on demanding, dynamic music, where the power IC amplifiers sound blurred and fuzzy when they approach any form of transient.

We have looked at four conventional

single-manufacturer midi systems and one of our own choice, compiled from popular budget separates. As a wild card, we have included one multiplay midi system from Pioneer, the N-52M. This is cheaper than any of the others in the test, but it does present an example of what the small midi system can do. Pioneer are also one of the market leaders in this field, so their inclusion is almost mandatory.

The systems by Technics, Yamaha and Kenwood all compete in the sub-£700 arena. Technics' amazing digital, feature-laden SC-CH700 system is reputed to be the market leader in this field, with Yamaha's Active Servo Technology in the CC-5 and Kenwood's space-age UD-700 styling closing the gap between the high street multiple and the specialist dealer.

Finally, we look at our own system, using a Sony CDP597 Compact Disc player, the newest NAD 701 receiver and a pair of the latest Celestion One loudspeakers. Although sans cassette deck, this system offers much of the component system's user friendliness, allied to the flexibility and better sound quality of specialist separate systems.

KENWOOD UD-700 SYSTEM**£699.95****DOUBLE CASSETTE DECK (X-A9)**

Looking svelte with its moulded grey edges, and pretty little green LEDs at the centres of the tape hubs, nonetheless this double cassette deck is suffused with a plastic feel. Both auto-reverse transports clanked a bit, with controls lacking positivity, but it is well idiot-proofed and easy to use. High speed dubbing is incorporated - not only from tape to tape but from CD too - but the result, frankly is flat and quite poor, though no worse than others in this test.

At normal speed, recordings fared rather better. Despite some undulation of pitch, tapes were clear with good imagery, if a little too 'hi-fi' with treble obviously pushed forward. Overall the deck performed ably.

CD PLAYER (DP-A9)

Sleek in styling, ergonomically handy, and economical in size, this CD player proclaims that it is single-bit with dual DAC's - potentially audiophile specifications. A link to tape machine and graphic equaliser allows the user to tape CDs at double speed and adjust the EQ settings for recording by sampling the disc for thirty seconds, a system Kenwood call 'AI Focus.'

With or without AI Focus, the CD is this system's strongest point, with a reasonably clear, detailed presentation if slightly bright and forward, best suited to commercial Rock. Classical or acoustic Jazz tends to sound antiseptic or barren. With AI focus switched in, the player sounds a little clearer; the effect is generally quite subtle, however, and on certain discs almost indiscernible.

GRAPHIC EQUALISER (GE-A7)

With the 'Spectrum Analyzer' operating the Kenwood really begins to look flash. Many of its facilities are designed for Dolby Surround, but there are also self-explanatory 'Car' and 'Headphone' settings for making tapes. 'AI Loudness' boosts low and high frequencies for low volume listening. While the settings do alter the sound quite dramatically and it's possible to make a truly obscene noise, they can be used with a subtler hand for satisfactory enhancements.

**LOUDSPEAKERS (LS-A6)**

A masterpiece of contrived styling, with ports reminiscent of the air intakes on a jet fighter, the baffle disguises a conventional two-way speaker. Although not in the same class as a true hi-fi loudspeaker, they match the system well, more dynamic, detailed and coherent than many of their rivals. Although there is a slight tendency to boominess, their overall balance is pretty realistic, especially placed on decent stands. Replacing them with Mordaunt-Short's MS5.10's, or a similar design, would be a good move, their relaxed balance harmonising with the amplifier's comparative forthrightness.

RECEIVER (A-A7L)

The nerve centre of the system, this also houses one of the most impressive timers around. When setting up, it prompts for year and date as well as time, and has a plethora of 'smart' timer options like a video recorder. Even the tuner presets can display a four-digit 'codename', but this is entered by the user as a memory aid, it's nothing to do with RDS.

An honest performer, although a bit brash, a little on the steely side and short on depth, the amplifier has an even balance. It's a shade more exciting and lively than the Yamaha in this group.

With a good aerial, the tuner copes with Classical, Jazz and Rock with equal aplomb. While there is no undue spitting or sibilance, it has a hard-edged quality on vocals and acoustic instruments.

CONCLUSION

A daunting piece of equipment at first sight, with so many functions described in its 84-page manual, it takes time to learn to handle this Kenwood system. However, the time is well spent, as the UD-700 stands close to the pinnacle of current component system performance. There's still a massive quality jump between this and a pukka separates system, but Kenwood's UD-700 closes the gap a little.

COMBINED SIX-PLAY CD/DOUBLE CASSETTE DECK (PDC-520M)

Pioneer have combined a multi-disc Compact Disc player with a double cassette deck in this system. Sporting all the functions common to the breed, the twin tape machine will automatically select bias for Ferric and Chrome tape only. Automatic recording level is set rather low, leaving a high noise floor. While this can be suppressed using either Dolby B or C, these also erase much of the treble content.

This is not a deck for piano enthusiasts, as pitch stability was a problem, making piano recordings sound as though the instrument had been transported to the bottom of a swimming pool. A melody is broken up into discrete components,

making it impossible to follow a tune; on a Rock recording with a solid beat, the Pioneer just cannot keep time. Pre-recorded tapes suffer the same fate.

The single-bit Compact Disc player uses a removable magazine which holds up to six discs, interchangeable with Pioneer's in-car units. The CD unit has no display of its own, instead sending track and time information to the receiver, where it appears on a light blue LED display.

Sonically, although the player has boundless energy, it all comes with a raw, unfocussed edge - the CD equivalent of an Irish wolfhound. There is little stereo focus or fine detail; the overall sound quality has an uneven character, brisk but brash, making it unsuitable for those with catholic tastes.

LOUDSPEAKERS (S-P520)

Small, thin, three-way designs with fixed grilles, the loudspeakers are a visual match for the system. The signal leads are captive, emerging from the rear panel, so no improvement on the thin cable is possible. Their sound adds credence to the suspicion that the principle design criterion was aesthetic, though the cost-cutting that has been applied to conjure up a system as cheap as this obviously has its effect. They are glassy, bright and synthetic at the top, boomy and indistinct at the bottom and lack presence in the mid-range. Stereo imaging was poor, almost to the point of being indiscernible.



RECEIVER (SX-P520)

Split into separate tuner and amplifier sections, Pioneer's receiver sports three sound field settings: Disco, Hall and B.G.M. (Background music, for the abbreviation-challenged.) At best none of these do little more than add a subtle bathroom quality. A Smart Operation control will memorize the settings. Though it's cheap, the Pioneer's controls are well laid out and every bit as positive to the feel as those on the more expensive systems.

Some of the controls on the tuner section are small enough to make fine-tuning and switching between presets a

little difficult. It has a touch of the car radios in its sound; vocals have a pinched, cuppy and nasal quality. Generally, despite a relatively natural sound, the tuner sounded compressed and lacking in life, without much stereo focus.

The amplifier section fared little better, sounding strained and beginning to boom through the loudspeakers if driven hard. Mostly undramatic, but with the occasional fire-cracker like peak, it effects a reasonably clear and concise approximation of music, but is tainted by lack of timing, imagery, ambience and fine detail. With little or no grace, it barely justifies the title 'hi-fi'.

CONCLUSION

The cheapest system in this test, the N-52M is typical of midi-system performance - the staple diet of high street multiples who would probably view the others in this group as 'high-end'. Although easy to use and well-constructed for the price, its sound quality leaves a lot to be desired. Sonically on the lowest rung of the ladder, it is firmly in the realm of 'audio' rather than hi-fi, sounding like a decent in-car system - without the engine noise.

TECHNICS SC-CH700 SYSTEM**£649.95****DOUBLE CASSETTE DECK (RS-CH700)**

Tape bias, equalisation and record level are set automatically on this twin cassette deck, though the latter is a little high, and the point of no return when the head saturates can clearly be heard.

A Digital Signal Processor can be used to tailor the sound of the source for recording; except for tape dubbing, which can be performed either at normal or double speed. Recording and playback is quite clear, but with an element of brightness at the top, a boominess at the bottom and a touch of the wobbles on piano. Dolby B and C are offered.

DIGITAL SIGNAL PROCESSOR (SH-CH700)

The 'Spectrum Analyser' has three light-blue display modes to catch the magpie eye of passing trade: in one of them pretty quavers continually dance across the window. Behind the light bars, however, lives an even more impressive Digital Signal Processor. All analogue sources, including the signals from tuner and tape, are converted to digital, processed, and then re-converted to analogue for the amplifier, taking in a variety of special effects on the way.

Six sound field settings add up to a total of 5.5 seconds reverberation to the sound; long enough to remove the CD and put it back in its jewel case. Few of the effects do much for sound quality. While the 'Car' and 'Headphone' presets may be useful for taping, the rest are about as useful as a chocolate fireguard. 'Stadium' moved a radio interview into a bathroom and 'Heavy' turned Mel Gibson's voice into a Kylie Minogue/Donald Sinden cross-breed. A 'Karaoke' setting strips away much of the mid range to mute vocals so you can sing along to your favourite recording.

TUNER/CD PLAYER (SL-CH700)

Combining a tuner and CD seems odd; the CD's converter lives in the DSP section, connected by an optical link. The loading drawer, hidden behind the control panel, bounces out rather jerkily, but while the controls themselves are also plasticky, they are easy to use. CDs take on a synthetic quality; this is fabulous for recordings of Grace Jones, but less so for Classical programme where such 'impressiveness' becomes wearing after a while.

The tuner section covers the three wavebands and is complete with thirty presets. Programming is simple, but with an external aerial the stereo beacon is too sensitive: it's hard to accept that distant hissy minicab messages constitute high quality stereo! Given a good signal from an external aerial the tuner is quiet, but vocals are chesty and it sounds as though signal compression is being used even when it isn't.

**INTEGRATED AMPLIFIER (SU-CH700)**

A true system amplifier, rated at 40watts, the SU-CH700 has controls only for volume, balance, source selection and timer operation, with sockets for a Karaoke mic and headphones. The loudness button is hardly subtle and is best forgotten.

The display shows a multitudinous array of functions: time on the left, sources and graphical displays of volume and balance on the right. Its sound quality is rather steely and hard; it can sound impressive with Grace Jones, but image focus is poor and overall coherence is lacking.

LOUDSPEAKERS (SB-CH700)

A three-way design, with connectors for cables at the rear, these loudspeakers appear to have been designed with more regard for perceived value than sound quality. Turn the volume up and the boomy bass drivers crack as they hit their end-stops and the tweeters are more than a little steely and bright. They are not especially coherent and create a vague image; while the sound they produce may be suited to over-produced pop music, anything more natural or refined loses out as they try to make even Kyung Wha Chung sound like Grace Jones. Quite a feat.

CONCLUSION

A profusion of features, sleek styling and remote control has made this system a market leader. Digital signal processing is a bold step in this market, taken to its logical conclusion in Meridian's 601 preamplifier. Since the sound, with the loudspeakers supplied, is vivid and exciting, but too intense and coarse for the audiophile market, Meridian probably won't be too worried about this competition!

DOUBLE CASSETTE DECK (K-CC5)

In a world of bright flashing lights and displays, this twin Dolby B and C deck, finished in light gunmetal, is remarkably restrained. High speed tape dubbing is possible, but there is no provision for manual record level adjustment. This is set low enough to prevent premature saturation on ferric tape, which makes it difficult to determine the difference between a pre-recorded tape and high speed copy. Differences in pitch stability, detail and timbre were instantly apparent on another tape player; sonically, neither the play/record nor the playback transports are particularly stable.

TUNER/CD PLAYER (TCD-CC5)

As with the Technics, the tuner and CD player are combined, though this time also sharing the box with the digital-to-analogue converter and timer. It comes in Yamaha's standard gunmetal finish, with a dulled orange display. The tuner section covers the three wavebands and has twenty presets; programming is quick and easy. It produces a pleasant, dry sound, but also one that at times is sibilant and hollow, with cuppy vocals and a touch of cardboardy, tuneless bass.

The CD player's character is broadly similar, with typical Yamaha dryness. More refined and restrained than might be expected, producing a moderately wide image with good stereo focus, it lacks image depth and gets in a bit of a mess with complex detail. Ultimately it is perhaps a little too bland and muted.

LOUDSPEAKERS

Unusually in a market where three or more drivers is the norm, the Yamaha AST system sports just two drivers hidden by a thick grille. Discreet this may be, but the same cannot be said of the 'air woofer' port which looks like a gaping grey mouth at the bottom of the speaker. The AST part of the equation means there is a kind of plateau between 11 o'clock and 3 o'clock on the volume control where it is possible to hear the amplifier's growing strain but with no increase in volume. With the Mordaunt-Shorts in place, although the tonal balance was less even, the increase in volume was smoother.

Stereo imagery was surprisingly good, with some of the sense of relaxation that Yamaha appear to inject into all their 'Natural Sound' products. At low levels, however, these speakers' relaxed sound becomes sleepy; when the music turns complex, the cones start to shake and high volume excites some sibilance and spitting.

**INTEGRATED AMPLIFIER (A-CC5)**

Restrained in looks for a midi-system amplifier, no more than four small yellow LEDs are on show at any one time. A neat touch is the servo-assisted volume control and source selector.

Unlike the heavy signal processing of the Technics, the Yamaha only sports three preset sound settings: Hall, Jazz Club and Rock Concert. Bass and treble controls are evident on the fascia, but there is no sign of a loudness button. The headphone socket, as usual on midi-systems, takes a 3.5mm plug.

Yamaha's amplifier uses their proprietary Active Servo Technology system to create deeper bass from the system's own loudspeakers, making upgrading potentially difficult. We tried using a pair of Mordaunt-Short MS5.10's, but the 'forced' sound that resulted made it difficult to recommend a change.

With the Yamaha speakers in place, the system sounds pleasant, relaxed and tonally even. It doesn't, however, take kindly to loud or dynamic passages. When stressed, it soon sounds raw, rattly, readily hardens voices and pushes instruments forward in the sound stage.

CONCLUSION

Although occasionally sounding cluttered and sometimes spitty and shouty, the Yamaha outfit was one of the most pleasant systems in the test. It was surprisingly pleasing with light, unstressful music. No single part of the system shines as superb, but conversely none sticks out as particularly poor. It's a pity that in the shining glitter of the midi-system world the Yamaha's laid-back nature and appearance may hold it back.

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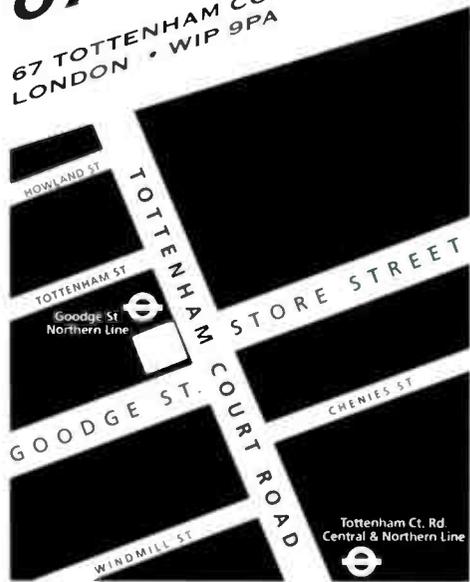
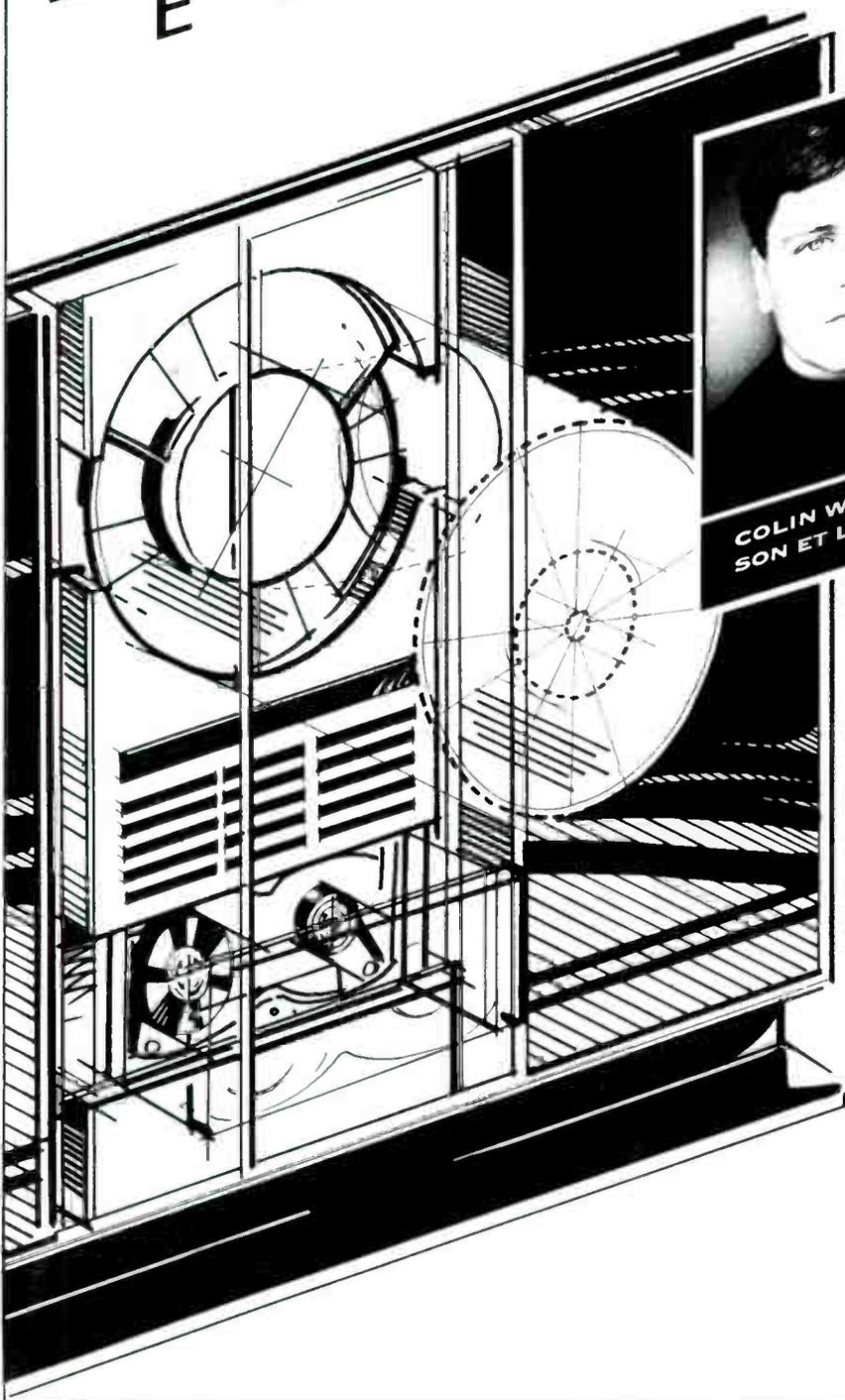
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**CD PLAYER
(SONY CDP597)**

This Compact Disc player has to justify itself in order to get sales. A midi player is seldom thoroughly scrutinised in its own right; a separate item has to be good in itself or it will not be a success.

A well-finished product, with a silky black finish and positive controls, the Sony has a comprehensive range of facilities including peak search to aid tape recording.

Musically, it is a strong performer with plenty of detail and a good sense of rhythm, producing a big rich sound which needs no bolstering with effects from a graphic

RECEIVER (NAD701)

This is a remote controlled AM/FM receiver which has just been launched by NAD. It has CD, video, and tape inputs and a phono source which can be switched to accept an additional line level input such as a Laserdisc player.

The tuner section can store up to 30 FM stations and a further 30 from the AM band, which is more than adequate for most listeners. It also has all the standard features such as auto tuning and an FM stereo indicator.

The NAD 701 combines good radio performance with a clear and confident amplifier. The amp has a smooth and powerful delivery belying its conservative 25w rating with an open and three-dimensional soundstage which makes it an involving amplifier to listen to. From a clean source such as CD, or its own competent tuner section, the NAD turns in a very commendable performance.

**LOUDSPEAKERS
(CELESTION 1's)**

The baby Celestions require very little introduction from us now, being a long time favourite of ours. For a little less than £100 they provide a level of performance that no midi system loudspeaker could ever dream of matching. Their presentation is lively and exciting with a strong, rhythmic bass which sometimes needed a little attenuation via the tone controls. Their treble is clear and extended but free from sibilance.

**CONCLUSION**

Sadly, the majority of the buying public have been conned into believing that a Japanese midi system is hi-fi. This simply is not the case. The dictionary defines high-fidelity as the "reproduction of sound with little distortion, giving a result very similar to the original." It also mentions that "the reverberation and spatial sound-pattern of the original must be reproduced too." All of the midi systems we listened to deliberately distort the sound in one way or another and thus present the music in a way that the artists had not intended. In addition the design quality of the systems is

not good enough to produce the height, width and depth that is required to present a believable image.

So professionally carried out has the image-making of the midi-system been that most people have been led to think that they cannot hear the difference and that only a select few can. This again is not true. Go and listen - everyone can hear the difference - your ears are as good as any other hi-fi enthusiasts, and possibly better; all that is needed is a little guidance.

From the moment play was pressed on the Sony CDP597 it was evident that this

system was in a different class. It was fast and dynamic with plenty of energy and life, breathing out a fresh and unpolluted sound in comparison to the smog that the midis belch out. The sound was powerful yet lucid and free from compression and colouration. Vocalists would speak out to you from a well defined position within the large soundstage created by this setup rather than mumbling in the background.

It does have its drawbacks, like requiring two remote controls instead of one, but these are far outweighed by the superior quality of sound it produces.

Kiss my Aura, Dora

Frank Zappa, '74



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CONCLUSION

It's strange. As the component system progresses, becoming smaller, cheaper and more technologically advanced, it seems that along the way the sound quality has been forgotten. There are exceptions, but the formula seems to hold true for many manufacturers.

The component system is still infinitely better than the run-of-the-mill all-in-one midi system. The Pioneer N-52M is indicative of this breed. Such a system is small and lightweight, easy to put together and simple to operate. The overall flavour is cheap and cheerful.

However, the Pioneer lives in a market far removed from the specialist hi-fi dealer; that of the high street multiple store. It is well finished and has a classic styling that would prove attractive to the less discerning listener and, while not garish, would not be out of place in a teenage bedroom. In these respects, the Pioneer fulfils its criteria exactly.

Moving onto the component systems represents a substantial step forward, though of the ones tested in this issue, the

probably lies with the analogue to digital converter, as CD performance is far better than analogue. In addition, the DSP system can be heavy-handed, especially with injudicious user programming. It is not the most civilised performer around and the addition of some of the more aggressive DSP sources pushes this into the realms of

undemanding and surprisingly refined for such a low cost player. This refinement could be its downfall, as it sometimes trades excitement for a patina of sophistication.

Of all the component systems in the test, the Kenwood UD-700 has the healthiest balance. It patrols the no-man's-land between true hi-fi and audio. It gets surprisingly close to the music and can be recommended as a second system.

While each component, taken singly, does not compete with true hi-fi products, they get far closer than might be expected. This, added to the tidy styling and convenience, makes for a product that can compete with 'pukka' hi-fi, without disgracing itself... almost.

Its prime strength is that it combines the politeness of the Yamaha with the excitement of the

Technics. Although it is not as advanced in its digital signal processing as the Technics model, there are a variety of DSP settings. These share the restraint of the Yamaha's, but allow for wild lapses of taste, if required.



the brush.

There are DSP settings on the Yamaha CC-5 as well, but they are all factory-set and are less overbearing than those of the Technics machine. Compared to the bells and whistles of the other systems in the



most technologically advanced is also one of the poorest, in terms of its sonic abilities. Technics' SC-CH700 system features some highly innovative concepts. All of the systems used some form of Digital Signal Processing circuit; in the SC-CH700, this is taken even further by processing every input digitally, using an analogue to digital converter for the tape, tuner and external analogue sources.

Unfortunately, such processing has a less than satisfactory influence upon the sound quality of the system. The fault

test, the Yamaha is decidedly straight-laced. The minimum of goodies does not compromise the Yamaha's sound. At low volumes it is pleasant and warm, although it quickly becomes harder, losing definition and causing the bass cones to thwack when the volume is cranked up. This is the first system that does not make stereo sound like an artificial effect.

It is far from perfect; there is a high degree of spit and sibilance from the tuner and the twin cassette player is far from vice-free. Overall, the CC-5 system is



While the Kenwood UD-700 system may have been the best of the midis, when it comes to 'real' hi-fi even that can't compete with the line-up of separates. The Sony CDP-597 has all the power and dynamic ability the Kenwood lacks, leaving the midi system sounding reminiscent of an average-quality cassette deck. By comparison, the separates system has powerful but well-controlled bass, with a well-focused midrange and clean, sharp, extended treble. It is truly a breath of fresh air ●

A PINK PINNACLE

Pink Triangle are aiming high with a new, innovative digital-to-analogue convertor. Alan Sircom heads for the top with the Da Capo.



The current crop of top-end convertors produced in this country have, until recently, used Philips' processing chips almost without exception. Now, looking for improvement, manufacturers are diversifying to alternative technologies from Burr Brown and Crystal, both American companies making inroads into high-end audio. Pink Triangle have opted to pursue another course altogether. They have designed their own one-bit convertor, rather than use a proprietary chip. By any standards it's a radical move, making their new £350 'Da Capo' digital to analogue convertor (DAC) a strongly individual product. Instead of being

subservient to current chip fabricating techniques, it breaks away from this constraint in an attempt to raise standards.

Pink suggest that their new discrete convertor is sonically superior to Philips' DAC-7 chipset because it reduces the number of in-line operational amplifiers to only one per channel. There are other reasons behind going discrete, but these are hidden beneath a sealed pot; Pink are not revealing their secrets. The discrete one-bit convertor does increase the IC count within the Da Capo; a comparable leading-edge DAC-7 convertor may have about six integrated circuits, while the Da Capo has thirty-two.

External styling of the Da Capo has changed subtly from that of existing Pink Triangle products. Its lines are more curvaceous and the case is wider, but sleeker and leaner - similar to the new-look Volkswagen Golf.

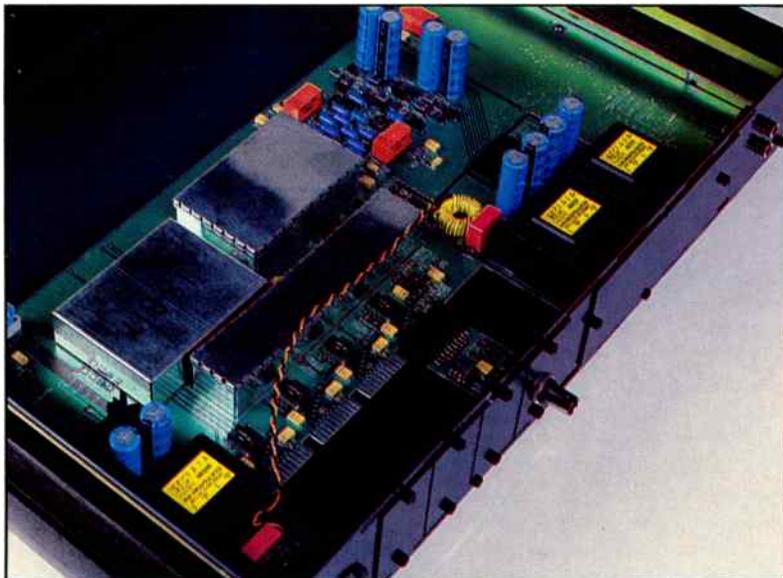
A silver-plated brass panel on the front sports a row of five small buttons. The leftmost four relate to rear inputs or outputs, while the last is a standby button, which also shows signal lock.

Potential

The main area of potential improvement in digital reproduction lies in digital filtering and the digital to analogue conversion process. The Da Capo offers dealer-replaceable cartridges that contain both the filter chips and the convertor. Currently, it is supplied with the Philips SAA 7350 Bitstream processing chip with two preceding filter options: a standard 18-bit Yamaha filter and also a 20-bit Burr-Brown/NPC filter. More will become available as digital technology develops.

These offer a degree of fine tuning, to suit individual tastes and systems, bringing tweaking back into the heart of hi-fi itself. Our review sample was supplied with both 18 and 20-bit filter cartridges. The former had more richness, clarity and a natural presentation but the alternative had greater authority in the time domain and a level of 'zip' and excitement that was alluring, although possibly less accurate.

The essential circuitry of the Da Capo. Metal cans hide the discrete one-bit convertor and the plug-in cartridge.





In addition to a BNC co-axial digital input from a CD transport, there are also three further spaces for plug-in digital input and output options, known as Digital Interface Cards. This allows some flexibility. At present, most domestic users only need a convertor for Compact Disc reproduction. In future, however, the Da Capo could accept further digital signals, such as Digital Audio Broadcasts, together with an actively reclocked datastream for output to any digital recording medium.

Multiple Options

All digital inputs and outputs can be specified. Currently, there is provision for RCA phono (Cinch) coaxial, fibre-optic Toslink or AT&T connector, or even 110 ohm balanced connection, for those with professional needs or Proceed or Mark Levinson transports. Pink Triangle suggest that balanced connection is ideal. Unfortunately, few domestic transports possess a balanced output.

All these user-selectable options are fitted onto a separate busboard within the Da Capo. Apart from easy interchangeability of inputs and outputs, it improves the motherboard's resistance to static damage. A DAC is most likely to suffer chip damage due to static electricity discharges introduced at the input/output stage. The busboard gives the Da Capo an extra line of defence against large-scale chip failure. There is also a diagnostic output fitted which allows the Da Capo to be

hooked up to a computer, for easy dealer servicing.

Although there is a wide range of inputs, Pink Triangle say that the quality of the digital input, or indeed the transport itself, is immaterial. As long as the transport is functioning correctly, with decent error correc-

"The Da Capo shifts the goal posts, showing up just what digital is capable of"

tion, the difference between transport mechanisms is effectively nil. DPA Digital, similarly, also claim that their Deltran clocking conversion overrides differences between transports. The Da Capo reclocks the datastream via three phase-locked loops at the DAC itself. It does not use sync-locking, like Arcam and DPA.

Internally, the standard Da Capo sports three separate RF filtered power supplies; a digital supply and analogue left and right. The digital power supply feeds the input/output bus and the filter plus processor chip cartridge. The discrete one-bit convertor is treated as an analogue stage and is powered by the two analogue power supplies. These are

mounted on a plug-in card, as the next upgrade is planned to be a separate battery power supply with a low impedance umbilical cable.

This battery pack, expected to cost around the £800 mark, will hold a dozen lead-acid batteries, two toroidal transformers and a hermia, but will be fitted into the standard new-look Pink Triangle wood case. The digital power supply will remain unchanged and still live within the Da Capo's case.

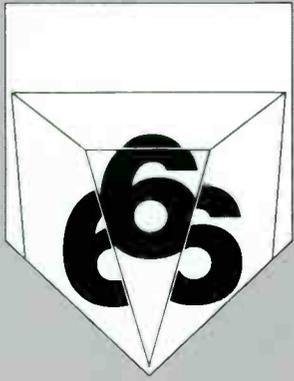
High-Tech Sound

If a convertor's sound quality does not match up to its technology, the highest of high-tech is pointless. Fortunately, the Da Capo matches the level of performance Pink Triangle have achieved with their Anniversary turntable.

That is not to say that it attempts to emulate the sound of vinyl, like some convertors. What it does is remove the artifice of 'digitalness' from the medium.

The first reaction elicited from most who have heard it is to remark on its sheer smoothness and top-to-bottom integration. Compact Disc is often criticised by analogue enthusiasts as sounding 'disjointed'. The Da Capo ties all the parts of the recording together with that stunning 'sitting at the mixing desk' clarity. Take the BBC freebie CD of Tchaikovsky's Sixth Symphony for example. One can hear the instruments hanging in their correct locations in space, with all those coughs and foot shufflings





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Jason Kennedy - HiFi Choice



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"Quite outstanding, breathtakingly neutral."

Jimmy Hughes - Audiophile

"Must be heard to be believed."

Richard Black - HiFi Choice

"An audiophile's dream."

John Bamford - HiFi Choice



M C 5 0 0 0 £1499.95

"The MC5000 was incredibly clean and focused, this much was evident from the very second it entered the groove... When the music started the cartridge threw open the shutters and afforded me a remarkable view of every element within the recording."

Malcolm Steward - Audiophile

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Trade in your old Ortofon moving coil - approx 25%

Trade in any moving coil cartridge - approx 15%

World Radio History

that tell you it is a live recording. Yet I never became aware of the imagery at the expense of the coherence of the sound. Although it is clear and detailed enough for a listener readily to listen into the recording, I never lost track of the living, breathing, orchestra - and coughing audience - flowing through the superb recording.

I have heard a number of the top Bitstream DACs in the past two years. To date, none could match the DPA PDM TWO for its insight and sheer detail, although I felt that there was a hardness, especially in the mid-band. On the other hand, we have the likes of the top Micromegas, without the hardness, but without the razor-sharp imagery and clarity too.

The Da Capo combines the

smoothness and grace of the best Micromegas, with the insight of the PDM-TWO and then takes a step forward. Why? Because the Da Capo shifts the goal posts, showing up just what digital is capable of, leaving almost every other CD player I have heard sounding like a poor compromise by comparison.

Even those few exceptions that can compete have always had a signature, benign or otherwise. The Pink Triangle Da Capo is different; if it leaves a fingerprint, I have yet to find it. I am at a loss to find an area of musical reproduction on digital where it does not set the standard. Tonally, it is as neutral as I can think of, with spatial abilities only limited by the amplifier or the loudspeakers. In addition, the Da Capo has a powerful

yet not overblown dynamic range and spot-on rhythmic qualities (when using the 20-bit filter). It also has precise detail and a coherent and deep bass that have hitherto lain undiscovered in the digital medium.

With such a forthright performance, it is only to be expected that it lays bare poor recordings. On a disc that has any redeeming sonic qualities, however, the Da Capo will retrieve them. This is the first time that a digital product has inspired me to actively embrace the digital format. It is also the first time that I have had cause to regret my seemingly uncompromising stance toward Compact Disc; I wished I had more CDs - not to play to test the system, but for genuine enjoyment, for that's what the Da Capo provides ●

MEASURED PERFORMANCE

We've been eagerly awaiting this convertor for some time now. It comes accompanied by some strong claims, the strongest being that the dedicated one-bit DAC-7 (TDA-1547) convertor chip produced by Philips - a highly specialised and dedicated audio device - has been improved upon!

It's not a claim to be made or taken lightly, especially with the critical reception that such a product will get in the UK. The ability to test these claims exists, and so do deeply capable and impressive commercial alternatives that have already set a very high standard, in terms of both sound quality and measured performance. In particular, I have in mind the most impressive DAC I have heard to date, the DPA Digital (once known as Deltec) PDM-TWO, based on the very Philips TDA-1547 chip Pink claim they have improved upon.

It was the green circuit board with its clusters of miniature surface-mount components and small, independent mains transformers that made us say "Deltec!" when the lid was lifted, but if the designer had been present I'm sure he would have cried. Pink, like Deltec, have decided that surface mount offers various benefits in terms of layout and component quality. Surface mount components are micro-miniature and lie on the surface of a circuit board. Developed for aerospace with light weight, low bulk and guaranteed high quality as a priority, the technology suits audio well. Used fluently, it helps reduce breakthrough between digital and analogue stages, avoiding correlated distortions. I couldn't help but notice how carefully Pink have screened their stages by putting them in metal cans - all a part of the strategy needed to avoid various insidious distortions that haunt true one-bit technology in particular.

The Pink DAC showed itself to be ultra-linear, producing distortion figures at all levels that were as low or lower than any competitor. This amounted to around 0.005% distortion at -30dB and less than 1% distortion at -90dB with a dithered signal. In fact, stripping away dither noise by synchronous time averaging showed that no real distortion

components existed at all at -90dB, only noise. So Pink have successfully produced a highly linear, true one-bit convertor, justifying their claims to be able to match or improve upon Philips' own DAC-7 chip. It's hardly an understatement to say that this is impressive. No one has yet sought to take on and improve upon the sophisticated digital processing chips designed by the world's largest electronics companies. And it's not as if DAC-7 is a mediocre or obsolete design. Quite the reverse: it's the best. Improving upon the best is no mean feat.

I had to chuckle a bit when the impulse response averaged into a thin green line on the analyser screen. It possessed the same pronounced treble roll-off seen in Deltec convertors, as our analysis picture shows toward the right side of the trace. In every convertor I have listened to, except a Deltec, this sort of droop results in an obviously warm but smooth and cohesive sound. Why Deltec convertors always sound quite bright, in defiance of the usual outcome, is something of a mystery, but it may be due to the filters used. Quite how the Pink sounds can only be decided by listening tests. As I have said, normally, this sort of roll-off would be clearly audible, but it is unwise to make such an assertion without first listening.

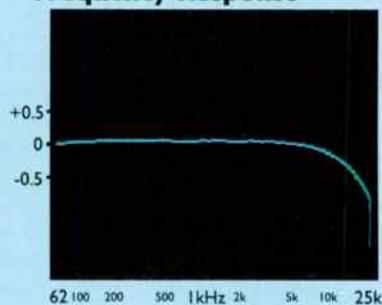
In every other area of measured performance, the Pink DAC put up a near-perfect performance. It isn't alone in being able to achieve this, but that hardly matters. The important point is that this mould-breaking new convertor flies straight in to the top of the performance league, fully meeting all the performance claims made for it. New implementations of difficult technologies often suffer teething troubles - Pink's new DAC does not. That says a lot for the abilities of its designer.

To me it seems wholly appropriate that Pink should decide to follow the same path as Deltec, tackling and overcoming the difficult underlying problems in audio that others would rather avoid. Pink's new one-bit convertor is something of a milestone in British audio design. It works superbly well, is unique, and will hopefully encourage others to be as bold and innovative. **NK**

TEST RESULTS

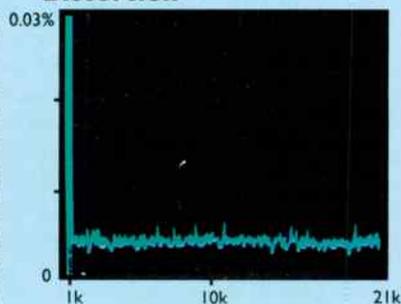
Frequency response	2Hz-21kHz	
Distortion		
-6dB	0.006	0.006
-30dB	0.004	0.004
-60dB	0.37	0.4
-90	30	30
-90dB dithered	1	1
Separation	left	right
1kHz	120	120
10kHz	112	107
Noise	-114dB	
with emphasis	-114dB	
Dynamic range	111dB	
Output	2.3V	

Frequency Response



Falling upper treble.

Distortion



No distortion.

We started out with high hopes and good intentions, feeling certain that the popularity of midi-systems must be justified. Hi-Fi magazines are commonly criticised for having their heads in the clouds and there's an element of truth in this accusation. Products whose cost is of little concern to a reviewer, since he will not be paying it and probably has plenty of alternatives in any case, get star billing, whilst those items that people commonly buy get allocated a page or two at the rear of the magazine.

So with midi-systems we



Reflections from Noel Keywood kaleidoscope

decided to clear away our prejudices in advance and welcome them in with all the attention and interest that products so popular must surely deserve. It wasn't long before all our fears about their sound quality came flooding back, however. Alan did most of the listening, aided by others, and he was left none too enlightened by the experience.

These systems sport every facility possible, just so they look the part. Applicability to the purpose seems to have little to do with their design. The Technics system even possesses an analogue-to-digital convertor (ADC), just so that Digital Signal Processing (DSP) can be applied. This gives it almost as much signal processing power as Meridian's 601 digital pre-amplifier (see p60). Yet ADCs are a notoriously difficult technology, those commonly considered good enough for real hi-fi costing far too much for a midi-system.

Our conclusion has to be that appearance and facilities hold total sway over product design in this end of the market. Sound quality has taken a back seat, put there by inadequate circuitry and, especially, cheap loudspeakers that sound no better than mediocre designs of the seventies (which is twenty

years ago, no less!). It is a situation that says everything about marketing and, sadly, seems to make a nonsense out of altruism as the motivation for an honest design philosophy. Surely, wrapping up cheap circuits and components in a glittering package is deception, isn't it? Or is it giving people what they want - lots of buttons and lights for not too much cash?

What really hurts is that real hi-fi, as made by numerous UK manufacturers, as well as others around the world, costs little more than any midi-system, as we proved to our satisfaction by assembling a good sounding group of separates. Sure, none of the features are there; there are no double cassette decks, DSP units or what have you, but none of us have any qualms about this, because we know that most of them have little real worth. In their place, a budget separates system offers ease of operation, satisfactory styling, compact dimensions; it all seems acceptable enough by everyday standards. Most of all however, a well put together separates system delivers superb sound quality, quite obviously superior to that from a midi-system.

Brought up on the simple notion that people will always recognise and value a good

product, and that quality will win out in the end, the success of these systems leaves me a little perplexed. It seems to directly challenge my inbuilt ideas about the value of quality and the belief that people will recognise it, one way or another. Or perhaps there is a little more to it?

I was collared recently by someone who wanted a decent sounding hi-fi for his wife and two teenage sons. Both he and his sons were aware that something better than the all-pervasive midi-systems they had seen was available, but they simply couldn't get to grips with it

(real hi-fi, that is). Specialist dealers gave conflicting advice and few seemed to have a really broad range on demo, he felt. The magazines needed prior knowledge before they could be understood; or in other words they were impenetrable to the potentially interested layman.

Faced with this, and very worried about making a serious and expensive mistake, he was desperate for advice. With a budget of £600-£800, tailored by midi-system expectations, and a desire to get something that looked attractive, I steered him toward a Denon Lifestyle system with Mission loudspeakers. It wasn't anything special by hi-fi standards, yet he was ecstatic about its sound quality. Just a week later, now appreciative of the quality offered by separates, he was happy to spend around £50 on a pair of Beyer DT-411 headphones - and he remained happy after buying them!

Cases like this lead me to believe that more people would turn to real hi-fi, if only they knew what it offered and how to get it. Midi-system possess few advantages; they're not even cheap any more. The specialist manufacturers have never made a good enough case for their products. The big battalions marched into the High Street, filling shop

windows nation-wide with stuff, extravagantly labelled 'hi-fi', that isn't. People talk about getting a 'hi-fi', as if it was as simple as that. Well, of course, the big companies have made it as simple as that. They also made it look expensive whilst at the same time keeping the price down.

Cut throat competition between them has squeezed out all other manufacturers and margins are reputedly very slim. Yet hi-fi is now a midi-system, or so most people believe. And that, it appears to me, seems to be more a failure on the part of real hi-fi manufacturers to inform people of their products and their presence than anything else. It's all down to marketing, and the budget needed to sustain it of course.

The truth is that budget systems made up of separates have never sounded so good and they've never been so cheap. The midi-system in contrast is poor value when it comes to making music. We wanted to give them star billing, but ended up reaffirming our prejudices!

SONY announce MINIDISC launch date.

Sony have just told us that MiniDisc will be in the shops from December 15th 1992 onward. This new recordable CD format - one that's likely to cause quite a lot of upheaval in future I suspect - has been on sale in Japan since 28th October 1992.

I'm sure most of you will be aware of Minidisc by now. It is a miniature CD that sits inside a protective plastic case, or 'caddy', much like a modern computer disc. The case measures just 68mm by 72mm and is just 5mm thick, so MDs can be jammed into pockets, handbags and car dashboards or what have you with ease.

The first portable recorder, the MZ-1, possesses a formidable amount of modern magneto-optical technology. Costing £500, it's the size of a bloated Walkman. Pre-recorded discs will cost as much as a CD.

MiniDisc will be battling it out with Philips Digital Compact Cassette system over 1993. Few are certain who'll win this war, but most observers agree that MiniDisc appears to be a very attractive format ●

Before the days of the analogue-digital schism, few debates raged more furiously than the class question. Not the struggle of proletarian against capitalist, instead the controversy of whether to use Class A or Class B amplification.

It is possible to have two types of amplifiers because of a demonstrable property of all musical sounds: that they are symmetrical. An oboe reed vibrates minutely back and forth when it is blown. The air inside a flute swells and compresses by an equal and opposite amount as it is played. A guitar string twangs back and forth. When a loudspeaker reproduces the sounds of each of these instruments, it too must vibrate back and forth exactly (or as nearly exactly as possible) following the contours of the original sound. Similarly, the current at the output terminals of the amplifier must vibrate back and forth in order to drive the loudspeaker.

Each vibration is termed a 'cycle' but there is nothing truly cyclical about sound or electrical signals. Engineers talk about cycles of signal in the same way you or I might talk about Autumn "coming around again" in the "cycle of the seasons", when what we really mean is that a year has passed and the pattern of nature is repeating itself in the way we expect.

Patterns and Cycles

Any repeating pattern can be thought of as a cycle and any musical sound, or indeed any musical signal, comprises many of these cycles. Each starts from nothing, grows in one direction, reverses back towards the rest position, grows in the opposite direction, reaches a peak and finally dies away again to rest. Engineers often term the alternating directions the 'positive' and 'negative' directions to distinguish them.

When a designer chooses between a Class A and a Class B amplifier design he (or she) is choosing between how the amplifier deals with the equal and opposite nature of musical signals. Put simply, the Class A amplifier has a single circuit devoted to producing both the positive half and the negative half of the musical sounds. A

Class B amplifier has two circuits, one devoted to handling the positive-going halves of each cycle, the other devoted to handling the negative portions of the signal.

Each type of amplifier has its merits and demerits. The Class A amplifier, because it has a single output circuit, has the advantage of simplicity. But it pays for its straightforwardness with a lack of efficiency. The Class A amplifier works as hard when it is reproducing silence as when it reproduces the

most awe-inspiring orchestral crescendo. And, as in most of nature, a lack of efficiency leads to heat being generated. Indeed the one sure cachet of a Class A amplifier is that it gets hot! Valves are ideally suited to Class A amplification because they do not mind running hot and the elegant circuitry is appropriate to a technology where the amplifying devices themselves remain relatively expensive and bulky.

Transistors, on the other hand, loathe heat. All transistors walk through the valley of death known as 'thermal runaway' because it is a general property of transistors that once they start to get hot, due to changes within their physical structure, they tend to get hotter still. Heat dissipation in the transistors of a Class A audio power amplifier must be very carefully controlled if the output transistors are not to self-destruct. This self-aggravating thermal runaway was such a very great problem in early transistor amplifiers using germanium devices that Class A amplification was not practically possible. Instead designers, who during the age of valves would never have considered a Class B circuit for hi-fi, were forced into using this more efficient, but more complicated, circuit.

Class B amplifiers are more



recorded message

Left by Richard Brice

efficient because of their split personality. Remember that the Class B amplifier has two circuits, one devoted to handling the positive half (and the other devoted to handling the negative half) of each signal cycle. The important feature of this type of schizophrenic circuit is that whilst one circuit is on (say the positive half-cycle circuit) the other is off. When Mr Hyde is awake, Dr. Jekyll is asleep. When Dr. Jekyll is conscious, Mr Hyde slumbers. Each has no job to do whilst the other is on. So half the amplifier always remains idle, consuming no power. Even more amazingly, when the amplifier produces silence both halves can effectively be off!

Beethoven to the B52s

Now, it would be a very boring piece of music indeed that remained permanently fortissimo - dynamic change is one of the key elements which make up any musical work from Beethoven to the B52s.

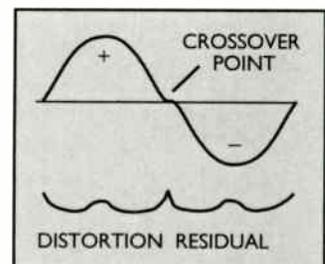
Whilst it would be a silly exaggeration to say that most music is composed of silence, it's certainly true (as anyone who owns an amplifier with a power-meter will tell you) that for the majority of the time, the output power produced by an amplifier is very small indeed. It is in this way that the Class B amplifier scores over its

rival, the Class A. Whereas the Class A type dissipates power all the time waiting to produce that fortissimo chord, the Class B amplifier only dissipates heat power as - and when - it is called upon to produce electrical power and that is only significant for a very small proportion of the time.

But there's a catch. Music is a fine, delicate art form and the structure of the electrical signals that represent it are fine and delicate too. As anyone who has ever broken some-

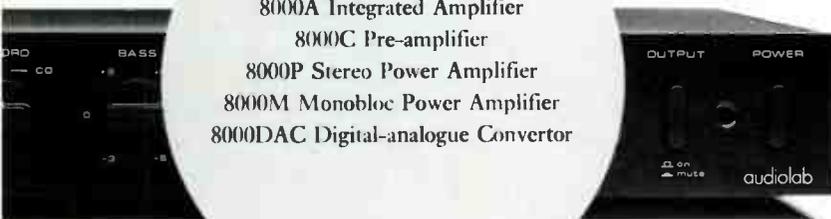
thing intricate into two pieces knows, once broken it is very hard to put the object back together again without revealing a flaw where the two halves meet. So it is exactly with Class B amplifiers.

Our electrical schizophrenic must switch personalities completely and instantaneously if it is to work correctly. Mr Hyde must fall asleep precisely as Dr Jekyll wakes. One circuit must not linger, dozing, as the other comes awake. Neither must it fall asleep before the other is fully conscious. If these conditions are not fulfilled, the Class B amplifier produces a very unpleasant form of distortion known, not surprisingly, as crossover distortion. The complete elimination of this highly audible and unpleasant form of signal mutilation represents the Holy Grail of the last twenty-five years of power amplifier design ●



In Class B one amplifying device handles the positive half cycle, the other the negative half cycle. If they do not work in perfect conjunction, spiky looking crossover distortion is produced, which sounds nasty.

Hi-Fi that speaks for itself:



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8000C Pre-amplifier
8000P Stereo Power Amplifier
8000M Monobloc Power Amplifier
8000DAC Digital-analogue Convertor



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World Radio History

People have tried to cross the great divide between sound and vision many times. In the past, however, such endeavours have been doomed to failure. Those products that have looked to the future under the loose banner of 'home entertainment' have inevitably found the future has passed them by.

Until recently, that is. With the growth of NICAM stereo broadcasts, Dolby Surround and ProLogic video cassettes and the recent re-birth of Laser Disc, it can only be a matter of time before the 'home entertainment' system finally takes off in this country. This year's Penta Show, with its profusion of AV systems attested to this.

Why has it taken so long to link the two media together? The first attempts at high quality sound from video, back in the late Seventies, suffered from a general lack of available software, sending the quality sound and vision systems of the day underground.

More importantly, however, was resistance in the marketplace itself. This scared off software and hardware manufacturers, who waited in the wings until the time was right.

Thinking back to the days when colour television was still in its teen-age in this country, it is hardly surprising that such resistance was encountered. At the time, although stereo broadcast sound was on the drawing board, all programmes on television were monophonic.

Enthusiast's Toy

The public at large were still unsure of adding things to their new-found colour sets. Most viewers still remembered the days of fragile black and white sets of the past, which is why the massive TV rental market appeared. I remember coming across my first ever domestic video recorder, a Philips device, in the home of a wealthy friend in about 1975 or 1976. The video recorder remained a wealthy enthusiast's toy until the boom times of the Eighties, when VHS won the format wars and the video rental shop became commonplace.

The biggest problem in the early days was a lack of software. Until the format war settled down, the video store

could not exist; it would be like stocking a library with every title in four different languages. This meant that there was early reluctance to release a title on video by the film-makers, due to the plethora of formats.

Stereo sound was still a distant ideal. Even in the cinema, Dolby sound did not become widespread until the end of the Seventies; it is difficult to think of a film before about 1975 that was originally printed in stereo, short of the biggest of big budget blockbusters.

In the Eighties, things began to change. More and more



Feedback from Alan Sircom

sircom's circuits

films were being made in stereo. The technology behind the television and the video recorder became cheaper and more reliable. It was only a matter of time before stereo sound could be introduced. Towards the end of the decade, the video had insinuated itself into popular culture.

By 1990, the infrastructure for home theatre was virtually complete. NICAM stereo broadcasts were in their last stages of testing in this country and hi-fi video had become established. Today, the ability to cope with stereo signals, NICAM or not, has become one of the principal factors in the purchase or rental of television equipment, thought to be important in upwards of a 30% share of that market. And that figure can only rise, as stereo TV and video prices drop.

Many audiophiles look on this as a gloomy prospect, suggesting that it is the beginning of the end of the hi-fi industry. I don't share their pessimism, but instead feel that it potentially expands the hi-fi industry in a way that simply could not have happened five years ago.

Imagine a typical couch potato, one who buys their own equipment. They are keen to spend considerable amounts on their television and video, but still confine the hi-fi to lo-fi, a cheap midi system, for example. To get the best out of their video system, they need to seek specialist advice; the high-street multiples are no help, as such systems are outside their jurisdiction.

To get the best sound out of their video system involves good equipment and the step up to hi-fi audio is only around the corner. When it comes to Laser Disc machines, which can play conventional CDs as well, this step is far closer than ever before.

Suited to the Specialist

Paradoxically, those who are best suited to selling good stereo or Pro Logic systems are the specialist hi-fi dealers; the very people who were most scornful of television systems in the past. Their experience in matching and installing hi-fi is well suited to making up high quality sound systems for television. The comparatively complicated cabling and installation of Pro

Logic set-ups is anathema to the sales assistant in a high-street multiple store.

Although many correctly suggest that the TV/Video market is dominated by the uninformed purchaser, there is a greater potential market in specialist A/V equipment than currently exists in the hi-fi market. After all, how many homes do not have a television?

The next few years will be interesting with regard to matters Audio-Visual. Laser Disc now has almost 1,000 titles under its belt; unlike the conventional video machine, many of these are compara-

tively 'high-brow', with audio-visual recordings of classical and operatic pieces. Sound and vision quality is demonstrably better than VHS, although the same was also true of Sony's unsuccessful Betamax format.

I hate playing sooth-sayer, as pages of past magazines are filled with incorrect predictions; hailing Elcassette and Quadraphonic Sound as 'the way forward'. I do think that there will be an increasingly large market for the all-in-one A-V system, as the sales of software start to diminish. It gives the baby boom market something to play with while the kids play Nintendo.

Finally, this will be my last column for Hi-Fi World magazine. Before I hang up my keyboard, a few final pointers: 1) Stay neutral. After all, look what it's done for Sweden. 2) Keep everything level, especially your head when it comes to upgrading. 3) If in doubt, buy more recordings. 4) Forget what I said about Sweden.

So long, and thanks for all the fish ●

TANNOY

Tannoy have tweaked a thousand 605 loudspeakers. Dominic Baker measures,

Tannoy's Limited Edition version of the 605 loudspeaker, the 605LE, is the result of the company's research into high quality crossover components. Though it is based loosely on the standard model, the drive units are inverted on the baffle, with the tweeter below the bass/mid driver, and specially selected polypropylene capacitors are used in the crossover. These are considered the best sounding variety of capacitor available for audio purposes.

Experimentation, however, has led Tannoy a stage further. Wrapping these high-quality caps in Tan-Tak and then securing it with heatshrink, the engineers believe, radically improves the sound of a loudspeaker. There is more to the LE-suffixed 605 than this, though. Externally, there are gold-plated bi-wiring terminals; top and bottom plates are damped with lead shot, and internally solid core cable is soldered to the drive units and crossover with silver solder. These extras are responsible for the thirty pounds added on to the standard 605's

£159.99 price tag. A thousand pairs have been made for the UK, with a further 500 destined for abroad.

The 605's use a 1 inch aluminium dome tweeter and a 6.5 inch moulded cone bass/mid driver hard wired to the minimalist crossover network where the Tan-Taked caps can be found. Steering away from tradition, the enclosure is six-sided, enabling individual panel size to be reduced, increasing rigidity and lessening panel resonance. The other main advantage of this shape is that standing waves easily set up in a rectangular cabinet are greatly cut down by its irregular dimensions.

For listening Tannoy provided us with a pair of matching stands. These comprise a wooden top, a bottom plate and an extruded aluminium pillar. This has no pre-cut thread, so assembling them means forcing the

self-tapping screws into the aluminium tube - which takes time, effort, and ultimately results in blisters. Additionally, the upright is so thin that it 'rings' willingly when tapped; we filled it with dry silver sand to damp what is otherwise a large tuning fork.

SOUND QUALITY

My abiding impression of the current Tannoy range - including the standard 605 - is that, generally, the speakers offer good apparent bandwidth, with satisfactorily deep bass and extended treble, a high level of general ability in terms of low colouration, sharp imaging and what have you, and quite strong dynamics.

'a busier but also sharper and more incisive presentation.'

So what are the reservations? A slight raggedness is how I would put it, or conversely, some lack of smoothness and integration across the audio band. The old Planet Series, of which the Mercury was the finest example, sounded smoother. I've never been quite sure in my mind that these polygonal successors have established a clear lead over the Planets they replaced, although the baby 603 packs an unusually good punch for its size and price.

The tweaks carried out on the 605 to make it a Limited Edition model luckily help to address some of the blemishes - most especially integration. It's not so much, I felt, that the drive units or the speaker's response has become smoother, for the 605LE has not become silky sounding, it is that other important and engaging properties have been so enhanced

that they draw attention past such matters.

The 605 has become much more lucid; it takes a listener closer to a performance. The contribution and sound of the two drive units has diminished, whilst the amount of music they convey has increased proportionally. This new insight - and a greater sense of coherence - is the 605's greatest gain. It helps bridge the gap between the sort of well-etched outline representation of a performance a good loudspeaker in this class can provide, and the full and almost overwhelming analysis that a real monitor can offer.

I started to notice how noise gates, artificial reverberation and similar

effects were being used to enhance recordings: the initial crash and panned reverberant echo of a hard strike against a cymbal is the sort of event the 605LEs highlight. Normally, this sort of thing is just another constituent of a performance that passes by unnoticed; but the 605LEs put a magnifying glass onto

such events, revealing them for what they really are, pushing them forward and into your attention.

But there is a price to pay. In fact - a few. Firstly, the 605LE has lost the amenable character of the 605; it is now a more intense and demanding beast to listen to. Its improved treble definition sharply delineates individual events, making for a busier but also sharper and more incisive presentation. The impression everyone comments upon is how the speaker sounds brighter and sharper, a view I would agree with. I found it initially more demanding upon the ear.

Another suspicion I have about this process, however, concerns the innate properties of Compact Disc. Some of the extra incisiveness and, at times, treble 'blasting' I heard was not a property of the speaker so much as its strengthened ability to convey

LIMITED

and Noel Keywood and Eric Braithwaite listen to, the 'Limited Edition'.

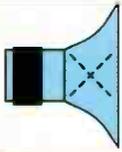
truthfully what exists on a disc. Where bog standard electrolytic capacitors smooth the over powerful, short term, high frequency events, polypropylenes of the sort used in the LE tweak let them through. With CD in particular you don't always end up with a sweeter, more amenable sound, but instead one that is coarser and more aggressive. Gone is the gentle smoothing and concealing of CD treble; it's hello to CD treble in all its occasionally gruesome glory - gritty distortion and all.

A general character I would attach to the 605LE is one of dry analysis; it has what I loosely describe as a 'crackle' to its sound. It is sharp, crisp, analytical, precise; it almost spits out the information. Various souls not well acquainted with such a possibility looked hard pressed when asked to listen to the 605LE. They were assailed as well as impressed; these speakers are in some ways, an edge-of-the-seat listening experience - they demand attention and almost force involvement.

The 605LE is a fundamentally balanced, wide-band design. It hasn't been tinkered with to possess a particular character, such as 'warmth' or 'brightness'. I did feel that the speaker lacked deep bass extension and, I'm told by others, their bass is on the light side. But they are tuneful in the bass - there's no one-note effect - and have quite good speed and impact. Only before running in



they demand attention and almost force involvement.



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did I find the LEs constrained by tightness.

If you're wondering why I say "others" say their bass is light, it is because I seem to prefer a slightly light bass balance. Having modified and lived with Celestion SL-6000 subwoofers and the REL subwoofer, both augmenting my own modified Quad ESL-63s, a preference for light-ish bass may seem curious, but it is borne of experience. Heavy bass soon becomes intrusive and tedious, overwhelming the music and weighing down the rhythm in an acoustic morass of continuing bass reflections around the room. So the light-ish but quite well defined bass of the 605LE was quite to my taste, but it may not be to others. Since Tannoy loudspeakers have always been incredibly robust, I wouldn't say this speaker wasn't for headbangers. Just don't expect to have your rib cage tickled by high impact bass.

I found the 605LE a dry, analytical - perhaps coolly featured - loudspeaker to listen to. It possesses little warmth or euphony, but enormous amounts of dispassionate analysis. In the best sense, it offers 'hi-fi' levels of resolution and detail, if perhaps without the smoothness one might like - but that costs more. **NK**

ERIC ADDS . . .

I had similar reservations to Noel. I listened with DPA Digital's new transport and PDM ONE Series 3 convertor as a source and with

mostly Classical programme. While the mid-range was startlingly vivid and revealing, the tweeter could also occasionally surprise a listener with a distinct zip on upper piano notes, for example, in comparison to those a little lower down the scale. Tannoy's LE version of the 605 is far more emphatic than the original, except, surprisingly, in the range broadly covered by the baritone register. Listening to some choral pieces, I couldn't help feeling that the baritones and basses were overshadowed by the higher voices.

Paradoxically, what I discerned as something of a lack of power or muscle behind the bass sections of an orchestra was much less evident on chamber works or solo pieces. Faure's *Elegy*, while softened in

impact in the lower registers of the cello, didn't sound quite as loose in these regions as a full orchestra did. Perhaps this is niggling, but the whole picture in the mid-range is so vivid it throws this aspect of the speaker's performance into relief.

Perhaps I'm asking too much, but I would have liked more energy, control and detail - perhaps a kindlier bloom - among the lower strings equivalent to the clarity and tautness that could be heard in brass and violins. Tannoy's 605LE is certainly attention-grabbing; but sometimes it shurs over some of the orchestral parts other speakers reach. Then, you can't have everything, can you, and what this Limited Edition does have puts it some way ahead of its competition. **EB** ●



◀ The component parts of Tannoy's 'Limited Edition' 605 loudspeaker. Note the attention to detail, damped Ansar Supersound crossover capacitors, Audioquest internal wiring, central bracing strut which clamps the bass unit via a piece of Bluetak and lead-massed top and bottom plates.

MEASURED PERFORMANCE

A lot of people feel that measurement is invalid when referring to hi-fi products. For this reason I was very pleased when the problem that we heard with these loudspeakers was clearly shown in the response plot (below). The effects Eric heard were almost certainly due to the dip in the response at 800Hz. These sharp drops over a short frequency range are audibly less noticeable to the ear than a long shallow dip such as the one shown higher up the response (2.5-5kHz).

The frequency response was plotted for the 605LEs with and without the small foam bung placed inside the reflex port. The response shown was taken with the bung in and has the smoothest roll-off, which is probably the reason

why Tannoy chose to use it. Bass is good to around 60Hz in the analysis, which is quite respectable given this speaker's small internal dimensions, but treble is rolled off early at the top end.

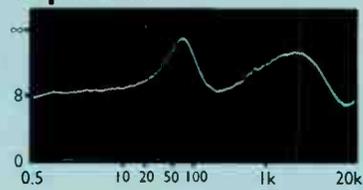
Sensitivity is above average at 86dB sound pressure level for a one watt input. Impedance, measured using a full frequency pink noise signal to give an accurate measure of what the amplifier will see, was a high 12.3ohms. These figures alone would suggest that the 605LEs should be a relatively easy loudspeaker to drive. However, the impedance curve shows steep gradients, indicating that the load is reactive. For this reason an amplifier of around 100 watts will be required to realize the 605LEs full potential. **DB**

Frequency Response



Some treble roll off.

Impedance



High impedance



TURNING THE TABLES

Conventional wisdom says top-quality arms don't mate with inexpensive turntables. Alan Sircom combines an SME 309 arm with a Systemdek to test the theory.

A widely-held belief currently held among turntable enthusiasts is that it is unwise to use an expensive arm on an inexpensive turntable. While there is some truth in the notion, like all rules it has exceptions.

The Systemdek IIX is one. Although relatively inexpensive, it is a fully-suspended sub-chassis design like more expensive turntables such as Linn Sondeks, Voyds and Pink Triangles. With the acrylic platter fitted, the external similarity between the Systemdek and the Pink Triangle becomes even more apparent.

With the instructions supplied on a

single piece of A5 card the turntable is simplicity itself to set up. It needs only the bearing filled with oil from the syringe provided, the inner platter fitted into the bearing housing, the removal of the transit screw and the deck is virtually ready for play. The three point suspension is fully adjustable from the top of the plinth and is more than capable of handling all but the heaviest or most difficult of pick-up arms.

When fitted with the separate electronic power supply, the IIX becomes known as the IIXE. An electronic speed control does far more than simply turning the platter

at 33 or 45 rpm. It adds a level of sophistication and refinement to the IIX, delineating the spaces around the notes far better than before.

Normally the Systemdek is fitted with a Moth RB250 arm, considered to be one of the finest budget tonearms and a worthy match. However, we felt it would suit the SME 309 pick-up arm, taking the combination into another class costing - at £868 - as much as the entry level Linn Sondek Basic, Akito arm and K9 cartridge. We were obviously not the first people to have such an idea; the correct armboard was sent to us almost immediately.

Based upon the SME V, the 309 uses an aluminium alloy armtube with a removable headshell. This differs from the one piece magnesium armtubes used in the Series IV and V arms, reducing arm rigidity and strength, but at the same time cutting costs dramatically. The remainder of the components, such as the yoke, counterweight and mounting assembly, look identical to those fitted to the Series V and the blend of black and silver gives it a purposeful air.

As expected with SME arms everything is engineered to perfection, although a little of the luxurious feel of the V is lost. Arm adjustment is as simple as with the SME V. Removeable headshells have fallen from grace lately, but they allow for easy cartridge changes as well as precise adjustment of stylus azimuth.

All the current SME arms are supplied with an optional finger lift. As the cueing lever is so accurate I see no reason to fit it and it is suggested in the manual that the purist would not. The manual is commendably laid out, in the manner of all SME literature and is a model of its kind.

With a combination as unusual as the Systemdek/SME tested here, the choice of cartridges is wide. One school of thought would be to go for a low-priced moving magnet model and keep the system under the thousand pound price bracket. An alternative is a more expensive moving coil cartridge resulting in a high-end package, but still one on a shoe-string by comparison with others.

Feeling patriotic, using a Japanese cartridge with a Scottish turntable and an English arm seemed out of place, so two Goldring cartridges were called into play: at the lower end a member of the 1000 series moving magnet cartridges, at the high end the Goldring Excel moving coil. If the turntable instils a character of its own it will be apparent with one of these cartridges. I also happened to have a Moth RB250 arm on a Systemdek armboard so that the more prosaic set-up could be compared directly.

The more expensive deck/arm combination does have a lot going for it. They combine together well, the neutrality and broad dynamic scale of the acrylic-plattered Systemdek melds with the even-handed nature of the SME. They are not perfect; there is a touch of brashness and lack of detail in comparison to the super decks. This is most noticeable with the Excel cartridge, which sounds a trifle hard-edged; quite unlike its normally polite character.

This is not to say that the Systemdek/SME combination is

lacking in detail, or brash. It is only when it is compared against one of the top decks, usually costing thousands more, that it might be found lacking. For the price, however, it is an unusually detailed and civilised combination, never standing in the way of the music. It could readily act as a platform for a high end cartridge, but I feel that is not the point of the exercise; fitted with a low price, high quality cartridge such as a Goldring 1042 or a Sumiko Blue Point, the

with the most fearsome passages without difficulty. Even Previn's interpretation of Carl Orff's *Carmina Burana* sounded alive and natural, whereas normally the theme music to *The Omen* can sound less than demonic with any turntable short of the best.

There is a fine sense of space around the very clear and coherent instrumental voices. Old mono recordings, such as those of Billie Holiday lose some of the life and verve the recordings were graced with in the Thirties and Forties. Such recordings can sound tired on cheaper decks, but with the Systemdek/SME combination there is no such problem.

Going back to the same player with the RB250 arm, a great deal of the detail and refinement in the sound is stripped away. The fundamental character of the turntable is still apparent but the level of sophistication that puts the player on a par with the top league is diminished.

When one has lived with a turntable of the quality of the Anniversary/SME V combination for some time, cheaper turntables tend to lose their magic. The Systemdek IIXE is an exception. If the icy fingers of recession ever laid waste to my wallet so that I had to sell my Pink Triangle, the Systemdek IIXE AP would be my consolation; the SME 309 would soon follow suit.

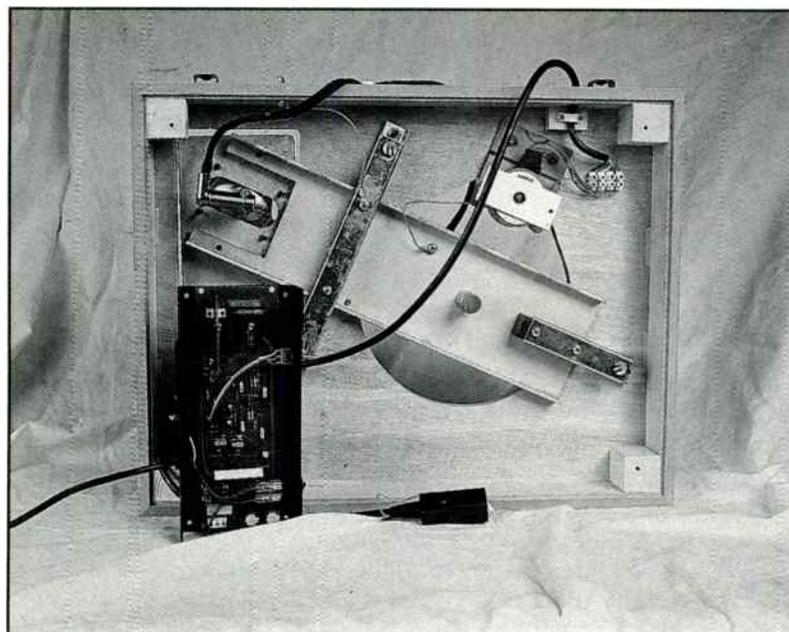
There is a lot to recommend in the combination of Systemdek IIXE AP turntable and SME 309 pick-up arm. It questions the current thinking so successfully that it opens up a wealth of possibilities. It is sad that it has taken until the end of the vinyl era for such possibilities to be realised ●

"an unusually detailed and civilised combination."

Systemdek/SME combination has the potential to be a giant killer:

Where the Systemdek is strongest is in its sense of balance. It has a great deal of the absence of character I find beguiling in my own Pink Triangle Anniversary/SME V combination, albeit in a diluted form. There is no area that is unnaturally fierce or bland though perhaps fundamentally it lacks the absolute rhythmic integrity of the starter Linn.

On tracks like The Orb's 'Backside of the Moon' the Systemdek/SME's timing was only slightly short of the mark, when compared to combinations costing over twice as much. The spatial information produced by the combination is very three-dimensional, creating an admirably wide, deep and high stage. Combined with this neutral presentation and the near tangible soundstage, the combination is also surprisingly dynamic, coping



Underneath the Systemdek, showing the suspended sub-chassis, a rarity at this price-level. At left is the power supply (normally enclosed in a box which matches the plinth) which allows speed to be changed from 33 to 45rpm without removing the platter.

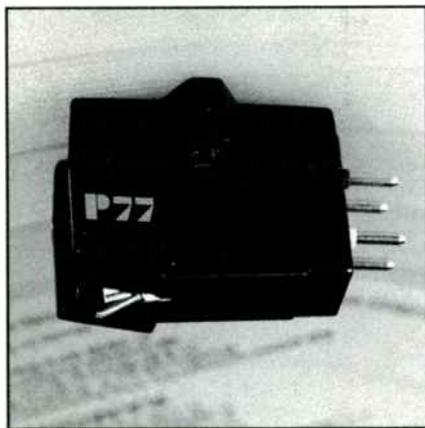
TO THE POINT

Combining a

high-quality arm like the SME309

with a Systemdek leaves enough change from £1000

to spend on a cartridge. Noel Keyword listens to four contenders.



ARCAM P-77

The Arcam P-77 is a magnesium-bodied cartridge with profiled stylus, costing £69.95. Its rigid metal body firmly anchors the generator assembly, improving sound quality. Interestingly, the headshell of the 309 is magnesium too, meaning the two items interface perfectly. The P-77 tracks at around 1.8gms.

SOUND QUALITY

Having turned in a mediocre measured performance, and having listened to a warm yet competent-sounding P-77 in the past, I wasn't expecting too much from this latest incarnation. I got a surprise.

This new P-77 has the tightest, richly textured and deepest bass I have heard from a moving magnet cartridge. What a shock to play Clapton's 'Pretending' after the Ortofon and find that not only is there a bass line, but that it nicely underpins the track with an unpretentious yet fluent exploitation of the bass scale. When the notes went low, the P-77 didn't flinch; it drove downwards with them, putting some real low-end power through the loudspeakers. After the other cartridges, it was impressive.

I noticed also an engagingly clean and precise handling of transients; the regular percussion of a wooden block on a Mink de Ville track beating out a clear time signature. I strongly suspect that the magnesium bodied version of the P-77 I tested works especially well when bolted into the magnesium headshell and rigid arm of an SME 309. I heard a generally tight and controlled sound, expressive in its rhythmic ability.

Unfortunately, the P-77 does also have weaknesses. It delivers a smooth and soft sound, if not a dull one. The stylus digs out little in the way of real detail and imaging was on the vague side. On complex performances, some muddle set in and a diffuse presentation was the norm. At high frequencies, whilst the P-77 excelled in bass reproduction, it was generally vaguer further up the audio band, although never offensive or unpleasant.

MEASURED PERFORMANCE

The Arcam P77 differs from most modern cartridges in possessing an upper mid-range droop, as the analysis clearly shows. This was once a common problem, being the result of high generator impedance, and it resulted in a warm sound, usually accompanied by 'spit' from a treble peak. The P77 had to be loaded by 350pF to tame the peak and raise upper mid-band output as much as possible to lessen the droop. All the same, it will have a 'warm' sounding tonal balance in comparison to most competitors.

Tracking ability was very high, both at low frequencies where compliance affects behaviour, and in the mid-band where tip mass comes into the picture. The P77 cleared a 25cms/sec torture track easily, where most other cartridges fail. In practice I doubt whether this unit would ever sound at all strained. It was tested at the recommended downforce of 1.8gms.

The P77 rides high, which is good for warp and ripple clearance, but it produces

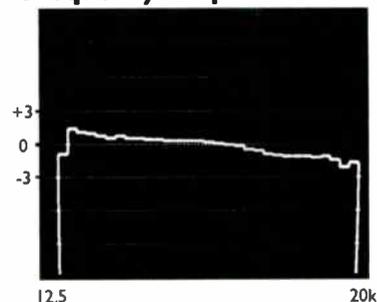
more vertical distortion than usual (2.5% second harmonic compared to 0.7% for the Roksan) as a result. However, its vertical tracking angle was spot on at 22 degrees. This was peculiar, as was generator asymmetry and incorrect alignment, which resulted in a poor 18dB separation figure on one channel and a normal 25dB on the other. I'd expect this to contract stage width slightly. Output was high at 5.9mV at 5cms/sec RMS and channel imbalance satisfactory at 0.6dB.

The P77 had blemishes, but these will not intrude much in practice, providing it is loaded properly and, of course, its warm sound is acceptable. In a bright sounding system, this characteristic could be beneficial.

TEST RESULTS

Tracking force	1.8gms
Weight	6.3gms
Load capacitance	350pF
Vert tracking angle	22°
Frequency response	20Hz-20kHz
Channel separation	21dB
Tracking ability (300Hz):	
lateral	90µm
vertical	45µm
lateral (1kHz)	25cms/sec
Distortion (45µm):	
lateral	0.8%
vertical	2.5%
Output (5cms/sec)	5.9mV
Channel imbalance	0.6dB

Frequency Response



Steadily falling treble



GOLDRING 1042

Goldring make the impressive 1042 cartridge, priced at £89.95, a model we could not ignore in this price bracket. Carefully honed over time, it is a conventional design that offers a fine balance of properties. The long contact stylus profile tracks at around 1.8gms.

SOUND QUALITY

I was happy to re-acquaint myself with this cartridge, having used a 1040 for some time in the past. Goldring's 1000 Series cartridges have a generous strength to their sound, delivering plentiful bass and wide-scale dynamics. It's an ability that makes them seem unconstrained and realistic in contrast to some of the 'flatter' sounding moving magnet cartridges, and I strongly suspect their Pocaan plastic bodies, plus a well-anchored stylus assembly, helps produce this impression. Whilst the 1042 has generous bass, it is of moving magnet quality, having a certain air of softness and roundness that a good moving coil design would suggest was not necessarily the case.

In the 1042 Goldring have smoothed out the treble, largely removing the brightness of the 1040. Yet this has been achieved without compromising the superb detailing that was available, the most delicate subtleties being lifted from the groove with admirable ease by the 1042. This helps it sound both analytical yet sophisticated in the fulsomeness and complexity of its rendition. It provides a beautifully tactile sensation to the reproduction of hand drums, for example, the initial 'thwack' coming with both speed and strength. Low distortion and superb tracking combine to offer a smooth, fluid delivery free from strain. Orchestras swell to a climax with no hint of uncertainty.

The 1042 images very well, throwing a clear projection onto centre stage of most vocalists, something that is helped by the ability of the stylus to keep the components of a performance, instruments and vocalists for instance, well apart.

MEASURED PERFORMANCE

The 1042 measures well all round, but like many finely honed designs, it needs to see certain operating conditions. In particular, I

found that load capacitance was critical; either too little or too much resulted in a treble peak. Goldring recommend 150pF; this must be met within about 30pF for the flat frequency response shown in the analysis to be achieved, one that stretches from 20Hz to 20kHz within 2dB limits.

Tracking was very good both at low frequencies, where hinge compliance matters, and at middle frequencies where tip mass enters the equation. At 1.75gms downforce, as recommended by Goldring, this cartridge sails through even torture test tracks.

To obtain low overall distortion, a vertical tracking angle approaching 22 degrees is needed. The 1042 gets close at 25 degrees. This does make it ride low however, ripples and raised disc edges sometimes catching the body.

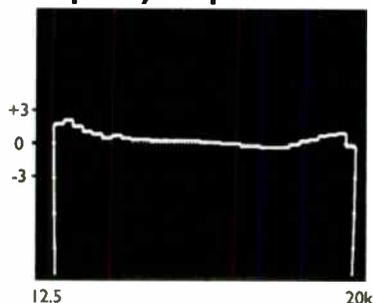
At 6mV output for 5cms/sec RMS tip velocity, the 1042 delivers quite a strong signal, a feature that helps keep noise down. Channel balance was perfect, but separation limited at 22dB.

The 1042 is well engineered all round; it offers a high standard of measured performance.

TEST RESULTS

Tracking force	1.75gms
Weight	6.3gms
Load capacitance	150pF
Vert tracking angle	25°
Frequency response	20Hz-20kHz
Channel separation	22dB
Tracking ability (300Hz):	
lateral	90µm
vertical	45µm
lateral (1kHz)	24cms/sec
Distortion (45µm):	
lateral	0.5%
vertical	1.2%
Output (5cms/sec)	6mV
Channel imbalance	0.2dB

Frequency Response



Falling mid-range, small treble lift

ORTOFON 540

Ortofon make a wide range of cartridges, including moving coils, and have a long history of doing so. Their 540 is priced at £99.95 and, being very compliant, tracks at around 1.25gms - a lower figure than that of the other three models. Tracking force does not determine record wear though; pressure at the tip face is what we are worried about and this is dependent upon contact area as well as downforce. Having said that, the 540 was a great tracker.

SOUND QUALITY

One of my favourite MM cartridges was an Ortofon - a black VMS40E that rode right down on the disc surface. It sounded wonderfully smooth, rich and detailed. My experience has shown me the later 500 Series, of which the 540 is a part, offered no improvement over the VMS cartridges. I was hoping the 540 would change this, but sadly it only reinforced the view.

Here's an obviously bright-sounding cartridge; it possesses a hard shimmer that can turn to harshness across the upper mid-band, tainting complex performances with a hard clatter I found a little objectionable at times. The worst manifestation of this came with Eric Clapton's 'Pretending', from the Journeyman LP. I found this sufficiently harsh and muddled sounding to get up and take it off. As part of the test routine, the other cartridges were obliged to show their mettle with this recording and whilst in places I might have wished for a little more from them, none became unpleasant. If they had sins, they were more of omission than commission.

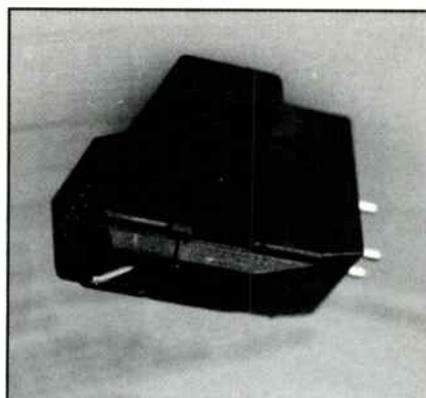
Superficially, the 540 sounds clear, detailed and forward, but it takes little time for the harshness to make itself known. Down at the other end of the audio spectrum I found bass weak and forced; it seemed not to want to play. Clearly the 540 is less than happy sounding when pushed to produce a bass line. Unfortunately for Ortofon, Arcam's P-77 cartridge, which has superb bass, followed it into the SME arm; it was a damning contrast.

MEASURED PERFORMANCE

The 540 is quite unlike earlier Ortofons. For a start it doesn't aim for correct vertical tracking angle and very low distortion, as they always used to. The cartridge rides quite high off a disc, giving it better warp and lip clearance than both previous models and the Roksan Corus Black in particular.

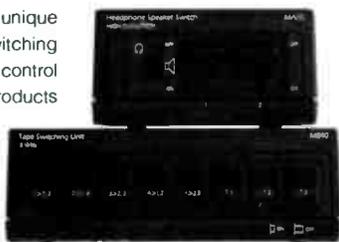
The downside is a vertical tracking angle of 25 degrees, resulting in 3% second harmonic distortion, rather more than that from the Roksan and Goldring cartridges.

Another departure from tradition is a reduction in capacitive loading from 400pF to 150pF. Once upon a time, special clip-on capacitors were available to 'flatten'



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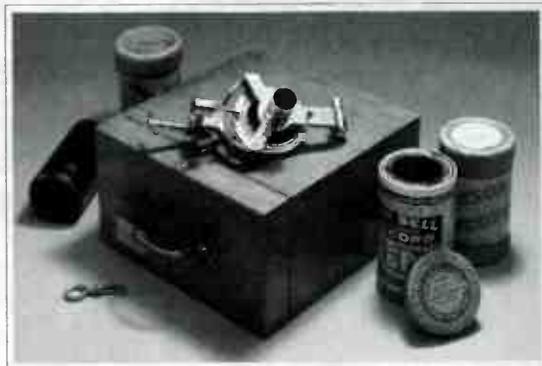
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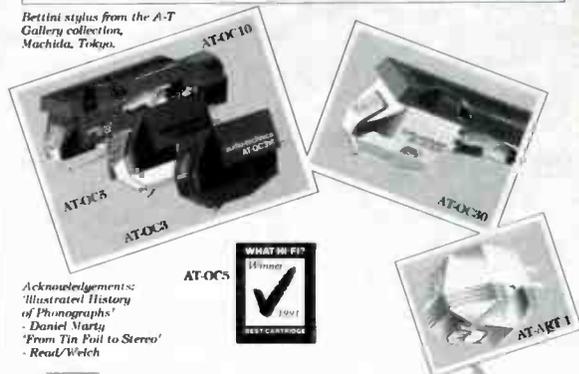
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 'From Tin Foil to Stereo'
 - Reul/Welch

AT-OC5



little over 100 years ago Gianni Bettini became the world's first audiophile. As an Italian cavalry officer visiting New York in the late 1880's, he was intrigued by the newly introduced Edison wax cylinder 'phonogram' yet unsatisfied with its poor audio quality. Using his flair for things mechanical Lieutenant Bettini began to turn this business dictation machine into a device which would satisfy music lovers and to ensure the ultimate fidelity he opened his own recording studio on Fifth Avenue. There he made the first realistic recordings of famous contemporary opera singers and built up a fabulous collection of 'celebrity cylinders' including his holiness Pope Leo XIII. His 'micro-reproducer' phonograph was first in a line of successful models and today A-T salutes him as a true pioneer of high fidelity.

At Audio Technica we strive toward the same goal, using unrivalled micro-transducer 'know how' to reduce the weight of Bettini's original device to the mere few grams of our latest moving coil series. Below we proudly present our 'reference' specifications but add one small note of caution. At this level 'numbers' do not tell the whole story as component compatibility and musical taste come into play. We thus urge a personal audition at one of our hand selected A-T dealers to fully assess requirements.

Meanwhile, please contact the A-T sales office for a complete selection of press review copies.

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Ortofon; now they work at what is assumed to be a typical and commonly seen capacitance (approximately 50pF for leads and 100pF in the amp.). With such a load, frequency response stretched from 20Hz up to 20kHz within 2dB limits, the analysis showing just a small peak of +1.7dB at 16kHz. I would expect the 540 to sound just a bit brighter and more forward than the other designs because it has no upper mid-range dip.

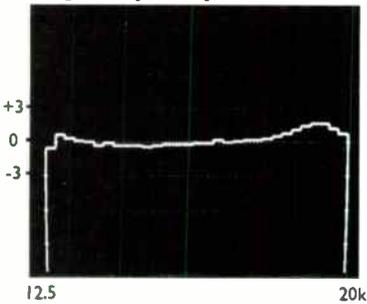
Tracking ability was superb, especially in the mid-band, where the 540 outperformed the others. Output was low-ish at 4.3mV, which doesn't surprise me; more mid-band output is obtained by reducing coil turns, the trade-off being loss of output.

The 540 is well engineered, but it is unlike earlier Ortofon in needing a normal 150pF capacitive load - and it is as sensitive to this load as the Roksan and Goldring.

TEST RESULTS

Tracking force	1.25gms
Weight	5gms
Load capacitance	150pF
Vert tracking angle	25°
Frequency response	20Hz-20kHz
Channel separation	25dB
Tracking ability (300Hz):	
lateral	90µm
vertical	45µm
lateral (1kHz)	25cms/sec
Distortion (45µm):	
lateral	0.6%
vertical	3%
Output (5cms/sec)	4.2mV
Channel imbalance	0.3dB

Frequency Response



Rising mid-range, plus treble lift

two is a slightly lighter and drier presentation from the Roksan, which is almost certainly a function of its raised upper mid-band output.

The Corus Black was noticeably less detailed in its treble reproduction though; I found it generally a little bland and vague after the 1042, but in smoothing over or submerging finer details it took a neutral stance, not offending by blatant distortion of truth - like the P77 for example. On the whole, I liked the basic presentational stance of the Corus, but felt it was compromised by the loss of fine detail. I wished to hear into the performance more, but could not; it was a little frustrating.

Stereo images were less cleanly etched than is possible, yet the Corus still images well by moving magnet standards. A little vagueness about the exact position of a singer was quite well countered by that same singer sounding full bodied and real. The high tracking ability and low distortion of the Corus make for a clean, unstrained sound. There's just a little less prominence and a bit more speed in the bass, compared to the 1042, but otherwise the Corus shares the same basic characteristics, offering a great sense of dynamic scale, with the promise to shock at times.

MEASURED PERFORMANCE

Although manufactured by Goldring and superficially similar to the 1042, the Corus Black's measured performance is in fact sufficiently different to show that under the skin it is not the same. Less bass lift suggests higher compliance; a peculiar glitch in the response at 1.5kHz is indicative of structural resonance and the treble peak is more pronounced, probably because the tip has a different profile, contact area and, therefore, resonant behaviour. However, as with the 1042, the Corus Black is sensitive to load capacitance, needing 150pF in all for least treble peaking. With this applied, the cartridge provides a frequency response that stretches from 20Hz to 20kHz within 2dB limits - a good performance.

Roksan have lowered the cantilever in order to get vertical tracking angle down to 20 degrees, in order to lessen distortion. The cartridge rides very low as a

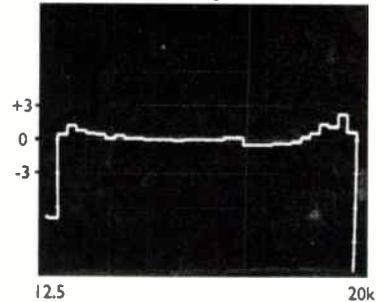
result, but it does produce very little distortion, as intended. It also tracks well at low frequencies, where compliance is important, and at high frequencies where tip mass affects matters.

The Corus Black is a very well engineered cartridge that provides an excellent measured performance, but ideally it should be loaded with 150pF total - within about 30pF limits - to avoid treble peaking and sharpness.

TEST RESULTS

Tracking force	1.9gms
Weight	6.7gms
Load capacitance	150pF
Vert tracking angle	20°
Frequency response	20Hz-20kHz
Channel separation	22dB
Tracking ability (300Hz):	
lateral	90µm
vertical	45µm
lateral (1kHz)	23cms/sec
Distortion (45µm):	
lateral	0.6%
vertical	0.7%
Output (5cms/sec)	6mV
Channel imbalance	0.3dB

Frequency Response



Flat mid-range and treble peak

CONCLUSION

Both the Ortofon 540 and the Arcam P-77 ride at a normal height above a record's surface, making them reasonably resilient to varying circumstances of use. With Ortofon, this amounts to a change of heart since years ago they too used to produce compliant and low slung cartridges. Ironically, many of them sounded superb, rather better than the 540 in this group, which I found unimpressive. Arcam's P-77 would be my choice from these two; it has superb bass, plus unrivalled transient attack and timing, even if it is a little vague and ordinary further up through the audio band.

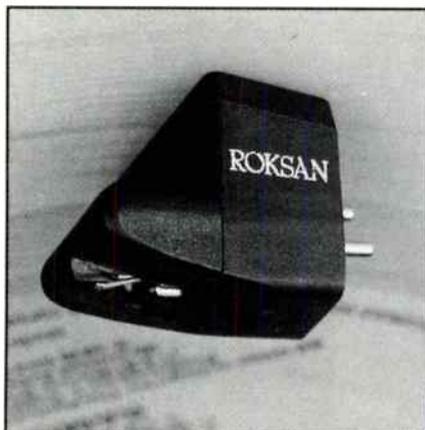
But perhaps your record collection is tightly packed between shelf dividers and warps are few and far between. If so, the Roksan Corus Black and Goldring 1042 won't be faced with vinyl hillclimbing. They offer the best sound - and by a clear margin in my view. Whilst the Roksan is light, dry and clean sounding, I have to say that I preferred the wealth of treble detail and fine sense of analysis proffered by the Goldring. There is just a touch of warmth and softness in its sound, which defines its overall character, yet this cartridge has broad ability and, at the price, makes the most of LP.

ROKSAN CORUS BLACK

Roksan's Corus Black is made by Goldring and bears certain similarities with their range - and shares their strengths. But it is certainly not the same. Even the price is different - £120. It has a Gyger II profiled stylus that tracks at around 1.9gms.

SOUND QUALITY

I put the Corus Black on after the 1042 and was met with much the same change I have encountered before, albeit this time a little more pronounced, my memory tells me. The chief difference between the



...continued from page 15

ites, as it became boring to read these pages over and over, looking for something new without satisfaction.

Room acoustics, a phenomenon that is part of a hi-fi system, has a definite influence on sound quality. Why don't you inform us more on the subject regularly, and give advice and hints on how to treat room acoustics to the advantage of sound reproduction. It surely deserves a page or two each month; what do you think?

J. P. Hagggar, Alexandria, Egypt.

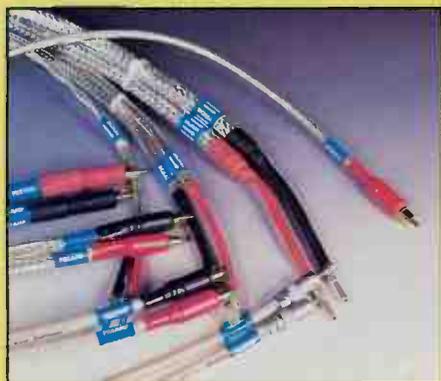
We think it's a good idea and we have penned some articles on the subject, primarily concerned with positioning loudspeakers. The reason why more hasn't been written is solely one of complexity; room acoustics is nightmare of eigentones, pressure modes, acoustic impedances, standing waves, flutter echoes and heaven knows what else. It's a science quite different from the ones we're acquainted with (i.e. electrical and mechanical) and it gets very complex very quickly. We could ask an acoustician to pen something, but you wouldn't find it exactly entertaining, we assure you!

At the same time, room acoustics are important and they can be understood in a simple fashion and usefully improved, so perhaps we had better think a little harder about the possibility. In some respects, room acoustics is more important with the Quad ESL-63s which you own, I recall from your previous letters.

We'd always seen World Favourites as reference material, which gets updated regularly, if not every month. **NK**

CONNECTIONS

I was very interested to read G. C. Hewick's letter in the November issue. Interconnects can change the sound for better or worse, as



High quality plugs and cables improve the sound. Many people have success experimenting with cables and making up their own using special plugs and cables.

the following will illustrate.

My neighbour purchased a well-known, highly praised British integrated amplifier and as I was planning to replace my old A60 with something more powerful, I was very grateful to be lent this new amp for a week. The results were disappointing. Whilst the sound through my neighbour's Tannoys was quite good, my Spondor BC1s produced a fizzy, grainy and occasionally fierce treble and were obviously a poor match. I subsequently bought a British Mosfet amp which has been around for five years, but after the initial rave review is seldom mentioned.

We were both using Philips CD850/1 players, with the maker's interconnect, but my neighbour was recently lent an expensive Audionote lead about 50cm long and reported a great improvement. The treble was sweeter and the trace of fizz, audible even through the Tannoys, had gone. Poor CDs were now more playable. On testing this interconnect on my Mosfet/BC1's, there was certainly an improvement with poor CDs, but none with good ones. Clearly this interconnect was modifying the sound by possibly attenuating the extreme treble and screening out RF. Martin Colloms has produced data on several interconnects, and the remarkably high capacitance and/or inductance of some could feasibly affect the frequency response.

Assuming that the best interconnect is no interconnect, I made up a pair of very short (20cm) leads with good quality cable. The definition on my Mosfet/BC1 is slightly improved and they remain in use. We then tried them with the other amp and Tannoys, and the result was worse than with the Philips interconnect. This speaker/amp combination seems to need the modification provided by the Audionote leads, but it would be interesting to make up and test a balanced fully-screened lead to see if RF pick up is the problem.

My final point concerns

amplifier reviews. It is clear that speakers and cables affect the rankings of amplifiers. Reviews with a large subjective content are misleading unless a range of ancillary equipment is tested at the same time. The profitability and even the survival of manufacturers can depend on comparative reviews, so this point cannot be emphasised too strongly.

D. Pearson, Dartmouth, Devon.

Capacitance and inductance do indeed affect the sound, often quite seriously, but only the more extreme designs possess such characteristics. We use good quality, technically sensible interconnects that are reasonably representative of real-life types and not unduly influential in their own right.

I wouldn't agree that "reviews with a large subjective content are misleading unless a range of ancillary equipment is tested at the same time." As reviewers with a considerable amount of very varied equipment passing through our hands, we are aware of potential differences or anomalies caused by ancillaries. Readers will have noticed that we will sometimes point out that certain loudspeakers will work at their best with solid-core cable, for example, where this has a noticeable effect. Unfortunately, with such a plethora of cable designs and types about, it is impossible to test each and every product with a full range. **EB**

KEEN BUT NOT GREEN

We recently purchased a Lasaway CD pen from a company called Innovations Ltd., Euroway Business Park, Swindon.

In their advertisement is a testimonial from yourselves and I am somewhat surprised by the comments.

Myself, our Programme Director and three other keen sets of ears set out to put the pen to the test. We took two brand new identical CDs and treated one with the pen as per manufacturer's instructions. We then played the two CDs simultaneously in two brand new identical CD players with the ability to switch from one to the other and compare like with like. We were most disappointed not to be able to notice one iota of difference whatsoever.

I would welcome any comments that you may have on the product.

Bruce Warburton, Chief Engineer, Beacon Radio, Wolverhampton.

As you note, we do feel that the Green Pen offers a subtle but worthwhile improvement. Whether you will notice it or feel it is worthwhile is also together another and very complex argument over human cognition and perceptual psychology including preconceptions, expectations, peer group outlook, listening experience and a variety of other factors, none of which are simply definable or really within the bounds of our full understanding. Then there are the listening conditions, exposure times, type of music and other matters to consider. We can't comment upon your experience, only that we can understand how you might come to feel this.

What we look for is consensus amongst a broad group of people. Cables, like the Green Pen, do not offer measureable improvement, yet you'll see a letter before this describing differences (one of many). Similarly, most people we have questioned seem happy that the Green Pen does make a difference. If consensus had it otherwise, we would probably hesitate to recommend it.

Finally, specialised measurements made at Loughborough University show that the Green



Green ink applied to the edge of the CD has proved to be a controversial tweak.

Pen does affect light output from the laser. Amongst the many imperfections of CD being investigated, one is the workings of its optical system. Laser Illusions of Illinois have provided compelling evidence of its problems. I suspect we'll be learning more about all this and, in retrospect, will realise that the Green Pen was effectual, albeit for reasons we don't fully understand. **NK**

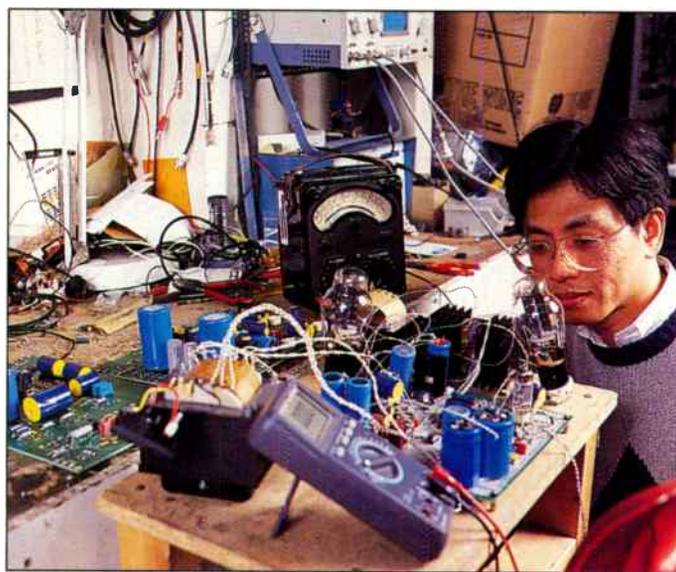
FEELING JITTERY?

Alan Sircom tries out a prototype digital signal processor, designed to reduce jitter.

We don't usually review prototypes, but occasionally one comes along that is so interesting we feel duty bound to try it. The ESTi DPP digital signal processor, expected to be priced around £495, was just such an exception.

It is designed to lock onto the electrical digital output signal of a CD transport, clean up the leading and trailing edge of the pulses in the datastream and virtually eliminate jitter, before sending the essentially rejuvenated data signal to the processor. It is powered by rechargeable Ni-Cad batteries, as any other voltage supply would cause unwanted ripples that would affect the data itself.

Obviously, as the DPP is in prototype form, I cannot comment on its construction, layout or appearance. In addition, as the prototype was developed in the Far East, by Tsai Hong Jen, it is difficult to



Tsai Hong-Jen, designer of the Esti digital signal processor, at work.

and the other to switch the signal processor into action. There are a series of yellow LEDs to identify different sampling frequencies and two knobs which adjust the leading and trailing edge of the pulses in the transport's signal.

When it sees a signal, the DPP automatically locks onto the correct frequency and the attendant LED glows. Once a locked LED shines, the volume can be turned up on the amplifier and the two adjustment knobs turned until the most focused sound is achieved. Obviously, a Ni-Cad powered device has only a finite playing time before it needs recharging. All that is needed is to turn the volume down, prior to switching off.

I found the ESTi produced a sound not unlike a smoother version of DPA's Deltran clock conversion to a CD transport. Music played through the DPP is more tidy and coherent than that usually attributed to CD, with a focused imagery similar to that from LP. Most of all, the ESTi processor brings a more natural and correct feel to material, something that is not a natural strength of

the CD medium.

There seems to be no down side to the improvements made by the DPP device. It doesn't affect the sound of the transport or DAC. As such, the DPP only comes into its own when used with a good transport/DAC combination. It would be pointless having the DPP sandwiched between a two hundred pound player and a two hundred pound DAC; although it would improve the sound of the CD system, it would still not move the transport/DAC out of first gear.

Fitted between two high quality components, the DPP transforms the sound quality of the player in a number of ways. It adds some of the zest to music that is often found lacking even

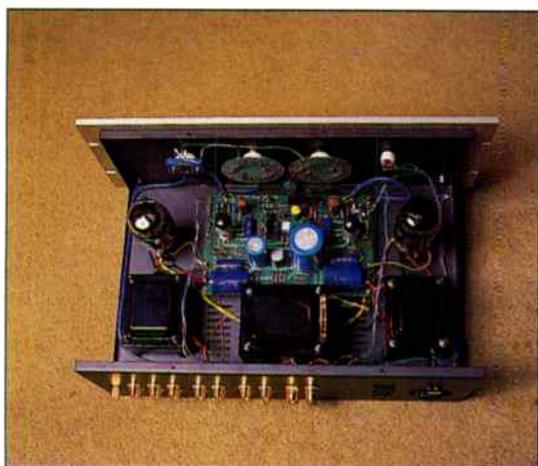


The Esti processor, in rack-mount prototype form.

in good CD players.

If some of these descriptions sound vague, it is because the DPP has no sound of its own, but merely optimises the best from the transport and DAC. Therefore, changes to the sound of a CD system appear to be dependent on the transport and DAC alone. The prototype DPP did not appear to colour the CD/DAC interface at all, just purify it.

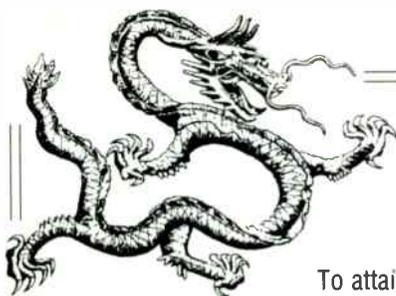
If the final production versions which will appear on the market affect the sound of a CD/DAC combination in as positive a manner as the prototype obviously does, expect a great many to be appearing in Christmas letters to Santa ●



An earlier Esti product: Tsai Hong-Jen's valve amplifier.

easily talk to the designer about its features. P.M. Components, with whom he works, are more than helpful, but we had the only device in the country, for which there was little product data.

Inside the prototype there are 12 AA sized Ni-Cad batteries and a small circuit board. On the front fascia sit two small toggle switches - one to power the device



Golden Dragon

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NORTHERN IRELAND SOUND AND VISION EXHIBITION

23-25 OCTOBER 1992

It wasn't just the Guinness. The Belfast Show, sponsored by Zeus Audio and LRG Sound and Vision at the Stormont Hotel, was as friendly as ever. No-one was keeping themselves to themselves; there was a good deal of equipment-swapping around the exhibitors' rooms. It lived up to its title, with audio-visual demonstrations side-by-side with a wide range of hi-fi: everything from AMC's new mid-price range to Audio Note's £11,500 Neiro.

Revitalised, Sansui were back on the show scene, joining other Japanese companies Pioneer, Sony and Kenwood on the circuit. The Brits were well represented: Wharfedale showing their brand-new Diamond V loudspeaker and 2050 integrated amplifier; SME their Model 20 turntable. Michell Engineering attracted much interest with the Alecto power amps we reviewed last month.

Belfast also saw the launch of John Sheame's new £495 integrated amplifier, making very good sounds in Room 148. Other attractive noises came from the Response One S in ProAc's room; B&W had their new loudspeaker range on show, including a curious 'Solid' design which looked like a Scandinavian reading lamp, but sounded like hi-fi.

Highlight of Rob Debenham's stay - while he was representing Hi-Fi World around the show - was meeting Hank Marvin, he said. He's been wondering whether he can use an Ongaku for guitar practice ever since ●



AMC's new Compact Disc player joins their growing range, beginning with a hybrid valve amplifier and soon to include a remote-controlled preamplifier and matching power amplifier.



Specially for Hank Marvin fans, re-ramped Quad and Leak designs courtesy of Peter Lindley, playing through stacked Quads.



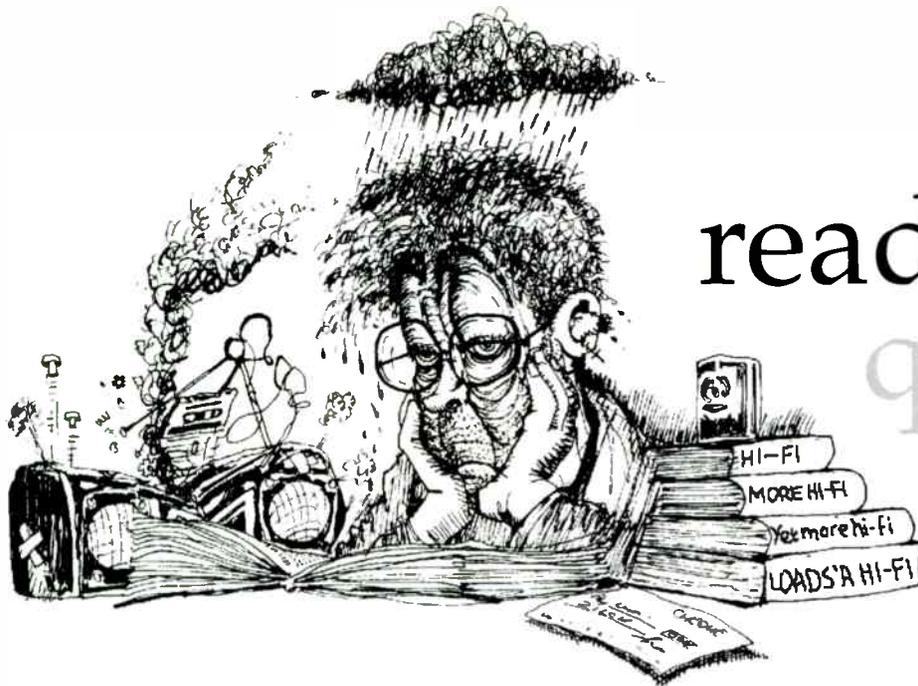
Up at the high-end in the Audio Note room. On display was the Neiro, which we had a sneak preview of some months ago. Demonstration record was a spectacular Decca test pressing.



Modern tubes from Tube Technology: Prophet pre-amplifier with power supply underneath and Genesis monoblock power amplifier.



Mission were demonstrating their multiple-drivered 753 loudspeaker. How many units was that? Their DADS package - Compact Disc player, Digital-to-Analogue convertor and Isoplat - was also on show.



readers' queries

DIAL-A-CD

After repositioning my system recently, I discovered much to my initial distress that my cordless phone interfered with my CD player, so that it started 'scratch mixing' Clannad in an alarming fashion. However, despair turned to delight when I realised that by suitable positioning of the phone base unit I could get the CD to stop playing altogether, thus providing an auto-mute-when-the-phone-rings-facility. This worked well until the phone rang while I was in the bath, and I had to drip my way around my flat to restart the player.

Seriously, though, has anyone ever measured CD players' susceptibility to interference, because I suspect that my player is still being affected by the phone, but not in a way that is noticeable with it ringing!

With an increasing amount of radiation from various sources buzzing around, perhaps the next trendy accessory/tweak will be a 'Furukawa Functionally Perfect Lead Box'.

**David C. Robinson,
Birmingham.**

We're not aware of research into this subject, although stringent new European Electromagnetic Compatibility (EMC) Regulations should prevent this sort of thing occurring in future, since all electronic products will have to be effectively screened, earthed and made resistant to RF injection through both inputs and outputs. It sounds like your

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.

player is inadequately screened, or perhaps it is not earthed; some house earths are useless for sinking RF signals. An earthed metal case, or even fine steel mesh around an equipment stand, all earthed, like a Faraday cage, may help. **NK**

MAINS POWER

I am at the moment in the painful last throes of buying a house. The great torture that this causes me, with solicitors soliciting and estate agents being estate agents, is only alleviated by the knowledge that when my goal is reached I shall have a dedicated listening room.

The major hurdle of getting my dear, sweet, loving, considerate (just in case she reads this) partner to agree to me having a room to play in is past. Now all I have to do is figure out how I turn a 12ft by 11ft Edwardian room into a static-free, electrically and structurally isolated audio

garden of Hesperides. (Found it next to Nirvana in the Thesaurus.)

The house needs major renovation, so I have my starting point and I have my budget. (Scrap that, I had to buy this writing paper.) But where should my priorities lie?

When I have the house rewired I can manage to slip in a dedicated circuit for my system, but should I use an audiophile mains cable such as Mr Russ Andrews might recommend right back to the fuse box or Didcot power station?

I have each of my components sitting on appropriately ridged and spiky objects, however, these in turn now have to sit on an early Edwardian timber trampoline that would make interest rates look stable. Any ideas on how I can convince the floor that it is not an oscilloscope?

There are also mains filters/conditioners to consider. Would one big filter before the sockets be better than a plethora of little ones after? What about RF interference suppression? Contact suppressors? Gold-plated sockets? Rubber underwear? (Sorry, wrong magazine.)

Does any of it matter anyway? In 2000 years' time W H Smith probably won't sell any format, just little green pens to stick in your ears. (It sounds better, honest.)

**Gary Kimberley,
Reading.**

To my everlasting regret, when I had all my carpets up and furniture out for re-decorating my own flat a few

years ago, I didn't take the floorboards up and install a mains spur. I know from Malcolm Steward's experience it's well worth while. In theory, with a short spur, interference suppression should not be a problem, since buzzes bangs and clicks tend to be transmitted around a ring main from fridges and washing machines.

The major problem is likely to be mains fluctuation; in one amplifier manufacturer's home in London, the discrepancy between the nominal 50Hz and what it actually is at different times during the day proved of the order of several per cent when measured. Dedicated power supplies to the hi-fi, I now feel, are a must when they are available. Audiophile mains cable I myself view as optional; 30 amp cooker cable for the mains spur should do nicely. Gold-plated plugs and sockets do tarnish less than the normal kind; if you can afford the luxury, go for it; if you can't, unplug everything frequently and clean the contacts.

I too have ageing and flexible floorboards; apart from replacing them, wall shelves are going to have to take up a chunk of your budget, I fear - there isn't really any alternative. **EB**

Experiences of dedicated mains systems seem to vary. I had my own house gutted in those heady days of the property boom when skips outnumbered cars and 'property developers' shouting

into portable 'phones out-numbered both of them. The results weren't entirely as expected.

The basic aim of a dedicated mains system should be to improve the quality of the supply in every sense, including safety. Do bear in mind that funny practices will be frowned upon by Electricity Board inspectors and that you need to get their approval of the installation to ensure your house insurance is not invalidated in the case of an electrical fire. Wiring should meet British Standards, which are available for inspection in the local library.

Everything after the board fuse (60A) is your responsibility; everything before is theirs. I paid to have the board beef up their part of my supply from the street, using very heavy current, fireproof 'Pyro' cables. From the distribution box I have a dedicated hi-fi ring main with double 30A cables, the 13A sockets being identified. There's a hard wired, non-switched IEC plug on a short flying lead for mega power amps like the Musical Fidelity SA-470. And to further improve safety a proper earth has been sunk in the garden, to which the mains earth is connected through a 30A earth cable, this being additional to the standard 'earth' connection.

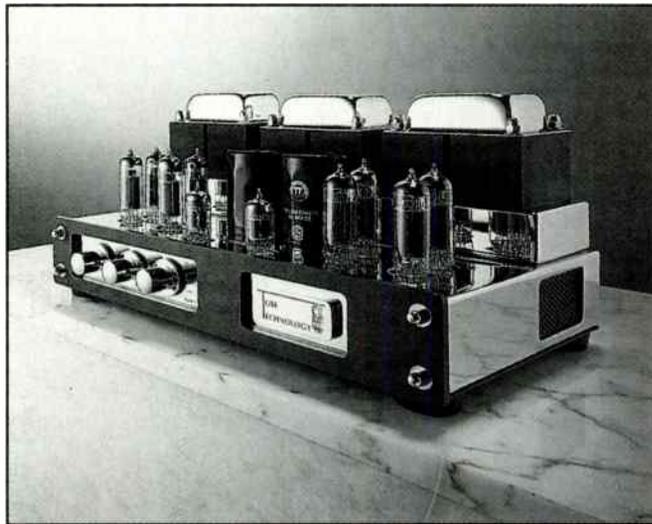
Trouble is, the system is so transmissive, that more rubbish now comes in - not less! My Quad ESL-63's shut down in protest at the tumble dryer being used, for example, even though the two are on separate lines. Electrical appliances should be suppressed at source; I don't use suppression at the hi-fi system. Amplifiers do give their best with a 'stiff' system like this, capable of supplying heavy current, but don't be surprised if opening the mains 'window' wider lets more rubbish fly in too. Also, I get no less than 250V on all my sockets now, having banished transmission losses, and this increases amplifier power output slightly.

At the end of the day, a sensibly improved mains system will be safer as well as more capable; it's something you'll have no cause to regret. Retain paperwork to prove that the house is especially safe, for insurers/future

buyers. But don't forget the TV and VHF aerials while the boards are up. Lay down something like Uniradio 70, keeping TV and VHF aerials and feeds separate. **NK**

DISTANT AND VEILED

At present my system comprises Michell Gyrodec/PSU/RB300, Pickering XEV/300I with D7500 stylus, Arcam Alpha 2, Mission 760 with Linn K20 loudspeaker cable and sited on Sound Organisation sand-filled stands. My listening room is 7ft high, 8ft 6in wide and 14ft long with roughly 2ft thick stone walls, suspended



Tube Technology's Unisis; a leap forward.

beamed ceiling and carpeted stone floor. The loudspeakers fire across the room. Listening tastes vary from female and male vocal to Folk, Rock, Pop, Classical and also Blues.

I am at present in the process of saving for my next upgrade, the last being from Linn Axis to Gyro, and would appreciate any help and assistance you could possibly venture. The system now can at times sound distant, veiled, boxy and unmoving, although the opposite can also be true with certain tracks; but then with vocals I feel they're on a leash and with Pop the beat and attack just lacks something. It's as if you're on the edge and just can't jump.

What I desire is to be drawn into and be surrounded by the music, for it to break free, to flow and for me to flow with it, to feel all the emotion, the highs, the lows that are contained within these grooves.

To this end I have im-

mersed myself in the hi-fi press, as going for a quick dem is a major operation, living so far from civilisation or the nearest hi-fi shop, but what I have made out is that the valve sound is just what I am looking for - I think.

Could you please give your thoughts on the following upgrades and any changes or alternatives you deem worthwhile:

1. Tube Technology Unisis, partnered with (at a later date) Sonus Faber Minuettes.
2. Copland CTA-40I partnered with Sonus Faber Minima.

ning. Given my recollection of Pickering cartridges, I feel there are far better alternatives which will inject more life into your vinyl. If you go for the Morch arm, the Morch da Capo moving coil is an excellent partner, as it is for the SME arms. Both Alan and I were impressed by the Lyra breeds, too. Somewhat cheaper, rounder and fruitier is Goldring's Elite moving coil. These will need a step-up transformer; from Ortofon starting at around £200, the Michell Iso at just under £400 or EAR's The Head.

At this point, it would be wise to get your abacus clicking. Almost certainly, the Alpha is also partly responsible for the lack of involvement. Of the two amplifiers, on balance I think I would go for the Unisis in your case, even though my own preference would be - using a similar front end to the one you are opting for - the Copland.

There's no alternative to listening for yourself. But, I would like to add two suggestions of my own. First would be Tim de Paravicini's new EAR 834 integrated line-level valve amp to be reviewed next month, which will cost around £1200. Secondly - though this might be creeping up beyond your unspecified budget - is the pre-power amplifier combo that took one or two valve aficionados by storm when it was in my flat. Having the very qualities you say you are looking for was Michell's Argo/Alecto, which I reviewed last month. This system comes out - in its basic form - at about £2,800, including Iso. It does have the advantage that you could, for a while, stick with your RB300 and replace the cartridge with the Goldring or an Ortofon moving coil. **EB**

The plan of your room shows that you are sitting close to the speakers (7ft or so by the look of it). Better bass will be heard if you can arrange for the speakers to fire down the room, with you sitting at the far end. If this is domestically acceptable, try it. I'd also add to Eric's valve amp list by suggesting you listen to the Audio Innovations Third

Two very different amps, I know. The Fabers were chosen because they are small and can be placed against a rear wall or one side as is my case.

Later my plans are to upgrade my arm and cartridge, also adding a head amp. Arms would either be SME 309 or Morch DP-6; which would suit the system I desire best?

When searching for a system I had the opportunity to hear both the Cyrus One and Audiolab 8000A and some Royd speakers; all of these I found on the clinical, as you put it, side. In turntables I heard the Linn LP12 - I found that too bassy - and also the Pink Triangle Export which I must admit to liking but the Gyro just got it.

**Paul Stevenson,
North Yorks.**

What a leap forward you're contemplating! I think it might be worth taking a step back, having a think, and analysing your system from the begin-

Continued on page 71...

My first impression upon opening the Sony TC-K490's box was that the wrong deck had been sent. Closer inspection confirmed that it was the correct model but I was still surprised at the lack of buttons and switches cluttering up on the front panel. For a £170 Japanese three-head cassette deck the fascia is surprisingly clean and free from excess gadgetry.

Among the essentials are three heads, Dolby HX-Pro and bias calibration enabling the recording to be tuned to the source. This is done

you need to make life as hassle-free as possible, including an optional remote control. If you have a Sony amplifier or receiver with remote control capability then it is possible to control the TC-K490 through one handset. I was most upset however to find that the Sony does not have one of their excellent powered door mechanisms and the cassette compartment is not back-lit. This does tend to imply that quality has been put ahead of unnecessary features, which must in the end be a better approach.

The Sony offers 'punch-in'

will find the next blank section of tape before the start of a track. If one of these cueing controls is pressed eight times the TC-K490 will skip eight tracks. If you change your mind whilst searching is in progress, the cue and review buttons can be used to modify your selection. All this is displayed on the attractive LED display.

I made up several recordings on a wide range of tapes from a high quality Compact Disc source for the purpose of this review. These included TDK AR, TDK SA and Maxell XLI-S and MX-S. I found TDK SA gave the best balance between

Cutting the

Sony's latest budget cassette offering is

by switching the monitor button to 'tape' and rotating the bias control until the recording sounds close to the original. The setting you end up with will be the same for every recording you make on that particular type of tape. Dolby HX-Pro improves the linearity of the high frequencies when recording.

On the convenience side of things the Sony has nearly everything that

recording, allowing the user to go directly into record mode from 'play'. Tape type is automatically selected and appropriate record level guidelines are provided. Automatic music sensing (AMS) on the TC-K490 has been well thought out with the ability to skip tracks in a similar manner to that of a CD player. If the 'fast forward' or 'rewind' buttons are pressed during play mode the Sony

tight bass and smooth treble and the most acceptable results. Of the metal tapes tried MX-S was the only one that the Sony could tame satisfactorily, but full bias was required and record level had to be lowered to give the bass some degree of control. Though the dynamics that metals are capable of shone through, the treble was splashy and poorly focused as well as being still slightly bright. TDK

MEASURED PERFORMANCE

The Sony's record and replay heads are siamesed together, which usually provides lower distortion and more extended treble - or so the theory goes. Another advantage of three-head cassette decks is their capability of monitoring a recording as it is made, allowing the effect of varying the bias to be heard immediately so it can be adjusted very accurately.

However, the system was so badly adjusted it couldn't tune metal tape flat. Even at full bias, there was a treble lift above 2kHz that peaked to +3dB at 10kHz, as the frequency response analysis shows. This is enough to give the deck an obviously bright sound - just the sort of effect that variable bias is meant to be able to tune out. With ferrics and chromes, the effect of bias adjustment is greater. With these the TC-K490 managed to provide a flat frequency response after tuning, with good treble extension up to 18kHz or so, from a satisfactory lower limit of 25Hz.

The TC-K490 gets most of the way there with metal tape, then fails because of a silly error in its set up. Consequently, this deck gives best results with ferrics

and chromes, which is something of a limitation in terms of quality alone, but perhaps not when price is considered too. I would be the first to admit that good, modern ferrics like TDK AR or Maxell XL-IS both produce pretty decent recordings.

Separate heads are potentially able to get higher recording levels onto tape. The Sony managed quite well in this area with the record level capable of being taken right up to the top (+8) with metal tape and maximum bias applied, before distortion became too great. The deck also got high recording levels onto chrome and ferric tapes, Dolby HX Pro helping very much to raise the treble overload (saturation) threshold here.

Even though the heads worked well in getting good mid-band and treble levels on to tape, they were less successful in the bass. With metal tape the Sony was producing 3.5% distortion at 0VU on the meters (IEC 0dB reference level), enough to result in soft or wallowy bass. In this respect, high quality ferric tapes generally give best results - especially TDK AR. When bass quality becomes a problem,

reducing recording level is the basic solution.

Noise levels were low in the replay amplifiers, hiss measuring -61dB. Bias noise, the hiss you hear on recorded tapes, measured -57dB with Dolby out, a low level. Dolby B gave -10dB hiss reduction and Dolby C -18dB. With a quiet chrome like TDK SA or SA-X hiss comes down to -75dB with Dolby C engaged, at which level it is all but inaudible.

The 0VU record level has been set high at IEC 0dB flux. A line of small red dots suggests peak record level for ferrics and chromes should be +3; for metals the figure jumps to +6, both of which are about right. Here, in an area where manufacturers commonly give curious advice, Sony get it right.

The transport was the other weak link in this cassette deck. The one on our sample suffered a lot of capstan wow, heard as a pollution of tonal purity (a fast 7Hz warble effect), some drift and random wow. In practice, drift compromises stability, bringing sudden small and random changes in pitch. Wow dirties the sound, and flutter adds a peculiar colouration and



Cost of Cassette

the TC-K490, tested by Dominic Baker.

AR had an over-soft bass quality which tended to plod rather than play. Even using a quality tape such as TDK SA the sound was spitty in the treble and lacking in dynamic impact. The soundstage was flat and compressed, sounding as if it was wrapped in cotton wool.

On Steve Earle's 'Esmeralda's Hollywood' track from his album *The Hard Way*, the tight hollow drum that

projects forward and bites the listener had too warm and soft an edge to it; it was hiding amongst the rest of the music. You felt like reaching out and stroking it instead of wincing from the impact of wood on drumskin.

The bass was reasonably controlled - if recording level wasn't set too high - but still had a ponderous quality which had the effect of slowing down the whole sound. This hesitation or

lack of timing in the bass is probably linked to the pitch instability which was shown up on a pre-recorded Classical tape I used.

Overall the Sony provides reasonable value for money. Sadly it is let down by less than average record and playback quality which is almost certainly due to the cost cutting required to offer this range of features for such a low price ●

reduces clarity. Sony's TC-K490 transport suffered all these effects to some degree, returning a poor total wow and flutter figure (weighted) of 0.15%. The speed stability analysis clearly shows capstan peaks ('shoulders') either side of the main test tone peak at right, plus random wow and flutter around the tone, seen as a steady broadening toward the base. This sort of performance is the sort of thing I would expect from a budget recorder.

The head was well adjusted for azimuth; replay frequency response reached from 30Hz up to 18kHz within -2dB limits. A small roll off at higher frequencies will be amplified by Dolby B and is enough to introduce some dullness with prerecorded material, but since this is down to adjustment accuracy on the factory production line, individual samples will vary somewhat. Replay speed was correct, so the '490 manages well enough in its ability to handle prerecorded tapes, even though it is unexceptional.

In trying to reduce costs, Sony have, inevitably it seems, run into problems with the TC-K490. In this they join nearly every other Japanese manufacturer, since

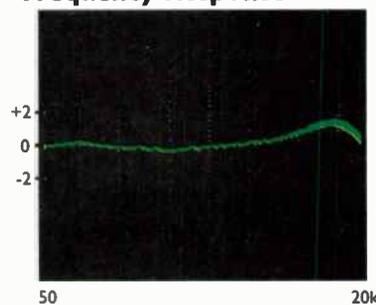
I have yet to measure a budget deck that didn't have some quite severe weaknesses. I would say you get your £170's worth with this model - but no more. **NK**

TEST RESULTS

REPLAY (prerecorded tapes)
 Frequency response (-2dB) 30Hz-18kHz
 Speed accuracy +0.3%
 Hiss (70uS, Dolby out) -61dB

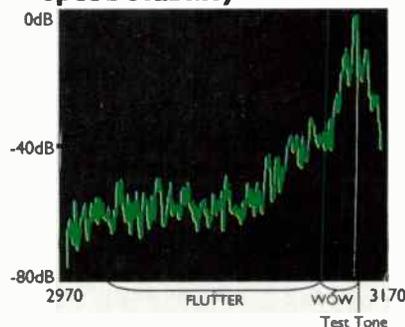
RECORDING (blank tapes)
 Frequency response (IEC Primary Refs.)
 ferric (IECI) 25Hz-18kHz
 chrome (IECII) 25Hz-17kHz
 metal (IECIV) 25Hz-20kHz
 Separation (1kHz) -53dB
 Distortion (315H) 1%
 Hiss (70uS, Dolby out) -57dB
 Speed variations (DIN total) 0.15%
 Flutter energy (3-3.13kHz) -25dB
 MOL/SAT (IEC Refs) 315/10k
 IEC I (ferric) +4dB/-8dB
 IECII (chrome) +3dB/-6dB
 IECIV (metal) +4.8dB/-2dB

Frequency Response



Treble peak with metals.

Speed Stability



Poor speed stability.

A Compact Disc transport named T1 has just been launched by DPA Digital (formerly Delttec), to complement their range of converters. From now on, they can offer a complete CD player comprising the new transport, priced at £750, with any one of their four converters, ranging from the budget (£395) Little Bit to the astonishing PDM-Two priced at £2350.

The T1 transport is a curious beast about which we all had - and could only have - reservations. Its construction is, er... somewhat unusual. Yet it contains the Deltran sync-locking innovation which Delttec pioneered, and which Arcam have since taken up. This alone gives the new transport a special value, when used in conjunction with DPA digital-to-analogue converters (DACs).

A transport and DAC were always meant to run in perfect synchronism, but in practice RF noise and jitter corrupt it. The effect is to slightly smear and dirty the sound. The benefit of sync-locking is that everything becomes cleaner and more precise. There is an emerging compatibility problem, though. The new DPA transport will work normally with any make of converter, but will only sync-lock with a DPA (or Delttec) converter which has a DELTRAN socket. While Arcam also have their own sync-locking system on their Delta 170.3, it's not compatible with Delttec's. Combining an Arcam transport with a DPA converter might seem attractive, but the two won't sync-lock together. In the course of this review, I compared a 170.3 against the new DPA transport and, without sync-locking it came off worst. But I'm getting ahead of myself here. Let me describe DPA's new transport in more detail and explain why we had reservations.

Bluff Appearance

At 460mm wide we found it too wide by about 1cm to fit typical hi-fi shelves. The slab of a front panel, machined from 1cm thickness of metal, attempts in simpler fashion to mimic the old Delttec cast fascias, with their unusual and distinctive curves. Apparently, they were difficult to make and finish well, which is a great pity. The new bluff appearance struck nobody in the office as being especially attractive, even though the deep gloss finish looks nice enough.

Hewn into this slab are a couple of slots: one for the disc drawer, the other for the display and touch-panel controls. Unfortunately, the thickness of the metal obscures the identifying legends from above, and it also makes getting a (human) digit in difficult. Just as well the transport comes with a

A T1 for 2



Marantz remote control unit, for the touch-buttons don't encourage their own use. They cover only transport functions too, like Stop and Play. All other facilities are on the remote control.

To the left of the buttons, nestling deep within the same slot, lies a bright blue fluorescent display - and it is here that certain anomalies are found, together with their explanation. A legend announces that DIG OUT (digital output) is ON. But there's no way to switch it off. And those big, blue numerals do look familiar.

"Surely," a voice in the office piped up, "that is a Marantz display; it looks just like the one on the CD-52 MkII which we have for review." The folded metal sleeve behind the fascia - a not insubstantial piece of metalwork itself, measuring 290mm deep and 120mm high overall - was slid off. Inside lay a complete Marantz CD-52 chassis (retail price £199), with audio stages and a back panel possessing a full set of output sockets. The only modification we spotted was the

necessary addition of a Deltran board, to process the synchronising signal.

This simple repackaging has a drawback. The Marantz disc drawer does not travel out far enough to clear the thick DPA front panel, meaning a disc must be slipped in rear first. It's not especially difficult, but then neither is it very welcome or appropriate at the price. Operation was slick enough, I felt. The drawer slides out smoothly and the thick metal casework tends to suppress mechanical noise. What a pity about the elephantine proportions, which in my view mar this package.

Copious Detail

Trying to judge the sound quality of the transport proved a frustrating business. We wheeled in a Delttec PDM One Series 3 converter to work with it. This is a simplified and less expensive PDM Two. As such, it uses Philips' specialised DAC-7 true one-bit converter in one box, with its own power supply, and an SAA-7350 digital filter/processor in another.

Our initial reaction to coupling the transport to a PDM One Series 3 was two-fold. Over most of the audio

A new Compact Disc transport from DPA Digital, the TI, creates the company's first two - box system. Noel Keywood assesses the Welsh combination.



band we were greeted by the sort of copious detail and wondrous stereo that is a hallmark of DPA products. But a large problem became apparent: peculiarly bloated, rolling bass threatened to overwhelm everything. It was with bass-heavy tracks that the problem got out of hand. Tracey Chapman's 'Crossroads' has an artificially emphasised bass line that went on and on, appearing unable to stop. The same problem made itself known with Billy Idol's 'Prodigal Blues' and manifested itself in a different way on Scott Walker's 'No Regrets', from the recent Walker Brothers compilation CD. Scott Walker developed such an unusual boom to his bantone voice that I became convinced there was a measurable hump in the frequency response - but subsequent investigation showed there wasn't.

A Surprise

Making comparisons with an Arcam Delta 170.3 merely showed that absence of a sync-link results in slightly rough treble which has a tendency to glare. In comparison, bass did seem a little less intrusive, but I wasn't certain that it had improved so much as become less obvious.

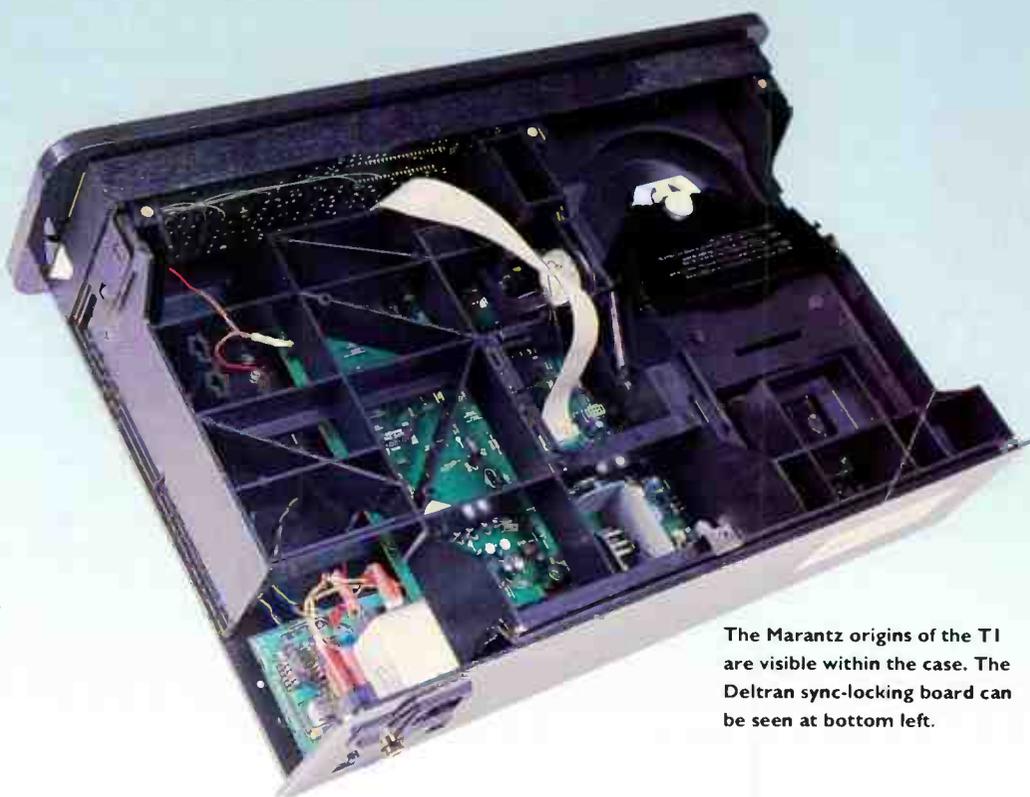
A surprise came with the Marantz CD-52 MkII player hooked up as a

transport: the bass problem suddenly became a strength. What had been rolling along uncontrolled snapped into line with the rest of the performance, becoming part of it. The character changed from loose and bloated to strong and deep. I had heard a similar performance before from PDM Two, the unit from which PDM One Series 3 had been derived, so it fitted the picture.

In truth, the change had come not so much from the CD-52 MkII transport but from the use of an electrical rather than optical link. Generally, electrical linking does give a harder, sharper sound than optical.

Re-connecting the DPA transport using an electrical digital link, together with the optical sync-link of course, brought forward an altogether more impressive sound from this combination, easily good enough to be quite clearly ahead of the competition. But what I heard was PDM One Series 3 working at its best, rather than the transport. Briefly, this convertor offers enormous scale, a picture painted on a huge canvas, with correspondingly large dynamics. Yet it isn't a crude representation. Within lies a wealth of fine detailing and a finesse and resolution at high frequencies that still defies more prosaic convertors - which means most on the market I have to say. This is the convertor I would buy if I couldn't afford PDM Two - and there wouldn't be one moment's hesitation in my mind. Comparable products have, until the present, not existed. Only the Pink DAC, tested in this issue, appears to have been designed and constructed with similar skill and dedication.

But back to the transport. It is almost obligatory for use with DPA convertors, so irrespective of price, appearance and the unusual constructional technique used, it has value. Nobody on the magazine was especially impressed by the TI, yet at the end of the day it does its job pretty well. All the same, I look forward to seeing a smaller and prettier design in the future ●



The Marantz origins of the TI are visible within the case. The Deltran sync-locking board can be seen at bottom left.



DIGITAL DOMINION

Meridian's 601 pre-amplifier is a digital processor with a complex array of facilities. Paul Miller takes a tour round a masterpiece of the future.

Judge this particular box by appearances and you'll be missing out on something very special indeed. But then Meridian are not doing themselves any favours, tucking what amounts to the UK's first genuine Digital Signal Processing (DSP) preamplifier inside bog-standard 600-series casework. So pause awhile and take a tour through the maze of options provided by this unassuming but £2,750 digital wonder.

For a start, Meridian's 601 will accept both the digital feed from any CD player, DCC or DAT deck, in addition to the analogue output of four line sources (CD, tuner, tape, video, etc.) plus either a moving magnet (MM) or moving coil (MC) phono cartridge. Nothing unusual so

far, until you realise that every analogue input, including LP, is converted into a 16-bit digital signal.

All subsequent processing, including cartridge equalisation (RIAA), volume, balance, phase, tone and loudness controls, is executed in the digital domain, so in effect even LP is exposed to the benefits and possible drawbacks of digital processing. All this is provided, plus comprehensive Digital Signal Processing for stereo, mono and Hafler-style output formats, together with an enormous range of possible equalisations for KEF-Kube loudspeakers, headphones, octave band response modifications. There's also a unique Archive section that'll cope with NAB, AES, STD, BSI, Blumlein, Westrex, FFRR and Decca 78's plus Columbia, NARTB, EMI,

FFRR and RIAA/IEC LP's. This is where the transformation of LP into digital opens up a wide range of interesting possibilities.

Every style of disc can be accurately equalised and subjected to scratch, rumble and notch filters before recording - in digital form - to DAT, DCC or even CD-R. Otherwise the digital signal, whether it originated from CD, radio or LP and whether processed or not, is converted back to analogue via a pair of bitstream digital-to-analogue converters (DACs). Like I said, the 601 is a very special preamp!

This vast armoury of features is accessed with just six function keys, from the front panel or from a remote control unit. An eight-digit display helps guide the user by

identifying the input or mode selected.

All inputs can be selected from a single 'Source' key on the front panel. This routes the digital inputs (four coax electrical and two 12MHz optical) to the 601's Audio Digital Input Circuit block.

Analogue inputs are sent via a different route to an intermediate analogue buffer amplifier which is under the strict control of the 601's central microprocessor. This enables a user to pre-select or 'configure' the input sensitivity of the line (500mV, 1V and 2V into 100kohm) and phono inputs to suit sources. Line adjustment caters for tuners, CD players and tape recorders. The phono input may be configured for MM or MC cartridges and pre-programmed for the respective 2mV-4mV-9mV or 120uV-240uV-600uV input sensitivities they demand.

The remote control and text display are invaluable during these 'setup' operations, though more comprehensive on-screen information would certainly be useful. If the 601 were a Far Eastern product, for example, I'm sure it would sport some vast multi-mode alphanumeric display!

Anyway, after this buffer, the analogue signal is digitised through a new bitstream analogue-to-digital convertor (ADC), at which point it is nominally equivalent to any external digital input. The digital signal then runs to the main digital signal processing (DSP) chip - a Motorola 56001 running at a full 32MHz (see fig. 1).

Digital Action

This, as they say, is where all the action takes place. RIAA equalisation is performed on the digitised LP inputs in addition to volume and balance control, muting and overload detection. If you select an input that does not require processing (digital or analogue) then these may pass through the DSP chip in its 'bypass mode'. Otherwise the principal DSP options must be identified via the front panel, with sub-options selected via remote control. Then wait a second or so while the program is downloaded from the microprocessor.

Incidentally, Meridian's up/down volume control is rather unconventional, operating first in the digital domain before addressing the datastream to a pair of bitstream digital-to-analogue convertors. Following conversion, the analogue output is either gain-locked to one of 15 maximum settings (from 450mV to a theoretical 18V) or rendered continuously variable over 99x1dB steps. Phew!

Still with me? Great, so how does the 601 perform in practice? Well, having blown the dust off my trusty

PT TOO/SME VVdH MC-Two record player, I was initially taken aback by the oddly processed sound of vinyl surface noise, particularly when there was no masking in between tracks.

This is not a feature of low-level quantisation errors in the ADC. I hasten to add, but a side-effect of the potent impulses that constitute vinyl noise. So, rather than adjust the LP input sensitivity for least noise, it's better to err on the side of caution and opt for a higher sensitivity figure, say 600uV instead of 240uV for the 'average' MC cartridge. This raises the overload threshold, preventing the sharp spikes caused by 'ticks and pops' causing trouble.

After all, Meridian state that an LP's dynamic range may be accommodated with a quantisation accuracy of 11-bits while that provided by FM radio may require 13-bits. Both clearly fall within the 16-bit window provided by the bitstream ADC's so there's really no need to push sensitivity settings to their limits.

By way of confirmation, not only was the 'sound' of vinyl noise influenced by my choice of disc input sensitivity, so too was the 601's modification of subtle musical detail. This is an important point because the 601 does have a 'sound', one that brings a feeling of stop-start solidity to bear, regardless of the type or style of music.

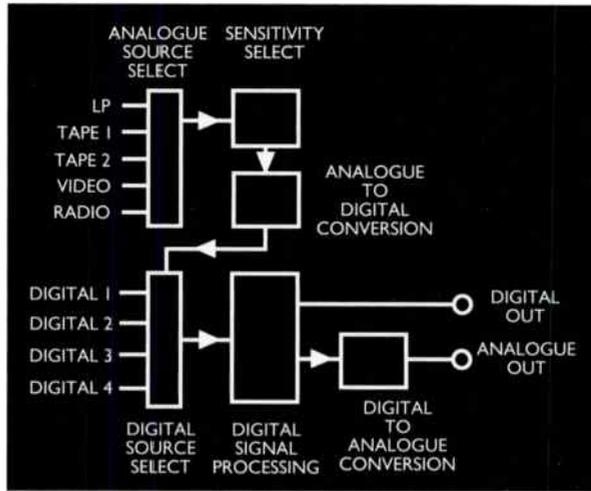
Without wishing to appear predictable, it's almost as if the 601 made my records sound more like AAD Compact Discs!

An old favourite like Marty Paich's 'I've Never been in Love' certainly sounded closer to my CD copy, barring LP surface noise of course. The brass sounded squeaky-clean, its astringent tone piercing through the clubby atmosphere generated by the track as a whole. The plucked bass was not quite as deep or resonant

as is possible but at least the 'feel' of this instrument kept the music rolling to a smooth and satisfying conclusion.

The vibrant bass line that underpins Peter Gabriel's 'Don't Give Up' was tempered by the 601 in similar fashion, yet this feeling of confidence and CD-like solidity was equally prevalent. So prevalent, in fact, that it stilted what I had felt to be the natural ebb and flow of the music - the detail was all there, but in a conspicuously packaged or processed form.

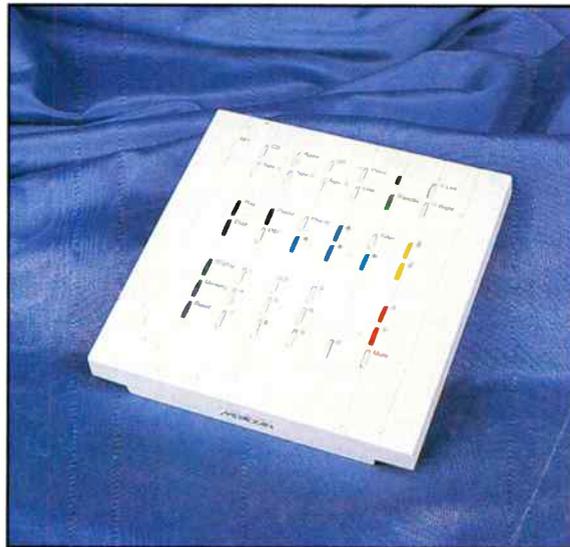
Other discs fared rather better.



◀ Fig.1 From input to output. The signal path through Meridian's 601 pre-amplifier. The crucial Digital Signal Processing (DSP) section is the heart of the unit (see text).

Athena's fabulous recording of Rachmaninov's 'Symphonic Dances' was as thrilling as ever, even though its orchestral dynamics had lost their explosive edge. Strings and winds climbed en masse into the vaults of the auditorium yet the performers still seemed a trifle close, lacking the final thrill and vibrancy I know to be possible.

Impressive and moving, to be sure, yet curiously restrained at the very times when the music demanded free rein. In almost every instance some of the colour, the richness and vibrancy of my LPs was sanitised in the name of accuracy. Was the 601 simply exposing the inherent 'sound' of this



◀ Meridian's elegant remote control from which a multiplicity of processing functions can be accessed.

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tumble/LP/arm/cartridge combination? Or was this a consequence of the tight 20Hz-20kHz band-limiting imposed by the digitisation of a far broader analogue spectrum? Perhaps we should hold fire until other digital RIAA networks are generally available before passing any final judgement.

By way of comparison, however, I hooked-up the latest version of Meridian's 200 transport and listened to a mix of CDs, including a number of albums I had just auditioned via LP. This route avoids the ADC processing chain that's necessary with any analogue input but does engage the same digital/analogue volume control and bitstream DAC. However the differences between the two sources was often quite startling.

With the benefit of hindsight the extra crispness, the exquisite bite of percussion and vivid expression of vocals, for example, often rendered the analogue version dim and speaker-bound. So dramatic is this improvement that I'm tempted to suggest it's a function of the 601 and not a true reflection of the relative differences between LP and CD. The suggestion is, then, that the Meridian LP input is a little less impressive than I might have wished. I've certainly heard my analogue front-end sounding more open, transparent and simply more 'musical' than this in the past.

A Turn For The Better

Back to the 601; my listening via its digital inputs took a turn for the better. Prokofiev's Romeo and Juliet (Decca) on Compact Disc seemed to provide all the elements missing with my LP source. The thrilling speed and commanding dynamics of 'The Fight', the deep and gloriously spacious soundstaging provided by 'The Balcony Scene' and the near-imperceptible detailing that peppers 'Masks' combined to produce some genuinely spine-tingling music. The sort of music that's available from just a handful of CD transport/DAC combinations.

So there you have it. The Meridian 601 is an immensely versatile digital preamplifier that'll facilitate custom digital recordings from virtually any source onto the likes of DAT, CD-R or even DCC. It is an upgradable processing centre that caters for in-room speaker and headphone correction, Hafler surround and KEF-Kube equalisation while accommodating the whims of every black disc stamped since the dawn of time.

All this is on offer, plus state-of-the-art digital-to-analogue conversion, with the benefit of a precise digital volume control that introduces no degradation. It's a unique and timely package aimed at the enthusiast who wants a toe-hold in 21st Century hi-fi.

What more can I say? The 601 is an investment in audio's future. Today ●

MEASURED PERFORMANCE

If Meridian has previously been associated with Philips' digital electronics then the 601 marks a break with that tradition. Here the CS5336 ADC and CS5328 DAC are all sourced from the Crystal Semiconductor Corp, a change of heart that's reflected in a new bitstream fingerprint for the 601. Philips' SAA7274 ADIC (Audio Digital Input Circuit) is the only link with the past!

Crystal's DAC is especially unusual because it performs a full 16 (or 18) to 1-bit truncation yet re-distributes the resulting quantisation noise over a relatively narrow 2.82MHz range. This range is restricted by the total 64x oversampling, significantly less than the 256x or 384x employed by other PDM-style DACs. Hence Crystal's application of a severe 5th-order noise shaping.

Nevertheless this steep increase in ultrasonic noise also results in a slight reduction of the 601's high frequency dynamic range. It's typically 5dB short at 20kHz relative to 1kHz for instance. The ultrasonic spurious then climbs to a peak at 75kHz beyond which Meridian's analogue filters begin to take hold.

Fortunately this still marks a reduction of some 20dB in ultrasonic rubbish over Meridian's previous SAA7350-based DAC's, a peculiarity caused by its use of a low 11.3MHz clock. Unfortunately, however, the 601's A-wtd Signal-to-Noise is also restricted to some 94-99dB via the digital inputs and just 84-90dB via any analogue (line) input. Of course, this is just as likely to be caused by cross-coupling between the digital and analogue environments, if not via Meridian's sophisticated 6-layer PCB then through the DAC substrate itself.

Another obvious feature of all its analogue inputs is the rapid HF roll-off beyond 18.55kHz, a consequence of the ADC's anti-aliasing filter. So any harmonic information (plus general grunge) that exists above 20kHz or so on your records will be rejected by the 601 in precisely the same way that data is band-limited on CD. Otherwise Meridian's digital RIAA network adopts the standard IEC 20Hz bass roll-off while extending the line inputs to -0.46dB at 5Hz.

Distortion, meanwhile, differs very little between inputs as this is a function of the digital rather than analogue processes. This is particularly true of the DAC whose peak-level THD increases by a factor of thirty or more from 1kHz to 20kHz, reaching a maximum of some 0.04%. Distortion-wise then, the 601 'looks' just like any competent outboard DAC employing Crystal technology.

But the sound, as you'll discover, is something else altogether!

TEST RESULTS

Digital Freq Response (-3dB)
2Hz-20.2kHz

LP Freq Response (-3dB)
20Hz-20.2kHz

Radio Freq Response (-3dB)
2Hz-20.2kHz

THD @ 1kHz:	Digital	Analogue In
0dB	0.0012%	0.0018%
-10dB	0.0013%	0.0017%
-30dB	0.014%	0.019%
-60dB	0.36%	0.553%
dithered -90dB	12.5%	15.6%

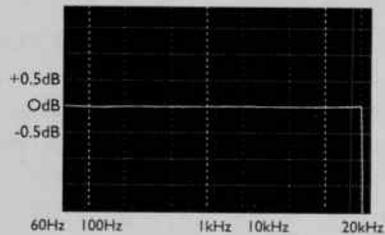
THD @ 10kHz 0.012% 0.010%

Stereo Separation		
1kHz	95.0dB	110.0dB
20kHz	68.3dB	103.4dB

Noise (A/wtd)		
	(emphasis)	(500mV in)
	98.5dB	84.3dB
	(no emp.)	(2V in)
	93.9dB	89.6dB

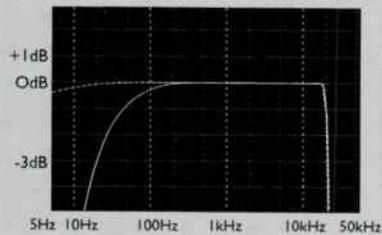
Peak Output		
	(vol. at 80)	(vol. at 92)
	2.1V	8.4V

FREQUENCY RESPONSE CD



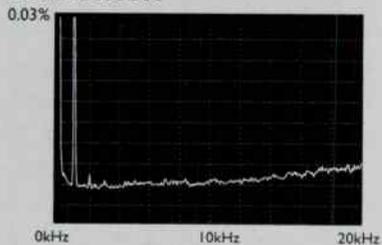
Flat to 20.2kHz with CD.

FREQUENCY RESPONSE DISC



Flat to 20.2kHz with LP.

DISTORTION



Negligible digital distortion.

Denon's new PMA-450 amplifier was conceived in the U.K. in collaboration with Japan, Dominic Baker discovers.

BORN IN BRITAIN

Slowly but surely the Japanese seem to be taking over the up-to-£300 separates market. Denon's launch of their £249.99 PMA-450 amplifier serves to strengthen this bid for the middle ground. However, one thing that is becoming evident is that the British hi-fi buying public takes more notice of a foreign product if it can in some way be associated with a British engineer.

The Denon PMA-450 takes the normal 'designed in Britain' idea one stage further. Denon's own UK technical team and UK consultants planned the new PMA-450 from scratch using high quality UK components where they couldn't find a suitably good Japanese equivalent. To this end, in key areas inside the PMA-450 you will find a scattering of Ansar super sound caps which are supplied from Wales. The prototypes of the amplifier were flown between here and Japan until they were built to the standard that Denon UK had intended.

Tone controls, loudness buttons and other such facilities that would normally clog the signal path have been banished, but strangely the A/B

loudspeaker switching capability has been retained. However this does make bi-wiring easy, obviating the difficulty of cramming two cables into one plug. A 6.3mm headphone socket is installed on the lower portion of the fascia which switches the speakers off via a relay when connected. Both of these facilities point strongly towards Japanese design ideas and suggest that the Japanese company has had more to do with the PMA-450 than Denon UK would like to admit.

Simple and Silky

The only other front panel controls are a volume knob and input and output selectors allowing monitor functions. These cater for five line inputs and MM phono. The Denon also has the facility to link two tape decks for tape-to-tape recording which is convenient for those who prefer the use of single recorders.

Visually Denon's PMA-450 is not exactly stunning, looking more as if something has been forgotten rather than purposely left out. Finish, however, is up to Denon's normal high standard with a silky smooth

appearance and neatly fitting controls.

The Denon was inserted into a mid-priced British system as well as being used amidst some more forgiving equipment. To start with I used a Teac transport Deltran-linked to a Bigger Bit and Tannoy's 605LE loudspeakers. The 605LE's, although a little sharp, are very revealing and quickly showed the PMA-450 to be a squeaky clean and detailed performer. However, it does sound a little sterile, which may be due to the fairly high negative feedback employed in the design.

From our own recent experiments we have noted that loudspeakers with polypropylene crossover capacitors are particularly sensitive to treble distortion. The Denon proved to be an ideal amplifier for such loudspeakers, sounding sharp but without the harshness or grain which would be associated with distortion. The treble was remarkably free from sibilance but possessed an overdamped quality making the Denon sound a little closed-in at the high frequency extreme.

Further listening revealed a restricted quality about the upper bass and vocal midrange which I found to be the Denon's weakest

MEASURED PERFORMANCE

We've long had a Denon PMA-350 skulking around the office. It is regularly pressed into service when good dynamics and plenty of power are needed, generally to inject some level and life into a tardy budget loudspeaker. The new PMA-450 looks and feels as if it has been designed to extend this useful ability; it also measures so. The '350 delivers 70watts on the test bench, but the '450 takes this up to 98watts, a +1.5dB power increase. It drives low loads well, increasing output to 144watts for four ohm loudspeakers, of which there are an increasing number around. It also copes easily with heavily reactive loads, as most loudspeakers are in one part of the audio band or another. One of our dummy loads represents this problem; the Denon shrugged it off.

Whilst the new '450 has plenty of power (voltage swing in fact) to cope with insensitive, high impedance loudspeakers,

and enough current delivery to drive low impedance designs as well, my only observation is that subjectively it doesn't actually go very much louder than the '350. The '450 offers a little more volume. However, both are capable of producing a good wallop and are suitable for anyone who plays music long and loud. Overall, in the marketplace, the '450 is excellent value in terms of pounds per watt, like the '350.

I was surprised to find the CD input reaches down to only 14Hz before gently rolling off. It is not difficult to go lower with solid state amplifiers and CD is specified down to 4Hz, approximately two octaves lower than the Denon's lower limit. In most systems this won't be of any subjective consequence, but in the odd one or two with speakers that can go low (inc. REL's subwoofers) this absence of deep subsonics can and will be audible, if not detectable without a reference.

The CD, tuner and tape inputs were all sensitive, needing just 180mV from the amplifier for full output to be available. The dual-concentric volume/balance control provides excellent channel separation, even on phono, and noise was minimal at -97dB - a figure entirely compatible with CD.

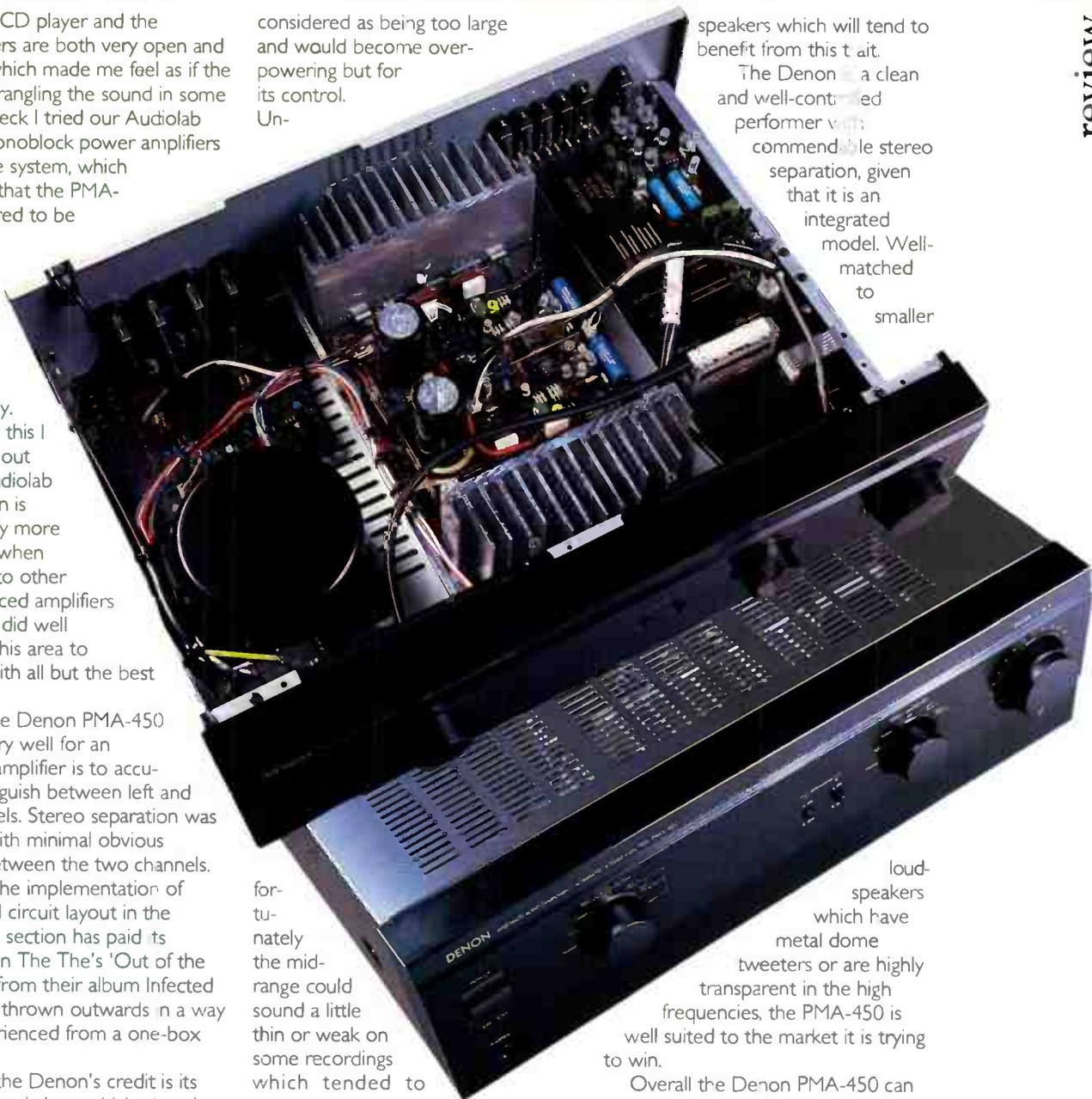
A characteristic of the PMA-350 was its bright and - with some loudspeakers - slightly coarse treble. Analysis revealed some treble distortion. The new '450 is free of this effect, having little distortion right across the audio band. The distortion analysis at 10kHz clearly shows this; even with a low full scale of 0.1%, distortion can barely be seen, measuring just 0.005%. Some designers believe that the high feedback invariably used to reach this standard of measured performance also suppresses dynamics. There are amplifiers that disprove this, so I tend to keep an open mind about it. What is certain is that

point. The CD player and the loudspeakers are both very open and spacious, which made me feel as if the 450 was strangling the sound in some way. To check I tried our Audiolab pre and monoblock power amplifiers in the same system, which confirmed that the PMA-450 appeared to be separating bass, mid and treble into bands and then squeezing them slightly. Having said this I must point out that the Audiolab combination is considerably more expensive; when compared to other similarly-priced amplifiers the Denon did well enough in this area to compete with all but the best few.

considered as being too large and would become overpowering but for its control. Unfortunately

speakers which will tend to benefit from this trait.

The Denon is a clean and well-controlled performer with commendable stereo separation, given that it is an integrated model. Well-matched to smaller



fortunately the mid-range could sound a little thin or weak on some recordings which tended to over-exaggerate the extent of the bass. However, the PMA-450 will in most cases be used with either miniature or medium-sized loud-

speakers which have metal dome tweeters or are highly transparent in the high frequencies, the PMA-450 is well suited to the market it is trying to win.

What the Denon PMA-450 does do very well for an integrated amplifier is to accurately distinguish between left and right channels. Stereo separation was excellent with minimal obvious crosstalk between the two channels. Obviously the implementation of symmetrical circuit layout in the power amp section has paid its dividend. On The The's 'Out of the Blue' track from their album Infected the stage is thrown outwards in a way rarely experienced from a one-box amplifier.

Also to the Denon's credit is its big and dynamic bass which played even the more complicated lines in a positive and powerful manner. In fact in some cases the bass could be

Overall the Denon PMA-450 can sound a little ragged and lacks any fine degree of finesse; but then again it is a £250 amplifier and thus rates reasonably highly amongst its rivals ●

measured distortion can also be heard - as a slight coarseness, so low distortion does have benefits.

The disc stage caters for moving magnet cartridges only. Like most UK designs it follows IEC recommendations, rolling off deep bass below 40Hz in order to prevent warps flapping the cones of reflex loudspeakers. Equalisation was accurate, staying within 1dB limits right up to 55kHz. The dual-concentric volume control helps provide an unusually high channel separation of 85dB, ensuring a wide stereo stage. Hiss and hum were both very low; they would not be heard in use. Input sensitivity was conventional at 3mV and overload high enough at 150mV. Denon have also ensured input conditions are right, at 45kohms in parallel with around 200pF of capacitance. In all areas the disc stage measures well.

Denon's new PMA-450 offers a little more power and volume than the '350,

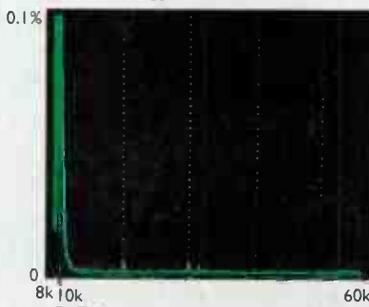
but at 98watts it will, all the same, make most loudspeakers go very loud. Low distortion will keep the sound clean as well, removing the slight taint of coarseness the '350 suffers. Here's an amplifier that

has enough voltage swing and current drive to cope with both high impedance and low impedance loudspeakers well, but without an astronomical price tag. In all areas, the new '450 performs well. **NK**

TEST RESULTS

POWER	98watts
CD/TUNER/AUX.	
Frequency response	14Hz-60kHz
Separation	78dB
Noise	-97dB
Distortion	0.004%
Sensitivity	180mV
dc offset	-2/-2.5mV
DISC	
Frequency response	35Hz-55kHz
Separation	85dB
Noise	-77dB
Distortion	0.005%
Sensitivity	3mV
Overload	150mV

Distortion

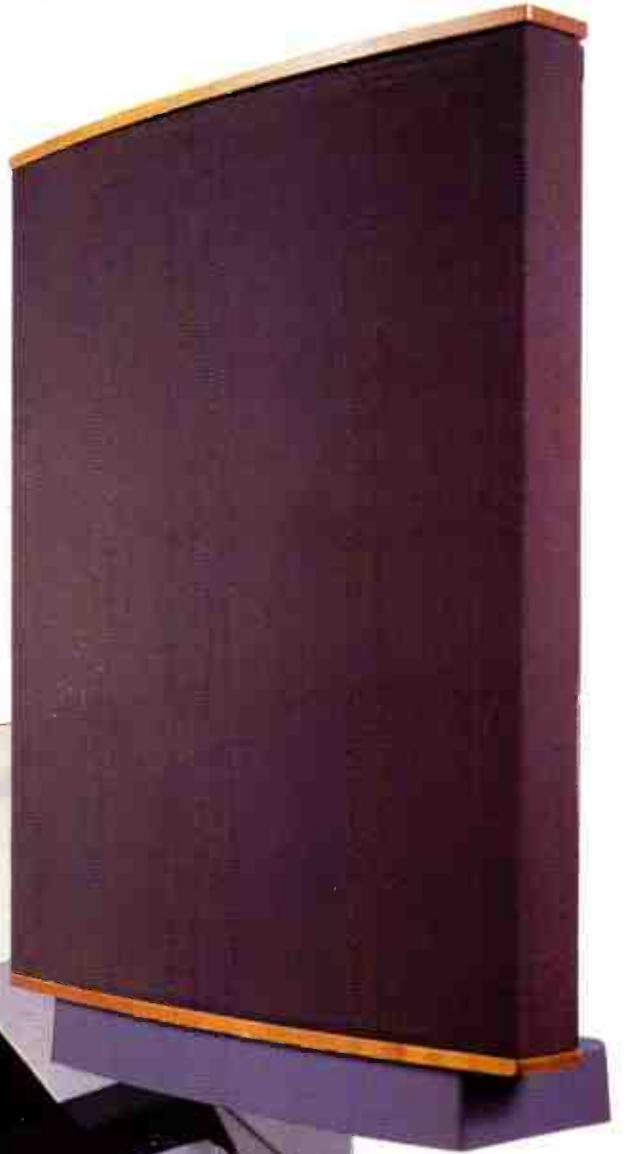


Negligible distortion.

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QUAD QUALITY

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In the October issue we reviewed Quad's new fully remote-controlled 66FM tuner. This month, we are giving away a complete Quad system worth over £4000, comprising the superb ESL-63 electrostatic loudspeakers, driven by a 306 power amplifier. This is fed by the 66 remotely controlled preamplifier, which receives signals from a 66FM tuner and 66CD player.

Quad is one of Britain's oldest hi-fi companies. Established as the Acoustical Manufacturing Co., their first domestic valve amplifier appeared in 1951. Known as the Quality Unit Amplifier Domestic, it spawned the abbreviation Quad which has since

become a brand name. Over the last forty years, they have possessed a reputation for innovation, producing the first electrostatic loudspeaker for a wide market in 1957. It wasn't superseded until 1981 when the ESL-63 appeared on the market after more than a decade of development. This quickly established itself as a landmark design, with astonishing mid-range and treble clarity and pin-point imaging. So much so that it became a reference speaker, used by Eric and Noel, among the Hi-Fi World staff, for example, and other reviewers throughout the world. It's used by recording engineers and Philips Classics as a monitor.

The latest development in the Quad line-up is armchair control. The new 66 series pre-amplifier, Compact Disc player and 66FM tuner, which are all a part of the prize, can be managed from a stylish coffee-table remote control unit. There's no need to panic if the batteries run out after the shops have closed: a lead can be uncurled from a compartment in the base and plugged in to take its power from pre-amp or tuner.

Finally, the power amplifier is Quad's slim-line and elegant 306, a perfect partner for the ESL-63s. It all amounts to a stylish system for the Nineties, with true hi-fi sound quality.

TANNOY GRFM COMPETITION WINNER

The reader who will shortly be advertising his furniture in our Classified section to make room for a pair of the wonderful Tannoy GRFM loudspeakers is Mr T. E. Clements of London. Many thanks to everyone who entered and whose concluding lines to the 'pome' kept us all rolling in the aisles.

Please send your entry form, completed in block capitals, to arrive by 22nd January 1993, to:

**Quad Competition,
Hi-Fi World Magazine,
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We will endeavour to publish the results in the April 1993 issue of Hi-Fi World. Audio Publishing Ltd. reserve the right to publish such entries as the company sees fit. No correspondence about this competition will be entered into and the Editor's decision is final. Employees of Quad Electroacoustics Ltd. and of Audio Publishing Ltd. may not enter the competition.

Rogers are justly proud of their new loudspeaker designer, Andy Whittle, who came to them from under Robin Marshall's Epos wing. In a press release, they write of the new revised £349.00 LS6a/2 loudspeakers having undergone "the 'Whittle' magic". He

seemed to work wonders with the LS2a, so we were more than keen to hear the LS6a after the magic wand had been waved.

Though the new loudspeaker is still a two-way reflex design, a great deal has been changed. Both loudspeakers use Rogers' own hard-wired

205mm polypropylene mid/bass cone, but the LS6a/2 has a 105mm magnet, instead of the original's 90mm one, increasing the surface area by around 26%. This magnet is said to be roughly twice the cost of the original. The 19mm aluminium dome tweeter remains unchanged although this unit

SECONDS OUT !

Alan Sircom listens to the LS6a/2, the latest Rogers



is now also hard-wired, unlike that in the original LS6a. Internally, the five-element crossover sports an air-cored choke for the bass driver, as opposed to the cheaper, but less performance-orientated ferrite core of the original model.

This crossover circuit has allowed the provision of bi-wiring, and the LS6a/2 now sports four 4mm gold binding posts, spaced 19mm apart, at the rear panel. The circuit crossover point is at 3kHz and is also star-earthed to minimise earthing interaction between LF and HF units.

The cabinet itself has been aesthetically 'tweaked' and stands 508mm high, 272mm wide and 280mm deep, made from particle board internally braced between tweeter and mid/bass unit with an MDF baffle. In common with most Rogers designs, the LS6a/2s are intended to be used with the grilles in place.

During the run-in period, a sense of gloom and foreboding overcame me at the prospect of reviewing the LS6a/2s; they sounded truly terrible! One person passing through commented "There's no way they'll warm up. It's a shame, I used to like the old LS6a." Both of us were completely wrong. Once on stream, they sounded much better. In addition, I was using a heavy Target stand which added considerable sludginess to the bass. Moving over to open-framed stands, such as Rogers' own, or a lightweight wooden stand helped the LS6a/2 to perform far better.

Scale and Power

In conversation, the designer Andy Whittle admitted a predilection for the Snell/Audio Note loudspeaker sound and this shows in the LS6a/2, combining the positive attributes of both traditional Rogers and Snell/Audio Note designs. There is much of their dynamic scale and power in the Rogers, especially when they are partnered with a suitable amplifier. Playing Crowe House's 'Woodface' LP, or the BBC Music Magazine live recording of Tchaikovsky's 6th Symphony on CD, the LS6a/2s coped with the level changes in the music without problem.

This is an attribute of loudspeakers usually costing far more. Strangely, for a comparatively system-dependent loudspeaker, they are forgiving to musical programme - Chapterhouse aside. For the most part, the LS6a/2s played music with a healthy balance between life and refinement, regardless of musical genre.

I feel that the Rogers LS6a/2s seem happier with vinyl-based sources, than with CD. With most CD players the speakers take on a bright and two-dimensional quality, although this is largely ameliorated

when used with a high-quality CD source. These qualities do not seem as prevalent with LP, for some reason.

In the right context, the Rogers neither add or subtract anything to the music; they merely perform. Those looking for an up-beat, pacey, performance may find the LS6a/2s lacking. They are more adept at making sense of a rich, melodic lento than a fast allegro. The LS6a/2 can still boogie, but it lacks some of the bass speed needed to keep up with the pace.

Natural and Refined

There is a good sense of stage depth and width, although with a slight soft focus effect to instruments within the soundstage. Stereo separation is good and natural, yet the instruments do not focus sharply on even the most precise of recordings. Lee Morgan's 'Candy' disc, for example, is a remarkably rich, ambient and well recorded piece. On the LS6a/2s, it is not possible to pin-point instruments with the kind of accuracy that I know is possible. For example, I found the subtleties in the Barry Adamson Soul Murder LP lost, making it sound like a James Bond theme to a Ska beat. Their excellent levels of refinement and coherence generally gloss over any apparent shortcomings in detail, however.

I have been reliably informed that this is also a function of the stand the LS6a/2 sits upon. Those who are habitual Rogers enthusiasts find the lighter the stand, the more focussed the imagery, in addition to the bass end becoming tighter.

Rogers' closest rivals to the LS6a/2s are probably the Harbeth HL-P3 and Epos ES11. Of these, the Epos is probably nearest to the LS6a/2 in terms of balance. As a small near-field monitor, especially for Classical music, the Harbeth HL-P3 has no peer, although its small size leaves it light in bass compared to others.

I like the Rogers LS6a/2s. I like them because they do nothing wrong. I like them because they will give long service and I like them because of their pure, natural sound. The longer I listened to them, the better they became; at the end of the reviewing period, I was aware that I missed them. On the other hand, their slightly uninspiring presentation may prevent them moving from the 'I like' category into the realms of 'I want' for many.

The biggest difficulty with the Rogers LS6a/2s is that they fail to inspire and excite at first hearing. In the demonstration room, they may fall foul of lesser speakers that are more initially exciting. This is a shame for, like a fine wine, the Rogers LS6a/2 matures with age ●

MEASURED PERFORMANCE

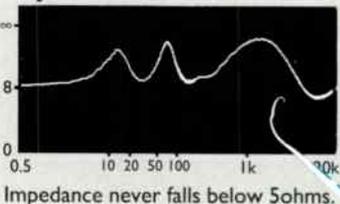
As with all Rogers loudspeakers the LS6a/2s are designed to be listened to with the fine cloth grilles in place; this is how they were measured.

The LS6a/2s are a medium sized enclosure and are therefore suited to stand mounting. However, in the particular room I had available to me for measurement purposes I found that it was necessary to place them in a position where the room was 'excited' least by the injection of sound from the loudspeakers.

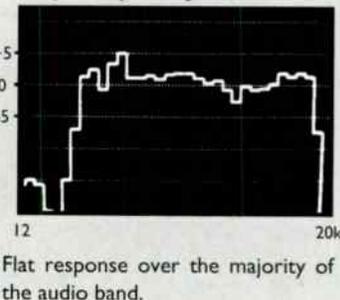
Even given this careful treatment the response still showed a peak then a trough in the lower bass which is almost certainly a room reflection effect. Ignoring this, the third octave frequency response is commendably flat over the greater part of the audio band. The only discrepancy is the smooth trough centred around 2.5kHz which will result in a less forward midrange vocal performance than a flat response would produce. Treble extends evenly up to 16kHz and is then sharply rolled off by about 7dB at 20kHz.

Sensitivity, measured at 1 metre from the loudspeaker, was a reasonably high 88dB SPL for a 1 watt input which is above average by today's standards. This is plenty high enough to annoy even the most liberal of neighbours and coupled with a 10.5 ohm overall impedance value indicates that the high levels needed to do this will be easily accessible to most amplifiers. The impedance curve does show quite considerable rates of change, i.e. it is not flat, which suggests the load presented to the amplifier will be largely reactive in nature. A good quality, high-current British designed amplifier such as the Alchemist Kraken or the Audiolab 8000A should prove a perfectly adequate powering partner. **DB**

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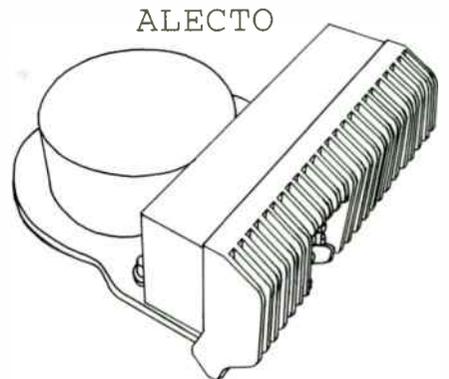
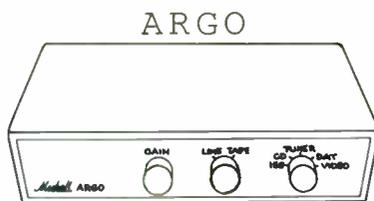
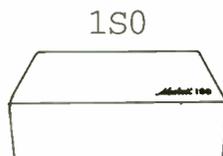
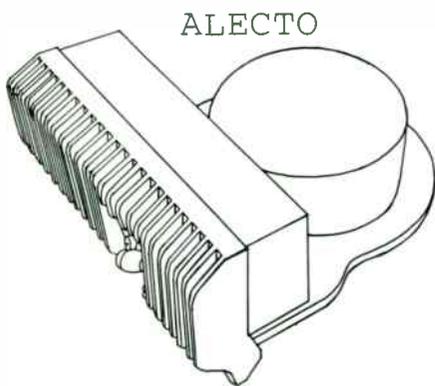
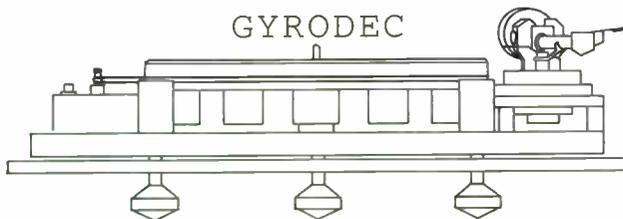


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...Continued from page 55

Audios, which are supremely fluid and sweet. For me they are just about the quintessence of the valve sound, £34,000 Ongaku's apart. **NK**

SYSTEM DISORDER

I am writing for some advice on my Jekyll and Hyde system which is as follows. The turntable is an elderly LP12 recently rebuilt, including Nirvana and Valhalla upgrades



The 'wonderful' Sugden A48B amplifier.

with Grace G707 and an A-T OC5 cartridge. Amplifier is the wonderful Sugden A48B. Speakers are a kit from Practical Hi-Fi, a design by Dave Berriman he called the DBS4. It is a ported speaker using SEAS drivers measuring 25"x11"x12" deep. The Linn is on a Target wall shelf and the speakers on low castor stands. Cable used is Litz, a thick multi-strand type.

With certain artists, i.e. Pink Floyd, Dire Straits, Chris Rea, Iron Maiden, the system sounds detailed, tight and musical, with a good, if lean, bass. But with Metallica and Judas priest it's very bright and spoils the listening session. Is it just bright recordings or the amp/cartridge combination? Would an Akito make a difference? (I can't afford a Naim ARO at the moment,) or would a change of speaker cable help? The Sugden and the OC5 are recent additions. The speakers must be around fourteen years old. I'm very fond of them and have no plans (or funds) to replace them.

**S. Chapman,
Ilkeston,
Derbyshire.**

A bit of both, I would say. Litz speaker cable acquired a bit of a reputation for the attributes you describe, which is one reason it's seldom heard of any more. It's a series of

twisted wires rather than simply multi-strand, although that's what it looks like, and it certainly doesn't suit some amplifier and speaker combinations. Linn speaker cable I should think will smooth the occasional toppiness of the Linn/Grace/OC5 whistling through the Sugden. The Grace was good in its day, though it is also probably responsible for some aspects of the sound you are hearing. A change to an Akito would

definitely be a good move. By the way, throw the castors away and use spiked stands. **EB**

The Audio Technica OC-5 cartridge we have found sounds weighty, but on occasions unpleasantly bright. An Akito arm will help, to which I would be tempted to add a Goldring 1042 moving magnet cartridge, or you could even consider the excellent Denon DL103 or Sumiko Blue Point moving coils. **NK**

HMV RADIOGRAM

At present I have a Philips CD624 hooked up via a Quad switching unit to an old HMV Stereogram with acceptable results. This has normal tone



A different kind of tone control from Quad's 34 pre-amplifier.

controls for bass and treble controls, as do modem amplifiers. I wish now to go ahead and get an amplifier and speakers and would like your advice on whether to get an

equaliser, as I have some hearing loss and do not use an aid. I would have thought that with an equaliser adjusted to mirror my loss I would hear nearer to normal as far as musical appreciation goes.

However, I am strongly advised against the use of an equaliser at all as it degrades the results. This I can understand, but surely this is for normal hearing. It also seems to me that one should start with as near perfect reproduction as funds will allow and that with minimal use of the equaliser to compensate, what I would actually hear would in fact be nearer to normal than listening without it. Your help would be appreciated as would your recommendation of a suitable amplifier for use with a Bitstream CD player.

**G. V. Pride,
Dorchester,
Dorset.**

I really don't think a Graphic Equaliser is the answer, even in this case, because their frequency bands are very unsubtle as a rule. Some years ago, a friend who had somewhat similar hearing loss - even using hearing aids - found, much to his surprise, that he heard an awful lot of music out of my system even so. It provoked him, for the first time, into taking hi-fi seriously - and he ended up with a much 'higher-end' system than mine had been at the time! I would, I think, audition a pre-power combination like a Quad with something like the new Rogers LS3's, Harbeth HL-P3's or one of ProAc's range. The point about trying a Quad 34 pre-amp, for

example, is its unique treble and bass 'tilt' and 'step' tone controls, which, with a degree of experimentation could well 're-balance' the frequency spectrum much more subtly

than a Graphic Equaliser without effectively removing chunks of music along with the adjustment. **EB**

I think I'm right in saying that frequency dependent hearing loss may not necessarily be amenable to compensation in the way you imagine. We all hear differently - in fact we all perceive the world differently - and what we make of the information depends upon individual interpretation, shaped by expectations, past experience, etc. What you hear is, by definition, right, unless your loss is so serious that when your visual sense 'sees' a sound, such as someone hitting a cymbal on TV or in a live performance, your aural sense registers nothing. Otherwise, how do you know that what you are not hearing exists?

Or is your loss simply one of sensitivity, meaning you have difficulty hearing what people are saying? If this is the case, then simply using more volume may be enough. I strongly suspect you'll appreciate an ordinary, uncompensated system, just as Eric's friend did. A little bit of tonal tweaking is likely to be all you'll need. **NK**

TIGHTER PLEASE

Perhaps you could advise me about improving my hi-fi system. It is a Trio KD1500 turntable/Goldring Epic II cartridge, Rotel RCD 965BX CD player, Yamaha KX330 cassette deck, Denon TU160L tuner, Pioneer A400 amp, KEF C45 speaker on open-frame Apollo stands with 79-strand cable.

I generally want to 'tighten' the sound. I have expansive tastes from Heavy Rock through to Classical music and everything in between. I want to concentrate on cabling and connections. The KEFs have a bi-wiring facility. Is this possible with the A-400, which only has one set of speaker terminals?

I also want to upgrade the turntable. A local dealer advised me that a Linn LP12 Sondek/Basik/Akito/K9 would be the best choice since it is readily upgradeable. I have a large record collection and would be prepared to find the 'readies' but am concerned that my amplification would

Continued on page 78...



Room Filler

Powerful and fast, the Onix preamplifier power supply and monoblock power amplifiers fill Alan Sircom's room with music.

Onix recently launched a pre/power amplifier range, consisting of one preamplifier, a power supply and three power amplifiers. We decided to look at the new high end representatives from this small, specialist company based in Brighton, East Sussex. The units chosen were the £395 OA24 preamplifier, the SOAP 2 power supply at £295 and the OA801 monoblock power amplifiers priced at £849 each.

There are but three controls on the front panel of the OA24 preamp: a source selector switch, tape monitor button and volume control. Surprisingly, there are no legends on the front panel at all to identify them, though Onix supply an optional strip label that can be attached by the owner to the top plate. Sources catered for by the selector switch are Compact Disc, LP (phono), tuner and two tape machines. With Digital Compact Cassette becoming available shortly and people plugging stereo video machines into their hi-fi system, I feel that the Onix amplifier, like many English minimalist designs, is short of at least one line level input.

The phono input is pretty flexible; it uses a pair of eight-way gold DIL switches located internally to set

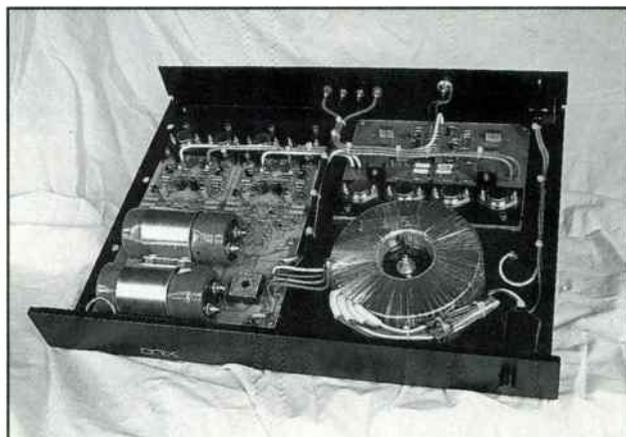
cartridge loading. Capacitance and resistance are adjustable for moving magnet cartridges, while on the moving coil stage, only the resistance is variable. The sensitivity is fixed at 2.8mV for moving magnet cartridges and 190uV for moving coils (their spec.). Given the number of disc stages around which offer no adjustment at all, these options are a valuable extra.

The preamplifier draws its power from socket A on the rear of the SOAP 2 power supply unit, which feeds it with a dual regulated, 24v DC voltage supply. The B socket on the supply is a high (reservoir) capaci-

tance 36v feed for a OA215 integrated amplifier or the BWD-1 tuner, making it possible to power both an Onix tuner and preamplifier from a single SOAP 2 power supply. Onix preamplifiers and power supplies come with comparatively short interconnecting leads, so they have to be placed close together, but there are no problems with hum.

The OA801 power amplifiers are styled like stretched versions of the SOAP 2 power supply, with a red power LED above the gold Onix logo on the left hand side and an on/off button on the right hand side. At the rear each seventy-five watt

►
A well-executed design: the Onix 801 monoblock power amplifier.



monoblock has two sets of 4mm sockets to allow easy biwiring, a single gold plated phono socket and an IEC mains socket.

Build quality of the amplifiers is generally good, although the on/off buttons on the SOAP 2 and OA801's feel loose; is the sort of thing that you expect for the money.

Starting with the line stages, it was clear that this Onix is very much cast in the Naim mould. Rhythm and timing were very precise, no matter how complex the music became. When playing complex African rhythms from the Virgin Sampler of World Music, the Onix amps were capable of presenting the interplay between horns, guitar, bass and percussion. It was easy to follow a melody.

While it was easy to follow the various instruments within the layers of a soundstage, where the Onix fell down was in its ability to reproduce depth and an acoustic. However, in their favour, music tended to fill the room rather than hang around the loudspeaker, though to do this I had to run the Onix loud before it really got going. At low levels, it sounded as if the unit had not warmed up; at high levels the music became full of life. Life also came into the neighbours, as they waved their arms animatedly, telling me to turn it down. It is surprising just how loud seventy-five watts can be, when the amplifier is as controlled as the Onix OA801.

Bright and Engaging

I found these Onix units bright and engaging, but a little too topky for my liking, though possessed of masses of tight, clean bass. The Onix lent itself well to Rock music, but worked satisfactorily with Classical and Jazz all the same.

I tried the phono stage with a number of cartridges. It coped even with difficult models like the exotic Ortofon MC-5000 without difficulty. The sound was slightly bright with certain loadings and was not ultimately as transparent as I would have liked, but it would suit a turntable like the Linn LP12 very well. Pace and timing was uppermost, the snare drum on The Fall's 'O Brother' being tight and easy to follow, for example. A good sense of clarity and fine detailing were also apparent.

The Onix has a forthright presentation, something it shares with Naim amplifiers. In this respect, it has an engaging nature. The Onix sound is very 'hi-fi' - the sort of sound that grabs a listener's attention; it is powerful and attractive. Distinctive amplifiers like this one generally gather a committed following. For those who want a fast, bright and tight amplifier that complements Rock music in particular, the Onix is an amplifier to be auditioned ●

MEASURED PERFORMANCE

The design rationale behind this British amplifier is a recognisable one, a sensible one and, in this case, it has also been diligently worked through to emerge successfully in final form.

Superbly regulated power supplies have long been recognised as a prerequisite for goodness in British amps, giving them consistently better dynamics and control over weedier (and cheaper) imports. Naim, Deltec and Linn have hit the theoretical goal of producing perfectly regulated amplifiers that don't sag in output irrespective of the nature of the loudspeaker load. Onix have pursued this ideal too; the 801 power amplifiers remain unaffected by load changes.

One of the most obvious benefits is a perfect doubling of power output when load halves. The 801 produces 66watts of output power into a conventional eight ohm loudspeaker but double that amount (132watts) into a four ohm loudspeaker. The implication is that it may display an abundance of bass power and control. It will also give more volume into low impedance loudspeakers, such as some KEFs for example.

The 801s also have uniformly low distortion, even at high frequencies. UK designed amps rarely display this sort of performance, one that results in 0.004% coming up on the analyser screen, with just a small amount of second harmonic being visible under magnification, although not in our standardised analysis shot published here, where no distortion can be seen.

The big Japanese manufacturers have been producing amps with a similar immaculate measured performance for years of course, but it's got them nowhere. All that's needed is lots of gain and plenty of open-loop bandwidth, so enormous amounts of feedback can be applied, even at high frequencies. This knocks distortion on the head; it disappears.

Trouble is, the final result never sounds very good. High feedback amps commonly sound flat, lifeless and, controversially, have even been described as "boring". The suspicion is that feedback suppresses dynamics as well as distortion, although this cannot be substantiated by measurement. Mindful of this and playing safe, UK amp designers usually limit the amount of feedback they use, trying to strike a happy compromise between dynamics and distortion.

Not everyone thinks alike though. Deltec used a lot of feedback, their designer claiming that dynamic suppression was due to other factors. Onix, it would appear, pursue a similar outlook, since the 801 power amps possess both perfect regulation and near-zero distortion.

Onix have extended the low frequency response on CD - it reaches down to 11Hz - but they curtail high frequency gain. Since CD produces nothing except unwanted signals above 21kHz this seems very sensible. However, band limited amps do often

sound 'warm'; whether Onix have found a way around this can only be judged by listening tests.

The OA24 preamp has switchable disc input characteristics. I'm not convinced the numerous input resistance options available are necessary for moving coil cartridges; at most just two are needed: low (around 10ohms) and high (100ohms or more). The MC stage is very sensitive though, needing just 0.14mV for full output; it has been designed to match high quality, low output cartridges. An input overload value of 4.5mV militates against using very high output types. Hiss was reasonably low, but I have measured lower values.

The moving magnet input has switchable input capacitance and resistance. It is reasonably sensitive and possesses a satisfactorily high overload ceiling of 67mV. It is quieter than many rivals, if again not the quietest I have measured. Both phono inputs have a built-in warp filter, limiting low frequency extension to around 40Hz. High frequency response is limited to 30kHz.

The Onix amplifiers follow a particular design logic. It has been very well executed and I can tell that quite a lot of attention has been paid to detail in these amplifiers. Their measured performance was promising; listening tests must decide whether the promise has been translated into good sound quality. **NK**

AMPLIFIER

Power 66watts

CD/tuner/aux.

Frequency response 11Hz-35kHz

Separation 80dB

Noise -96dB

Distortion 0.004%

Sensitivity 200mV

dc offset 9/7mV

Disc (MM)

Frequency response 43Hz-31kHz

Separation 78dB

Noise -73dB

Distortion 0.005%

Sensitivity 2.1mV

Overload 67mV

Disc (MC)

Frequency response 44Hz-30kHz

Separation 72dB

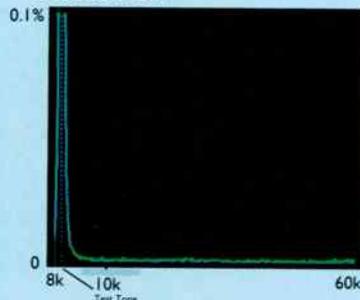
Noise -66dB

Distortion 0.005%

Sensitivity 0.14mV

Overload 4.5mV

Distortion



Negligible distortion at 0.004%

SPECIAL MAIL ORDER



ANTI-STATIC RECORD SLEEVES

Translucent antistatic record sleeves from Nagaoka, according to availability. A surface treatment makes them anti-static, lessening dust attraction. This helps keep records pristine. They are supplied in packs of fifty. We suggest you regularly change sleeves in order to prevent trapped dirt contaminating records, especially after cleaning. The record label is clearly visible through these sleeves, an aid to easy identification.

LP SLEEVES (50) PRICE £7.50

NAGAOKA CD CLEANING KIT

As with cassette deck cleaning kits, we don't recommend the 'cogs and wheels' cleaners and choose not to sell any of them. Tests we have carried out with a Cambridge CD-1 CD Quality Control Unit clearly show that careful manual cleaning is the most effective way of removing all types of surface contaminants without causing damage to the disc. Remember that CDs must not be scratched - even finely. Tests showed that the Nagaoka kit was the best all round cleaner. It has a solvent and a chamois leather pad which, together, bring the CD surface back to almost as-new condition.

NAGAOKA CD CLEANING KIT £10.50

NAGAOKA ROLLING RECORD CLEANER

The big drawback with most record cleaners is that they fail to remove all types of dirt. Brushes pick up fluff, but they redistribute fine dust around the grooves, causing noise build up. Nagaoka's rolling record cleaner actually lifts dirt from the bottom of the

groove - even fine dust. It uses a peculiar form of sticky coating on a soft foam backing. Dirt of all types - especially fine dust of the sort left by brushes - is removed completely. It is lifted from the record's surface, and no deposits are left behind. This is an effective way to dry clean a record.

ROLLING RECORD CLEANER PRICE £10.20

AUDIO TECHNICA GREEN CD RING STABILIZER

These are detachable green rings which are fitted round the circumference of the Compact Disc. The non-slip material allows the disc to be picked up without touching the playing side and leaving fingermarks. It also raises the disc slightly from any surface it's placed on, avoiding scratches if you don't replace it directly in the jewel box, as you should! It also adds a tiny but significant degree of mass to the outer edge of the disc, improving its stability and reducing vibration when it rotates at high speed inside the CD player. Green absorbs stray red laser light, so reducing random reflections within the disc, much like a green pen. So the rings perform many useful functions - and they are removable too! Improvements to the sound include better focussed and firmer images, plus a generally denser and richer sound.

GREEN RING STABILIZER (5) £6.50

AUDIO TECHNICA RECORD CLEANING SYSTEM

The Audio Technica Record Cleaning System removes both dirt and static. When you lift the pad from the record, dirt comes off with it. A tiny amount of cleaning agent inside the handle provides just enough humidity to dissolve

fingerprints, oils, and film. A bottle of special fluid and pad brush are included.

AUDIO TECHNICA RECORD CLEANING SYSTEM £10.50

AUDIO TECHNICA CD LENS CLEANER

Here's a product for smokers in particular. However, seeing the peculiar haze that can coat

safe too. Just rest the stylus on its high speed vibrating brush and watch dirt get driven off automatically.

ELECTRONIC STYLUS CLEANER £19.95

CD JEWEL CASE

To house and protect your CD. **CD JEWEL CASE £1.00**



windows even when there are no smokers about suggests this clever little gadget is a necessity for one and all. It is a laser lens cleaner for your CD player, beautifully made by Audio Technica. Contained in the pack is a disc with fine brushes on it. Each brush takes one drop of cleaning fluid, then it is inserted and played. The brushes gently clean the laser lens, removing oil, grime, dust and other airborne deposits like nicotine (ugh!). Audio Technica recommend use once a month.

CD LENS CLEANER £16.25

AUDIO TECHNICA ELECTRONIC STYLUS CLEANER

Scared of damaging your stylus when cleaning it? Try this amazing little device - an electronic stylus cleaner that vibrates gunge right off the tip! Powered by a small AA battery, it's a doddle to use and

AUDIOQUEST LASERGUIDE

There are many factors that can undermine the process of converting the pits on a Compact Disc into a digital signal to feed your CD player's D/A converter. How efficiently your player's transport can send laser light into a CD and then accurately read the reflections is crucial.

The surface of the CD itself is often a problem. The clear polycarbonate may look smooth to the naked eye but viewed under a microscope it is quite rough. This leads to unwanted random refraction and reflection of the laser light, causing additional jitter on the recovered digital signal.

Laserguide is a carefully engineered silicone based treatment which has a reflective index close to that of the CD's polycarbonate surface. It helps



AUDIO ACCESSORIES

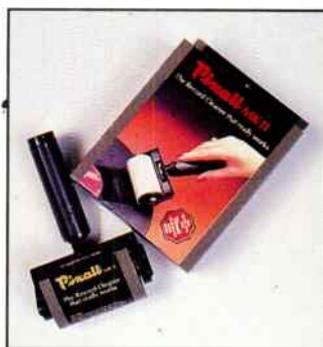
Hi-Fi World

accessory offers

smooth out that surface resulting in a claimed 50% reduction in refracted stray light. It is suggested that this improves stereo depth and openness. Video Discs also benefit with a sharper picture and less noise.

Just apply to the surface of the disc surface and wipe clean. One bottle treats approximately 300 CDs.

AUDIOQUEST LASERGUIDE £14.95



simply clipped in. This is one of the most effective ways of cleaning an LP.

PIXALL MARK II .. PRICE £10.75
REFILL ROLLER £2.75

LASAWAY GREEN PEN

When red laser light hits the silvered reflective surface of a disc, some of it scatters and is later reflected back off the disc edges, causing optical interference. Because green is far removed in the light spectrum from red, an opaque green coating effectively absorbs this scattered light, reducing interference signals reaching the laser and improving sound quality. The green coating is applied to outer and inner edges. It has been formulated by one of Japan's largest companies, Mitsubishi, to be harmless to the CD itself.

LASAWAY GREEN PEN ... £8.50

ON STYLUS CLEANER

Here's another simple but effective



cleaning kit. It consists of a stylus brush and cleaning solution. Use carefully to keep your pickup cartridge stylus and cantilever clean.

STYLUS CLEANING KIT .. £2.50

HI-FI WORLD DRY STYLUS CLEANER

A method of keeping your stylus sharp and bright for perfect

tracking without using fluid. We're offering a whole sheet of card with an aluminium oxide micro-abrasive coating. Cut a strip off, about the size of the striker on the side of a matchbox, and draw it gently

under the stylus from the back to the front. It removes the gunge that builds up. One sheet should be more than enough clean your stylus at least forty times.

DRY STYLUS CLEANER .. £1.95

PIXALL MK II RECORD CLEANER

Simple in both function and design, and made in the U.K, this uses a roll of sticky tape which lifts the dust out of the record groove. Three or four passes will clean the record very effectively, and can reduce static at the same time. After each pass, the dirty length of tape can be peeled off and thrown away, reducing the risk of any gritty particles picked up being ground back into the vinyl. When the tape roller runs out, a replacement is

TDK CLEANING KITS

A comprehensive range from TDK for cassette decks, Compact Discs and even connectors. The CK-A1, head cleaning kit includes two bottles of fluid for heads and rubber pinch wheel, and cotton buds for applying it. The CK-TB pack has a single bottle of dual-purpose liquid.

TDK offer three cleaning pens. Each with a soft double-ended replaceable shaped tip. The Audio Head Cleaning Pen for cleaning cassette heads, the CD Cleaning Pen for removing finger marks from CDs, and the A/V Connector Cleaning Pen for polishing up audio plugs and sockets.

The CD cleaning kit contains a bottle of fluid and a cloth which can be used for removing grime and stains. Finally, a dandy CD



cleaning tool for applying the cleaning fluid and drying the CD off afterwards.

TDK HEAD CLEANING KIT CK-A1 £5.50
TDK HEAD CLEANING KIT CK-TB £4.65
TDK AUDIO HEAD CLEANING PEN CP-AH1 £5.00
TDK CD CLEANING PEN CP-CD1 £5.00
TDK A/V CONNECTOR CLEANING PEN CP-CR1 .. £5.00
TDK CD CLOTH CLEANING KIT CD-C2TP £6.50
TDK WET AND DRY CD CLEANER CD C1TB £8.75

RECORD STORAGE CUBE

This cube has been designed by us to hold roughly one hundred LPs. It has an internal width of 37cms. Internal height is 32.5cms and depth 32cms. The cubes can be stacked or placed alongside each other to increase storage - and they can even be used as seats!

Strongly made from 15mm medium density fibreboard (MDF),

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FOR 6 CUBES,
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KONTAK

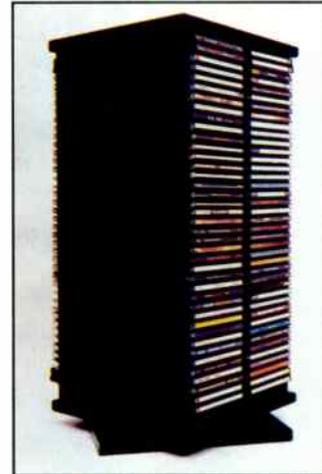
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not be suitable. What options should I consider?

I am considering purchasing an Alphason hi-fi rack. Would the glass (as opposed to MDF) version help to 'Mana-ise' the system?

My listening room is about 15ft x 12ft with parquet flooring laid on concrete. Any suggestions which will help me get the best from my present equipment would be gratefully welcomed.

Mark Richards, Bristol.

For a start, we'll clear up the bi-wiring. While some amplifiers do provide two pairs of terminals for bi-wiring cable to loudspeakers, it's not essential. Bi-wirable loudspeakers have the crossover split between treble and bass sections, so it's the speaker end where one pair of cables goes to the red and black 'Treble' sockets and the other pair is wired to the 'Bass/Mid-range' ones. Both pairs lead back to the appropriate Left and Right speaker output terminals of the amplifier. Be sure not to mix up the leads



KEF C45 loudspeakers. How are they bi-wired to a Pioneer A-400?

at the amplifier end. Most users notice a discernible improvement with bi-wiring. It also lends itself to experiment, using different types of speaker cable to the bass and treble. A common practice is to use multi-strand to the bass and solid core to the treble, and there are innumerable proprietary combinations available.

While this is going to go some way to producing the improvement you are after,

there are other opportunities. The cartridge, for example, is rather letting the side down and is overdue for upgrading, as is the turntable. While the Linn LP12 is upgradeable, Linn arms tend to work best with a relatively small variety of cartridges, which in fact limits that upgrade path somewhat. I would also listen to Roksan's Radius and Pink Triangle's LPT in roughly the same price bracket. With a decent cartridge, a new front-end will make a much greater difference to your system than bi-wiring.

Glass shelves would not 'Mana-ize' the Alphason equipment support since the two are designed differently. However, glass shelves under the Pioneer amplifier do seem to suit it more than Medite ones. **EB**

DELTEC OR NAIM?

I need advice on improving the CD section of my system. Currently it is an LP12 Lingo/ARO/Troika/Naim 72/140 and Naim SBLs. I am currently using a Rotel 965BX CD player which sounds insubstantial, bass light and uninvolved.

Obviously the Naim CD players would be on my shortlist, but I am also interested in the Deltec PDM One or PDM Two using the Rotel as a temporary transport until funds allow a suitable transport to be purchased. My main queries are:

1. Would the Deltec DACs go well with a Naim amp/speaker combination?
2. If the Deltec is purchased, should I wait for the Deltec transport to be produced or should I go ahead and purchase a transport and, if so, what do you recommend: a Meridian, Teac, Roksan or Wadia?
3. Would the Rotel suffice as a temporary transport, allowing me to hear a substantial improvement?

I am mainly a Rock fan, but do buy some Classical and Pop and I am looking for a powerful, clear sound with excellent presence and realism.

D. Whelan, Birmingham.

The "powerful, clear sound with excellent presence and realism" is pure Deltec (now DPA Digital) in a nutshell. Furthermore, the PDM One Series 3 and PDM-Two both have strong bass, the latter being more dramatic, the

former softer. But ideally you should Sync Lock the transport to either DAC, which means using a Deltec transport or a Deltran conversion of a Teac or Philips transport, or such like.

The Rotel would be a good temporary transport, until you could afford to upgrade, but remember the purchase of a PDM Two requires serious amounts of wonga. It is easily the most dramatic convertor I have ever heard, all the same, and PDM One Series 3 is also very impressive, both sonically being very much out on their own in my view. I believe they'll match into a Naim system very well, but surely you could afford a Naim CD player, of which I have had little experience. I suggest that for this sort of expenditure, you listen carefully to these items first. **NK**



Could Deltec's PDM 1 Series 3 DAC live with a Naim System?

BACK HANDED!

I'm not sure whether I should compliment you or not on your excellent publication. Before it came along, I knew no better, so here goes.

I have a dilemma or two. firstly, I would appreciate your advice on upgrades and order of same. System is Quad 33/303 (recently serviced by Quad), electrostatics (c.1982), a Garrard 301 (recently mounted on a very substantial plinth to a vast sound improvement), an old and early Series II SME with Linn K5 cartridge.

After careful reading of reviews, I have recently invested in the Technics 520A CD player and BX707 cassette deck. (I tried a 606 and liked it better.) My tuner is an old Technics ST7300.

I am pleased with the CD and cassette but slightly unhappy with the sometimes

treble-heavy sound on vinyl. Since vinyl constitutes 95% of my listening matter, I would like to rectify this. Please advise.

Secondly, in my loft I have a Leak Troughline tuner, but I get confused. Which is the one worth keeping, the model gathering dust is a brushed aluminium fascia type, circa 1964-5. It goes with the Leak Stereo 30 amplifier, also in the loft. The tuner has an annoying and seemingly permanent hum. So it's been left for about five years. Is it worth servicing and would it sound better than my aforementioned Technics tuner?

Andy Brittain, Frome, Somerset.

Turning the tables, I don't know whether I should thank you for the compliment or not. Anyway, as they say in business a lot these days, I think some rationalisation is called for.

First, the arm and cartridge. Neither suit the other particularly well; unfortunately, I can't make out from your description whether there's too much treble, it's too slow, or too dull. Recommending a change of cartridge

for a 3009 is increasingly hard, these days, since the arm generally performs best with cartridges that track at 1.5g or less and there are fewer of them about, Ortofon and B&O being among the few survivors. I would recommend a change of arm to a Rega RB300, for example, which wouldn't do too much damage to the pocket, and will allow the K5 to perform more optimally. If you wish to replace that later, it will suit a very wide variety of cartridges.

Next, the 33 pre-amp, which I think would benefit the system by being replaced. However, if you remove the plug-in disc board, you will find it fits either of three ways; one is marked for ceramic cartridges, so ignore that; alternate between the other two. The fourth edge can be customised to suit a

particular cartridge, but some electronics knowledge is required - or advice from Quad. It seems odd, but a Quad 34 pre-amp functions very well with a 303, and since a moving-coil board can be plugged in, it's worth considering. **EB**

Ah! The 33/303 with electrostatics; it warms my heart and brings a smile to my face! The architecture of the 33/303 I'll never forget. It's an amplifier I bought in its heyday and I loved every second of using it. If ever there's been a well designed and built hi-fi product, this is it.

But times move on. As lovely as the 33/303 is, ultimately it should go, making way for modern solid state or valve designs. But first, as Eric says, attend to arm and cartridge. You could try a Goldring 1022 moving magnet in the Rega RB300 arm, since it is less bright than the K5.

There's some misunderstanding about what we have said on the Troughline. It is one of the best ever tuners, but only when working perfectly and when fed a really strong and clean signal of 5mV or more from a good aerial. Most need repair and re-alignment, plus a decent stereo decoder, all of which adds up to a few hundred pounds. However, you end up with a tuner that makes the very best modern designs sound woefully inadequate; the job's well worthwhile. Contact Radlett Audio at 141 Watling Street, Radlett, Herts. Tel: 0923-856497. **NK**

NOT PINKY AND PERKY

I've got an Ariston RD110 SL turntable with a Hadcock 220 S/S tonearm. The bias adjustment has broken. Would it be worthwhile upgrading to a Rega model or can you suggest a more suitable alternative.

Also, I've just purchased a Rotel RCD-965BX CD player together with the Pioneer A-400 amplifier. Would the Tannoy 609 or Rogers LS2a/2 loudspeakers match my set-up. What would you suggest? My listening room measures 16' x 12' and I listen to just about anything - apart from Pinky and Perky - but I have a slight bias to Classical.

**Chris Williams,
Llanelli,
Dyfed.**

Like many others who were, or are, in the retail business, I have memories of the Hadcock. Your deck will almost certainly benefit from a replacement, but we hit a small problem here. As you may have read, Ariston are no longer in business; while to the best of my recollection an arm with a single lock-nut fixing like a Rega RB250 - or more ideally a Rega RB300 - should slot into the same hole as the Hadcock, it's always possible a little juggling may be necessary along with re-adjustment of the suspension.

If you have a bias towards Classical music, then I would try the Rogers loudspeakers on their own MDF stands, though the Tannoys would be more obvious partners for an A-400. Another with a similar balance to the Rogers would be the Castle Warwick or Durham (bi-wirable), and, perhaps more suited to the A-400, JPW's AP3. The A-400 being as popular as it is, there shouldn't be much difficulty auditioning a range of speakers with this amp in place. **EB**

WORKING IT OUT

I am in a quandary at the moment regarding my hi-fi set-up. I'm sure that many of your avid readers - like myself - have the same sort of problems and I am writing to you in the hope that you can give me (us!) some solutions.

Before I come to my specific problem it is necessary to explain that I am an ordinary working class man without unlimited funds, and for this reason I have always upgraded my system when funds are available, usually spending around £500 each time. I should also explain that Wales is very short on dealers (although Audio Excellence in Cardiff has served me well over the years) so getting to see and hear other equipment is difficult, and that I have no friends who share my interest in hi-fi so I can only compare my system to their mid-systems - and without being conceited, there is no comparison!

And now to my dilemma - 'At last!' I hear you cry. My system comprises LP12 with Lingo power supply, Ittok LVII arm, A-T OC5 cartridge, Linn Intek amplifier, NAD 4020A tuner, NAD 6155 cassette deck connected to AR18

speakers (c.1979) on Linn Index open metal stands via Linn cable. The turntable is on a Sound Organisation wall



JPW's AP3 loudspeaker. A partner for a Pioneer.

bracket (my maple floor is far too springy) and the rest of the equipment is on a Target table. The tuner is fed by a loft mounted aerial.

I now wish to upgrade again, and given the reasons outlined above, wish to spend about £500. So where's the problem? Well, the main one is that I live in a large-ish semi-detached modern house which is quite unusual in design but bloody awful for siting hi-fi equipment, and a wife - whom I love dearly, who tolerates my love of music and who I wish to please in that my equipment doesn't intrude too much into the aesthetics of our lounge. I have enclosed a diagram of the main living areas from which you will see that the room has very little in the way of walls upon which to site equipment. The alcoves are shelved with books; there are other occasional tables, plants, etc. (Perhaps I should have written to Ideal Home instead.)

Bearing in mind my budget, I would be pleased if you could help me decide where my next improvement should be. I think the system as it stands sounds quite good and I don't intend changing the arm or cartridge at the moment, the cartridge being only six months old; also my record collection is only about 200 albums.

My thoughts - in my order of priority - run as follows, but I would welcome your opinions.

1. Change speakers - but bear in mind room placement, etc. Would small speakers like Linn Kans be compromised by

placing them on wall brackets. Looking at my room diagram, what would you suggest I audition. I think the AR's sound O.K., but have they been overtaken by new technology - again I've not got the opportunity to hear other systems to compare.

2. Buy a CD player - as mentioned, my record collection is not large and I will continue to buy records as long as I can. If I decide on a CD player, which ones should I audition bearing in mind the sound from my present set-up - which I think you will probably know.

3. Would there be any point in buying a Linn Powertek for use with the Intek to bi-amp any new speaker I bought. (I realise this might take me over-budget, but I might be able to manage that in a few months.)

**T. L. Jones,
Pontypridd,
Mid-Glamorgan.**

First of all, the Linn Kans will have a very different sound balance to the AR's. Watch out for bright treble from the OC-5, since with new speakers this may suddenly become noticeable and intrusive. Believe it or not, you could well try listening to Goodmans Maxim 3s. These roll off above 15kHz, which will partially compensate for the +2dB rise in treble output of the OC-5. Don't worry about them being a budget speaker; they're dynamite all the same, especially when modified with polypropylene capacitors, as advised in our December issue. And the price of £110 will be right up your street. Mission 760i's offer a weightier, more laid back sound and give superb results as well.

Another smoothie is the Harbeth HL-P3, but at £399 perhaps this looks less attractive to your wallet.

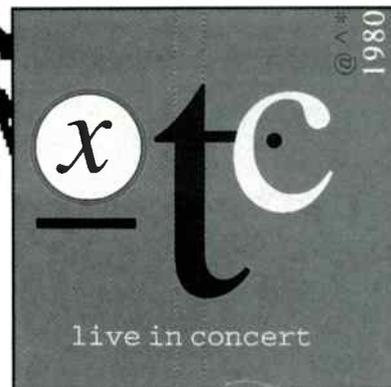
Since DCC has just arrived and MD, at the time of writing, is just weeks away (Sony tell us), I'd advise against investing in CD right now. Software is becoming fearfully expensive at £14 a hit, and the new systems may just undermine CD.

Bi-amping is effective and you could well consider a Powertek for this purpose, but try and get a demo first to make your own assessment. **NK**

The Must Haves



Edited by
Eric Braithwaite



XTC LIVE IN CONCERT WINDSONG WINCD 026

● Well, it took them long enough, didn't it? I mean, for them to come up with Nonesuch. In the meantime, the Windsong label has been busy transferring the Beeb's live Radio 1 concerts at the Hammersmith. This was XTC on 22nd December 1980, the year after the third album *Drums and Wires* and just before *Black Sea* which none of my mates rated at the time, for some reason, but which I still think is their best.

Down at the Parais, XTC played their all for Auntie Beeb: 'Life Begins at the Hop', 'Are You Receiving Me?', 'This is Pop', 'Making Plans for Nigel', all the late chart songs, and a generous helping of six from the yet-to-be-released new album.

It's different, sometimes wild and over-the-top, and reminds you that XTC were a class act live. Just how much on the edge the band could be, hyped up by a few thousand punters, Andy Partridge tells in a typically off-the-wall note, which at least explains why there's no intro to 'Burning with Optimism's Flame' (someone threw a jumper at him) and the odd tuning of the Les Paul in 'Towers of London' (someone had knocked it over). Mind you, however much the band needed something more soothing around half-time, likening 'Battery Brides' to Philip Glass is overdoing it.

Maybe 'Love at First Sight' doesn't have quite the snap of the LP version - Partridge had a cold - but it didn't stop his lungs working hard on 'No Language in Our Lungs'.

Not as polished as the albums, maybe, but it doesn't let up. Radio 1, I always thought, did a good thing mostly in putting bands like XTC on live, and Windsong's re-mastering of this one makes it a real treat. Tracks like 'Scissors Man' really rip. 'We didn't improvise much on stage,' writes Partridge in the notes, 'but when we did it went for the throat via the spinal column.' Bliss, this one. There's nothing like a real, live audience to make a concert; by the end, XTC were buzzing - and Partridge's voice was going. A good night had by all.



THE ZOMBIES The EP Collection SEE FOR MILES SEECD 358

● Remember Colin Blunstone? O.K., remember 'She's not There'? Well, you should, because it's only a year and a bit ago that Blunstone's remake was in front of your eyes - and ears - on the TV screen in a British Telecom commercial. It's a classic, that in its time, has been adopted by Vanilla Fudge, Santana and the UK Subs. The snag is, it's probably only the dedicated collectors of singles who will know the original, way back in 1964; no-one will know the unreleased stereo version unless they buy this collection. Nor probably, will anyone really remember the show-stopper of The Zombies' live act - Blunstone's version of Gershwin's 'Summertime' - more than a bit breathless.

No doubt the singles from '64 and '68 are too near the milk-bar and bouffant hair styles to justify much of a revival, and in those four years it's not easy to put your hand on your heart and honestly say that The Zombies produced anything earth-shattering. But then, these were the days when teen problems seemed to go more easily into simple words, simple beat arrangements and were definitely less lubricious. All the same, listening once more after more than twenty years to the '68 tracks, The Zombies did have something that we more readily attribute to the likes of Procul Harum or the Kinks - an honest outlook, competent wordsmithery and some good tunes. Worth the looking back.

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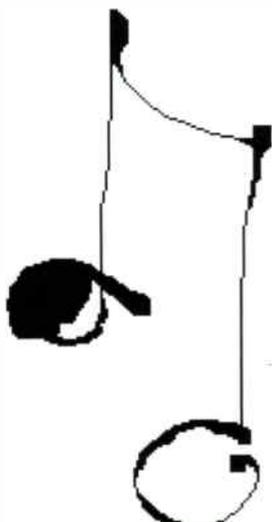
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THE SEARCHERS
The EP Collection Vol. Two
SEE FOR MILES SEECD 359

● Why bother with Volume Two, when there were thirty of the UK's thirty-six EP tracks on Volume One? Why bother at all, when The Searchers only sang other people's songs? Well, not always, and the group did have a way with them - listen to 'Sugar and Spice' or 'Needles and Pins'. At least when the Searchers picked something up they could usually turn it to their advantage; this was first recorded by Jackie de Shannon. The Number One, 'Don't Throw Your Love Away' had been the B-side of 'Bon-Doo-Wah' by the US girl-group The Orlons, who The Searchers reckoned had thrown it away. Events proved them right.

While they were replaying hits like Ben E. King's 'Stand by Me' or the Crystals' 'Da Doo Ron Ron' (they changed 'Bill' to 'Jill') their own pens were busy with 'This Feeling Inside' or 'I Pretend I'm With You'. They had a knack of moulding R'n'B and Rock'n'Roll to a lively sound that appeared to be zigger than it really was, probably greatly due to producer Tony Hatch. The star rose - and then fell, effectively inside just two years, from 1963 to 1965, unsustainable by original songs.

This is one for collectors, though I admit to a liking for the Searchers' cover versions; there's an added saccharine to them that I acquired a taste for. Real collectors will be intrigued by the addition of the four songs from the rare French EPs, though John McNally does See For Miles something of a disservice in the sleeve notes, often quoted disparaging the original Searchers' choices of songs and even their methods. I hear the squeezing of sour grapes: "We were fallen idols for many years," Frank Allen is quoted as saying. "We're living legends, now..." I don't know I'd put it as strongly as that. The dog has had its day, but it wasn't a bad canine for those two years and it deserves to be let out of its kennel again.

ULTRAVOX LIVE IN CONCERT
WINDSONG WINCD 028

● Caught in the very act of transition from Art-Rock Punk to New Romantic, this is Ultravox without the exclamation mark, minus John Foxx and plus Midge Ure. The Vienna album was launched on the Chrysalis label in summer 1980 and the new line-up followed it up with a low-key, short tour. Ure's strident guitar work, Warren Cann's Kraftwerk-style drum programming, and the lush

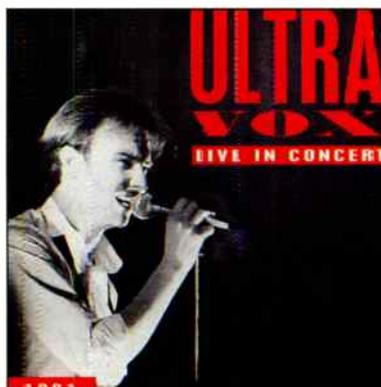
synth-based sound did its trick, however, and Ultravox six months later had regained some ground.

There were howls of betrayal, of course; there was also some sniping because Ultravox (new style) had obviously been listening carefully to Bowie's *Low* as well as Kraftwerk. What couldn't be denied was that it all worked - even if it sounded as though a track like 'Mr X' was synthetic through and through. It turned the Hammersmith audience's ears, however, and succeeded by the squealing guitar-driven 'All Stood Still', Ultravox had obviously reconciled them with their sheer drive.

Looking back on it, Ultravox (without the exclamation mark) have a hell of a lot to answer for, mostly in the degradation of synths and drum machines that's afflicted Dance Music since. Then they were innovative, they were pristling with electricity and it all shows in this live concert. No matter that if you have the Vienna album you effectively have this one - the concert covered seven of the nine tracks of the album. It's worth it for the OMD precursor 'Vienna', the synthetic exercise live audiences transformed into the real thing, or the instrumental 'Astrodyne' which ended the live shows. Twelve years on, Ultravox still sound fresh and fascinating.

PAICE ASHTON LORD
BBC Radio 1 Live In Concert
WINDSONG WINCD 025

● Last but not altogether least of the current crop of Windsong's raids on the BBC's live recordings. Yes, I have to admit I liked Deep Purple - off and on, I still do, but it's The Book of Taliesin I'm liable to go back to for my Seventies fix and certainly not that homily pretentious Rock Concerto. When the group split, I couldn't seem to get the hang of Gillan any more, and the brief resurrection of Ian Paice and Jon Lord as P.A.L. (the A was Tony Ashton, vocalist and keyboardist) passed me by. Malice in



Wonderland was recorded during the autumn of 1976, and the BBC taped their first gig at the Golders Green Hippodrome in March 1977. Malice was received with... malice aforethought would probably be the best way of describing it. Certainly, 'A Ghost Story' seems a mere shadow of Deep Purple, though maybe it's because the band hasn't quite got itself together, drums and guitars seemingly pulling in different directions. The funkier 'On the Road Again' is distinctly more together, though it's fairly clear that Martinez and Marsden aren't as much at ease with PAL as Gillan and Blackmore were in Purple. The songs are looser, the style more relaxed - on occasion, like the middle eight of 'Arabella', in danger of losing direction altogether.

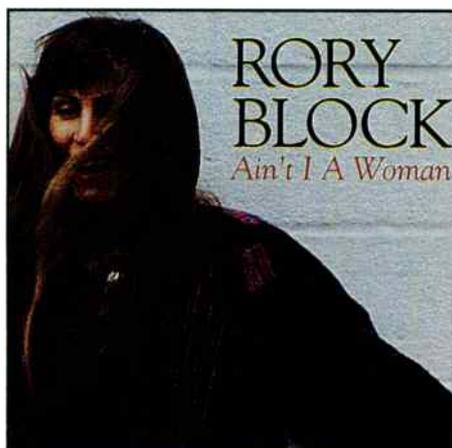
There's also a degree of unimaginativeness evident which reminds you that Deep Purple was greater than the sum of its individual parts. All the same, PAL In Concert in retrospect is worth having to remind you of that interim period before Marsden Paice and Lord were recruited into Whitesnake. No prizes, but worth the occasional listen - the fake Blues 'I'm Gonna Stop Drinkin' is great fun, though 'Steamroller', which might be good R'n'B rapidly disintegrates into wayward pastiche. PAL live might not have the style or value of XTC or Ultravox, but it's one I'll keep on my shelves for when the mood strikes me. It makes a better concert than a record, that's for sure.



Rock & Pop

Malcolm Steward

The Blues feature heavily in this month's assemblage of above-average recordings to savour and relish in your leisure hours.



RORY BLOCK
Ain't I a Woman
MUNICH NETCD0038

● Songwriter, singer and extraordinarily capable guitarist, Rory Block first came to my attention with her album *Turning Point*, an outwardly more contemporary voicing of her talents than the bare-bones Blues for which she's most noted. The subsequent acquisition of her album *Mama's Blues* - an altogether more spartan, chaste collection of songs - made me realise that I much preferred her more frugally arranged work. Songs like her version of Robert Johnson's *Terraplane Blues*, where she plays with just an acoustic guitar (while an Amtrac train rumbles in the background), recorded in the austere, reverberant surroundings of a Chatham church, seem more intimate and emotive than her band-backed outings.

This new album, however, is rapidly usurping *Mama's Blues* as my favourite Rory Block disc despite the fact that it sees her playing with a band for several numbers, one of which - perhaps the strongest - features Mark Knopfler, of whom I rarely say much that's complimentary.

There's plenty of her authentic guitar and voice driven rural Blues on this disc, more than enough to satisfy purists.

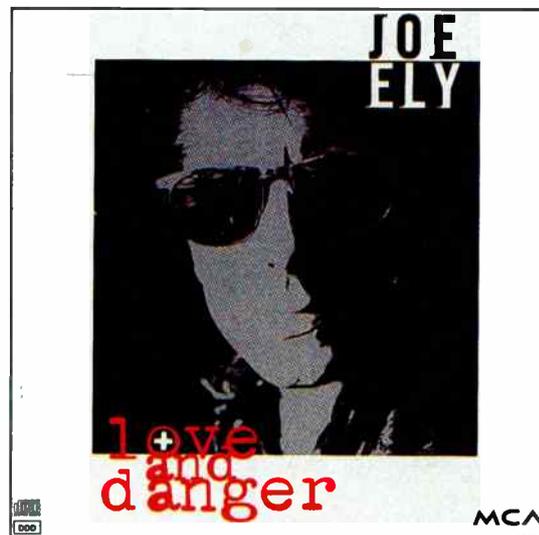
But there's also a helping of rockier tracks, like the opener, 'Silver Wings' - a song that's highly reminiscent of contemporary Joni Mitchell, along with 'Faithless World' and 'Sisters', both powerful and beautiful songs. It's not until you reach track five, Robert Johnson's 'Come On In My Kitchen', that you hear Ms Block take out a National Steel and slide her way - literally - into hard-core Blues. It's worth the wait. By the time you reach track ten, 'Cool Drink Of Water', Rory's well into whoopin' an' a-hollerin' gear,

tackling a song that she admits seemed like it "didn't want to be recorded". It makes for an unusual intro into the closer, a moving rendition of the Gospel standard 'Walk In Jerusalem', which Rory



performs with her customary verve and commitment.

This provides a fitting *debrouillement* to a collection of songs that showcases Rory Block's striking talents. Do yourself a favour and buy a copy today. Albums of this quality, variety and all-round satisfying wholeness don't grow on trees. Ignore it at your peril.



JOE ELY
Love And Danger
MCA MCAD10584

● With the exception of bands like Little Feat and singers like Lyle Lovett, I remain happy to dislike ninety-nine percent of musicians who acknowledge their music's country-based roots. Redneck bars and steel guitars, for the most part, suck wind. But stand by for another bout of exception-making. Joe Ely's an okay guy, even if his music veers more towards Texas than New York.

How could I - the champion of the clever rhyming couplet - fail to admire under any circumstances. such lyricism as evidenced in songs like 'Sleepless In Love': "He had hair. . .black as a fibreglass speedboat. The morning air. . . was as crisp as a brand new bank note. He swaggered. . . like a surfer on a Louisiana dirtbike. He swerved. . . like a trucker on the Dallas tumpike." And the killer lines - "She was calm . . . soft as a K-Mart pillow" and "He held her close, tight as a Harley's drive chain." That, friends, is poetry, the like of which Wordsworth, stuck with his daffs, never had the imagery to call upon.

Love And Danger also has fine tunes, excellent playing, tasteful arrangements and more than its fair share of intelligent wordsmithery spread throughout its ten tracks. It's well worth your investment. And hell, Bubba, while you're out buying it get me a pair of cowboy boots, a pickup truck and a six-pack!



MARIA MULDAUR
Louisiana Love Call
 BLACK TOP CD-BT-1081

● As proof that there is indeed life after *Midnight At The Oasis*, Maria Muldaur is back with an album to delight anyone with the remotest interest in female vocal and southern states music. This recording pays homage to - and includes - musicians from that most fertile of breeding grounds, Louisiana, and New Orleans in particular.

The most dominant element throughout - with the exception of Ms Muldaur - is Dr John's mellifluous piano and voice. And here I have to admit to being a rabid fan - if Dr John provided the accompaniment for a double CD of Des O'Connor songs I would probably buy it and love it. You'll also hear Neville Brothers various, Zachary Richard, Mark Kaz Kazanoff, Amos Garrett and other members of the New Orleans mafia scattered throughout this disc.

There are songs here that I could live without - the title track, for instance - but others like 'Best Of Me', J. J. Cale's 'Cajun Moon', 'Dem Dat Know', and Leon Russell's 'Layin' R,ght

Here In Heaven' (with lead vocals shared by the Doctor) are absolute must-haves.

The closing track, *Southern Music*, is another gem, albeit a touch too sentimental in places for my cynical tastes. It lets you hear Muldaur's voice at its best, soaring and plummeting over a sublime stripped-down arrangement (for which read Dr John's piano). If your emotions are

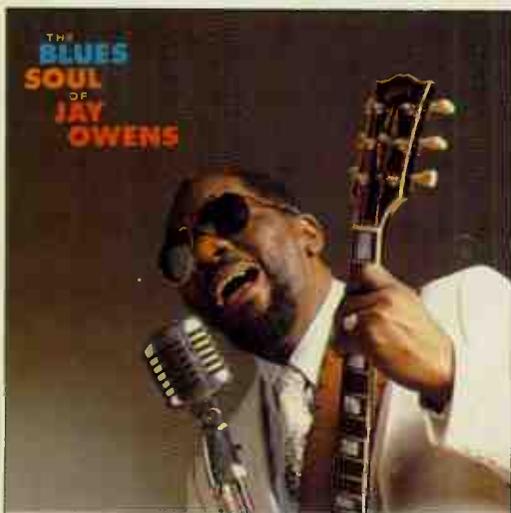
sensitive to female vocal music then this track will raise goose-bumps on your arms that'll make them feel like cheese-graters.

JAY OWENS
The Blues Soul of Jay Owens
 INDIGO IGOCD2004

● I'd never heard of Isaac Jerome (Jay) Owens before I received this record. That's hardly surprising as I've now discovered that this is his first outing on disc in his own right. He has worked with many of the great names in American black music and has led bands of his own but no one has ever taken the trouble to park him in front of a tape recorder. Listen to his debut album and, like me, I think you'll find that hard to reconcile.

The title of the album describes his music perfectly. Owens is steeped in the Blues but his brand swings like a motorised pendulum. If you wanted to liken him to anyone I suppose that Walter Wolfman Washington comes pretty close. However, on up-beat tracks like 'Back Row' the soul element clearly predominates. Yet on 'Why You Treat Me This Way' there's a strong southern, almost cajun, feel intruding.

All the songs are his own compositions and what emerges is that Owens definitely isn't locked into one groove. This album contains songs to suit every mood and all persuasions of listeners. Add that to Owens' powerful voice, artistic guitar, sympathetic band and production, and you've got a recipe for hours of satisfying entertainment. When is his next album due?



RECORD OF THE MONTH



JOHN LEE HOOKER
Boom Boom
 POINTBLANK VPBCD 12

● John Lee isn't the only 'there-when-the-mould-was-cast' Blues original but here sure is one of the finest living examples. Now in his seventh fifth year, there's only one thing I want to know just where does he get his supply of vitality, vigour, and unmitigated mad-assedness?

Boom Boom is a tour-de-force from start to finish. Whether he's leading his sharp-as-daggers band or going it alone with his guitar and voice, John Lee swathes through the music, sounding as fresh and well-tongued as any teen-age post-punk protagonist while being as considered and worldly-wise as only an old-timer who has fudged around the block more times than he would want to count is able.

From the opening bar of the first title track right through to the last note of the closing number 'I Ain't Gonna Suffer No More' Hooker's guitar sings, burns, rips and sets a steaming pace while his voice cycles, decays and chokes, with knowing worldliness over his band's wholly appropriate accompaniment. Every phrase he plays and sings amply demonstrates his unmatched mastery of the Blues.

Quite honestly, nothing I or any other critic can say can provide a worthy commentary on this brilliant work. If you enjoyed *The Healer* and *Master Lady*, Hooker's most recent albums, then look out for *Boom Boom*, which will astound you. More raw, keener and less cynical than these albums - which some might consider perhaps a touch too white around the gills - this gem will satisfy your soul and let you die a happy, contented little Blues fan.

Jazz

Simon Hopkins



PRAXIS
Transmutation
(Mutatis Mutandis)
 AXIOM/ISLAND 314-512 338

● Corker number one; and a supergroup at that! A few months back I talked about a new record label, Axiom, started up by New York's famed eclectic bassist-producer Bill Laswell. Now, Praxis, a supergroup assembled by Laswell, and a supergroup for the Nineties and beyond to be sure: on bass Bootsie Collins, the king of funk bass, one time member of Parliament and Funkadelic, and the man who, aged a meagre seventeen summers, co-penned James "The Hardest Working Man In Showbusiness" Brown's massive "Sex Machine"; on Hammond organ and synthesizers, another Parliament alumnus, the classically-trained and groovesomely-inclined Bernie Worrell, the Space Wizard himself; at the turntables Af Next Man Flip - Lord of the Paradox (yes, honestly), scratch and break-beats manipulator from the hugely underrated hip-hopsters The Jungle Brothers; on drums Brain, of

cult San Francisco band Limbomaniacs; and on electric guitar, also from San Francisco, the little-known Buckethead.

A motley crew, for certain, whose debut outing *Transmutation* is a massive cut-and-paste job assembled, meticulously, by Laswell. The net result is truly a soundtrack for the metropolis, from its opening police sirens bursting into rapid-fire heavy metal soloing, then fracturing into spacey dub-funk and on and on. Not that it's anything like as random as I make it sound; Hakim Bey's anarchist sleeve notes exult the cause of entropy, but there's as high an order of organization at work here as in any through-composed work, with each genre-byte giving the next (and previous) its real

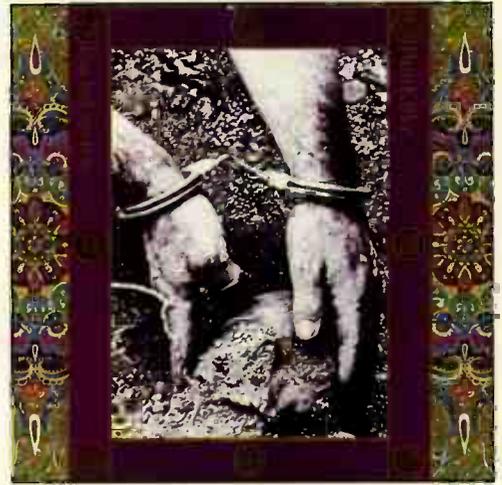
meaning: sound collage at its finest.

There are real comparisons to be made here with altoist/composer John Zorn's large-scale collage works like 'Spillane' and 'The Big Gundown', and his small group work with Naked City; the approach, and, indeed, general philosophy, are much the same. But Naked City and Praxis sound as different

as Erasure and Extreme Noise Terror, not least because their respective collage-constituents are so different: Zorn's obsession with hardcore and grunge is replaced here with Laswell's love of metal, in all its hybrid forms. (Laswell remains the only producer on Earth to have caught on wax both Motorhead and Herbie Hancock.) In place of Joey Baron's swinging backbeat we have Eighties hip-hop in head-on collision with Seventies funkateering; and making up for Zorn AND Bill Frisell is the screaming, magnificent Buckethead. Of whom, I have a few words. . .

I have a penchant for guitarists, regulars may have noticed, and Buckethead is a personal hobby-horse. Word was out last year on this 21-year old virtuoso avant-garde HM madman who plays live in full face paint with, naturally, a bucket on his bonce, but there have been precious few glimpses of his playing: a cameo role on a Henry Kaiser album, an appearance at last year's Company Week (British free jazz guitarist Derek Bailey's annual London-based improv-fest), and the promise of a solo

project on Zorn's own Avant label. And now this. King Crimson's Robert Fripp once remarked that KC was nothing but a means to finding out what Jimi Hendrix playing Bartok would sound like. Now imagine Steve Vai or Yngwie Malmsteen playing Albert Ayler: Buckethead. There are plenty of sterling performances on *Transmutation*, not least Bernie Worrell turning in a ten-minute organ solo that owes more to Stockhausen than to James Brown - but Buckethead, by sheer dint of being a newcomer, is worth the price of the CD alone. One of the albums of the year.



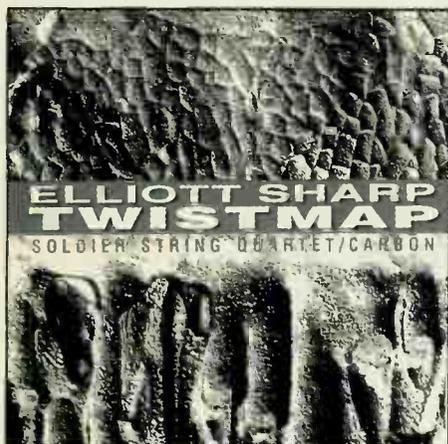
PAINKILLER
Buried Secrets
 EARACHE MOSH62CD

● Painkiller is another supergroup of sorts, but on a smaller scale: Zorn on alto saxophone; Laswell on electric basses; and on drums Mick Harris, formerly of UK speed-metal/hardcore superheroes Napalm Death, and composer of sample-based ambient/industrial soundscapes (check out his recently-released Lull, too un-jazz to be reviewed here, but a fine album all the same). On *Buried Secrets* the trio is augmented on two tracks ('Creed' and the title track) by Godflesh's guitarist Justin Broadrick and bassist G C Green - Birmingham's gods of grincore.

Secrets is a massive improvement on last year's album, although, broadly speaking, it covers, and draws on, the same musical areas; extreme, grinding, churning rock, free improvisation, splatter movie soundtracks. But this time out, the whole thing seems somehow more polished (although "polished" improvised grindcore might seem a tad oxymoronic to more pedantic souls than myself). Certainly the use of dub effects throughout is hugely enjoyable, and Zorn's increasing use of electronic effects on the alto are welcome. And the fact that the stand-out tracks are just the two with Broadrick's ferocious guitar on

them perhaps says something; I could definitely have lived with more of that.

Not for the faint-hearted, perhaps (the titles alone - 'One Eyed Pessary', 'Black Hole Duo', 'Skinned' - give some indication of what a gothic horror story of a record this really is), it's nonetheless a fine old slice of contemporary music.



ELLIOTT SHARP
Twistmap
EAR-RATIONAL ECDI029

● As much a composer as an instrumentalist (and if it's good enough for Ellington, then...) New Yorker Elliot Sharp has been one of the last decade's most consistently intriguing music makers and a highly innovative guitarist. A prolific writer of music for theatre and ballet as well as for concert performance, he's the sort of artist who defines avant-garde, in its very best sense. His music ranges from the icy industrial onslaught of his ballet score 'Fractal' to the (arguably more accessible) post-punk/free jazz of his regular collective Carbon.

This group, along with David Soldier's Soldier String Quartet, are featured on Twistmap, a collection of pieces for standard quartet and custom, hand-built instruments. These, which include the Violinoid (a sort of electric violin with movable bridge and pickups), the Slab (a solid-bodied quasi-harp), and the Pantar (a multi-necked sitar-come-guitar that Mad Max might play) have been standard in Carbon for several years, and place Sharp firmly in an American classical music tradition that runs from Ives through Partch to Cage - and those eager post-modernists among us would argue, right down to Sonic Youth.

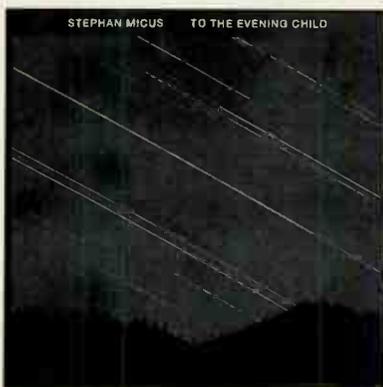
But, of course, Sharp is as interested in the improvising of his cohorts as his own writing, and the harsh, driving collective music on Twistmap, for all its overt similarity to Seventies systems music, owes much to the inventive playing of the whole group. One more piece in an exciting and essential canon of work.

KEITH JARRETT
Vienna Concert
ECMI 481

● Pianist Jarrett has become one of the most critically-lauded, influential, and at the same time popular, jazz musicians of the last twenty years, with an approach that easily blends composition with improvisation and romanticism with intellectuality. An artist at once warm and aloof.

With hundreds of hours of solo and collective work in the can, he believes that Vienna Concert, recorded in July 91 at the Vienna State Opera, just days after completing a recording of Shostakovich's 24 Preludes and Fugues, is very special indeed. "I have courted the fire for a very long time, and many sparks have flown in the past, but the music on this record speaks, finally, the language of the flame itself." It's certainly a very beautiful record,

typically progressing from stately chording to frantic, technically dazzling polyrhythms, and evidently shot through with the austerity of Shostakovich; but, although Jarrett devotees will find it essential, I can't say with any honesty that this record stands out obviously from the rest (and there's a lot of it) of his excellent work.

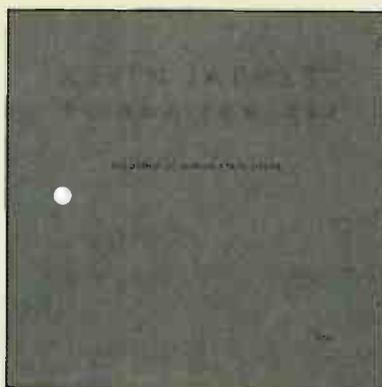


STEPHAN MICUS
To the evening child
ECMI 481

● Further vocal and instrumental cogitations from the pioneering "global village" multi-instrumentalist. As ever, evocative, charming, and always pure and ascetic enough to keep it one step ahead of his legion New Agey imitators.

JOHN SURMAN
AdventurePlayground
ECMI 463

● The first of a sterling two-volume set of contemporary acoustic jazz, recorded in September 1991 by a quartet never previously assembled: drummer Tony Oxley, pianist Paul Bley,

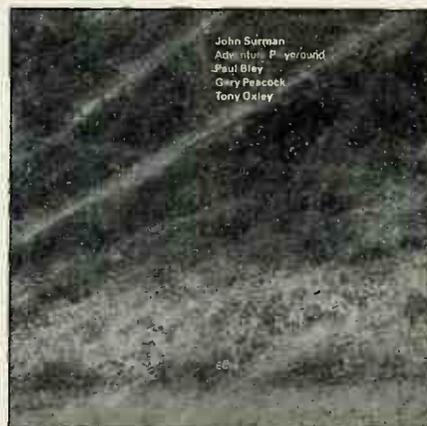


bassist Gary Peacock and baritone/soprano saxophonist Surman. A fine example of high-level communication and group interplay that's all-too-seldom heard on countless post-bop records. Very highly recommended.



DAVID DARLING
Cello
ECMI 464

● The fifty-something American Darling is that rare thing, an improvising cellist, and at that one who specializes in playing a rare instrument: the 8-string electric cello. He's contributed to a whole bunch of essential ECM sessions with the likes of Jan Garbarek, but this is his first solo disc for the label since 83's October Journal. Cello features a series of multi-tracked and solo pieces, all elegant, elegaic and largely tonal, in many ways comparable with the 'ambient' navel-gazing of many lesser musicians. Introspective but hugely enjoyable listening.



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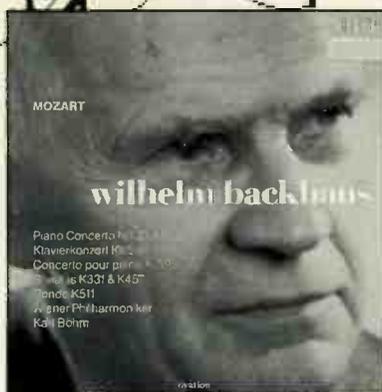
Classical



GUSTAV MAHLER Symphony No 4

Frederica von Stade, mezzo-soprano;
Vienna Philharmonic Orchestra;
conductor, Claudio Abbado
DG ABBADO EDITION 437 011-2

● Recorded over more than a decade, Abbado's Mahler cycle contains several towering performances: the First, Second and Third Symphonies together with the Sixth, Seventh and Ninth. This Fourth, however, just misses the mark, despite the advantage of having Frederica von Stade as its vocal soloist. It begins well enough, with a well-judged first movement and a spacious recording that does justice to Abbado's pinpointing of delicate detail. The magical, fairy-tale like quality is perfectly captured (this symphony was Mahler's last gesture towards innocence and childlike simplicity before the stark realities of the Fifth and Sixth). But the slow movement exchanges charm for a degree of self-consciousness which seems quite at odds with Mahler's request for "sincere and serene expression". If any recording captures that, it is another Vienna version under the baton of Lorin Maazel, the pick of an otherwise disappointing Mahler cycle for CBS Masterworks. The VPO play that much better for Maazel and, moreover, he is better recorded. Maazel's soloist, Kathleen Battle, sings just as sweetly as von Stade and, overall, the gains are well worth the extra outlay. **PH**



WOLFGANG AMADEUS MOZART

Piano Concerto No 27 in F flat Major K595/Piano Sonata in A Major K331/ Piano Sonata in C minor K457 Rondo in A minor K511
Wilhelm Backhaus, piano; Vienna Philharmonic Orchestra; conductor, Karl Bohm
DECCA 483 898-2

● Born in 1884 in Leipzig, Wilhelm Backhaus grew up at a time when pianistic fireworks were far more highly valued than fidelity to the score, in sharp contrast to the tenets of today's interpretations of the classical repertoire. Both by upbringing and temperament, Backhaus was at odds with this approach to performance. In his playing of Mozart, Beethoven, Schubert and Schumann, he set out to peel away the spurious accretions of history and play the music for what it was, not what generations of misguided pianists had elected it ought to be. It was described as a 'new objectivity'.

That is undoubtedly why his playing of Mozart's last piano concerto, the wistful, smiling K595, sounds not at all dated. In some ways, it is very modern in its refusal to languish and the approach, while not lacking in poetry, is more about commanding the keyboard than caressing it. It certainly meets the criterion of objectivity and the playing is well-considered, if uneven in places.

What is dated, though, is the recording, which places the piano well forward in a bloated sound picture and does scant justice to the VPO strings. Bohm's conducting doesn't always help, being heavyhanded at times, and despite Decca's ADRM transfer, the hiss level remains intrusively high. While the fullness of tone, the precision and colour that contributed to Backhaus's reputation can be appreciated, it is not enough to displace newer versions - Brendel, Perahia, Bilson, Uchida - in this most sublime of concertos; and, in the 'vintage' stakes, Gilels on DG still stands supreme. As fillers, we are offered two sonatas (including a rather prosaic 'Rondo a la Turque') and a fine performance of the Rondo K511; not enough for this reissue to transcend mere historical value. **PH**



JAMES MACMILLAN The Confession of Isobel Gowdie/Tryst

BBC Scottish Symphony Orchestra,
cond. Jerzy Maksymiuk
KOCH/SCHWANN 3-1050-2

● James Macmillan is a young contemporary composer, born in Ayrshire in 1959. The Confession of Isobel Gowdie was a Prom commission for the 1990 season, where it was performed by the BBC Scottish Symphony and conducted by Maksymiuk to a warm reception.

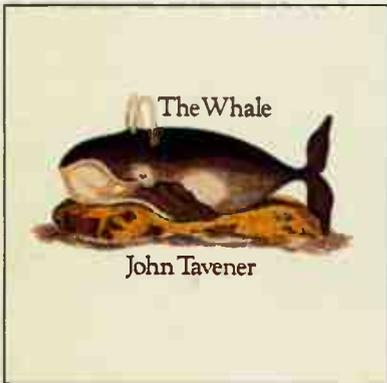
The Polish connection is not entirely fortuitous; Macmillan's earlier work was serialist and based on the aleatory style particularly cultivated in Poland. While both Tryst and The Confession of Isobel Gowdie are much more approachable, there are discernible echoes of Panufnik, or more so, Gorecki, in the first of the short compositions on this new release.

Isobel Gowdie was a poor woman accused of witchcraft and executed in Naim in 1662. In that upsurge of persecution she confessed to visiting hell and a liaison with the devil; changing her shape into that of a hare, cat or crow; *pace* Macbeth, even boiling toads to make people ill; in short, all the devilry that spell of hysteria made popular and turned eccentric or lame-witted women suspect. She was strangled and burnt at the stake.

Macmillan's piece is not programmatic, though that is how it began. "It seemed gratuitous and voyeuristic. It changed into something more like a prayer for the dead." It is certainly atmospheric, with the slow, long chords of the beginning swelling and dying like the wind around Bimam Wood. Shimmering woodwind casts a distinct chill over dense string writing through which can just be discerned strands of Gaelic Psalmody, a Scottish ballad and plainchant Lux Aeterna. Suddenly, trombones and percussion batter their way in, and an intense thirteen-fold chord repetition introduces the only programmatic element that remains, a barbaric, wild, Stravinskian Walpurgisnacht dance around the stake. After a series of tempestuous and shattering climaxes, the work ends with the gentle return of the strand of plainsong - the Requiem Isobel Gowdie never had - and the work ends in a mood of peace and reconciliation. It won't be to everyone's taste, but it's a

modern work well-deserving of more exposure.

Tryst, for chamber orchestra, is a less rawly emotional piece, but also with its strongly rhythmical Stravinskian elements. Energetic, syncopated rhythms are superseded by slow homophonic wind chords interrupted by rapid string figures. First performed at the St Magnus Festival in Orkney in 1989, Tryst is in much the same melancholic strain, perhaps mixing elements of serialism and melodic strands too roughly and raucously together to be easily grasped. Good for fans of Maxwell Davies, perhaps, but less successful and developed than Isobel Gowdie. **EB**



JOHN TAVENER
The Whale
EMI 7 96242 1

The London Sinfonietta; The London Sinfonietta Chorus; Anna Reynolds, mezzo; Raimund Herincx, Baritone; Alvar Lidell, speaker; John Tavener, organ and Hammond organ, cond. David Atherton

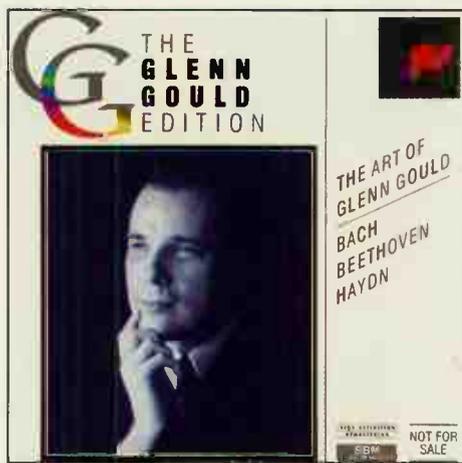
● Perhaps one of the most unexpected recordings on the Beatles' Apple label was John Tavener's *The Whale*, recorded in 1970 as a result of a meeting between Tavener and John Lennon at a dinner party in London where they swapped tapes. Apple's own studio was still being built, so the recording took place in the church of St John the Evangelist in Islington - a more appropriate place altogether for this 'cantata' based on the story of Jonah and the Whale. Certainly it's doubtful whether the exuberant clamour of the percussion - indeed of the whole piece - would have come off with such vividness otherwise.

The Whale is a kind of broken cantata - choral passages taken from the Vulgate interspersed and mingled with soft gentle orchestral passages representing the whale with raucous outbursts of chaotic sound from band and chorus as the storm approaches. Jonah draws the short straw and is swallowed whole. The 'Belly Music' stitches together fragments of liturgical themes and raw snatches of jazz as panic approaches; elsewhere, bells, brass, percussion and even Hammond organ set up a wild threnody of sound.

It's perhaps less avant-garde than we thought twenty years ago - taking its

direction more from Britten than we appreciated then - but while it's more approachable than some contemporary serialism, it still makes its demands on the listener. If you can make it through the Melodrama and Pantomime section, then you'll be well on course to achieve an exhilarating experience.

Tavener's *The Whale* has been deleted for more than twenty years. Recorded in the early, vivacious days of the London Sinfonietta, its re-release is long overdue. I doubt if Beatles fans will be much taken with it - even if Ringo is to be heard shouting through a loudhailer seven minutes and forty-four seconds into the thirty-minute piece - but Tavener fans have every reason to be grateful to EMI. The digital remastering, done at Abbey Road from the original two-track mix-down by Ron Furmanek, has resulted in splendid clarity and the startlingly vivid dynamics this piece demands. **EB**



THE GLENN GOULD EDITION
SONY CLASSICS

● It's ten years since the death of Glenn Gould, that unconventional and even eccentric Canadian pianist. Sony Classical are marking this anniversary and what would have been his sixtieth birthday with the first issues of a complete edition. Taken from the CBS catalogue (which Sony Classical now own) it will include some previously unreleased material and videos - on Laserdisc and VHS - of material originally recorded for Canadian Broadcasting.

If anything, the Glenn Gould Edition has a two-pronged appeal to audiophiles: Gould himself abandoned live performances for the recording studio in 1964. "It is important to realize that if the demands and situations of the electronic age change the function and relevance of the composer to society, they will also

change the categories of judgement by which we determine the matter of artistic responsibility. . . " he wrote. "The great paradox about the electronic transmission of musical sound is that as it makes available to the most enormous audience, either simultaneously or in a delayed encounter, the identical musical experience, it encourages that audience to react not as captives and automatons but as individuals capable of an unprecedented spontaneity of judgement." It's quite the opposite point of view to that of, say Michelangelo, who's barely set foot in a recording studio in the last thirty years.

It's also one that caused a considerable stir at the time. One of the recordings in the Edition is the 1955 mono recording of Bach's Goldberg Variations, which made his reputation and has been pretty much disliked on this side of the Atlantic ever since. I have to say I find it wayward in tempo and insecure - or at least eccentric in development. The original recording was not of the greatest clarity, but this is where the second audiophile aspect comes in.

While still on the wiry side, the '55 Goldbergs sound remarkably clear and clean, Gould's notorious sniffing and shuffling coming over loud and clear. There's a decent body to the piano sound, too; a result of Sony's 'Super-Bit Mapping' remastering process, whereby the original tapes have been remastered as 20-bit.

Turning to the Haydn Sonata in E-flat major, where I find Gould still wayward but more approachable, the success of the 20-bit approach is more marked. This is the stereo tape from 1958, and apart from some inevitable tape hiss, could well have been recorded a decade later. Sonic quality is quite startling and realistic, with the sometimes fierce shine evident on many CBS re-releases taken off.



On this evidence Sony's extensive Gould edition is well worth collecting, with the proviso that if you're a fan you'll want all of it; if you aren't, you should at least have some of it. **EB**



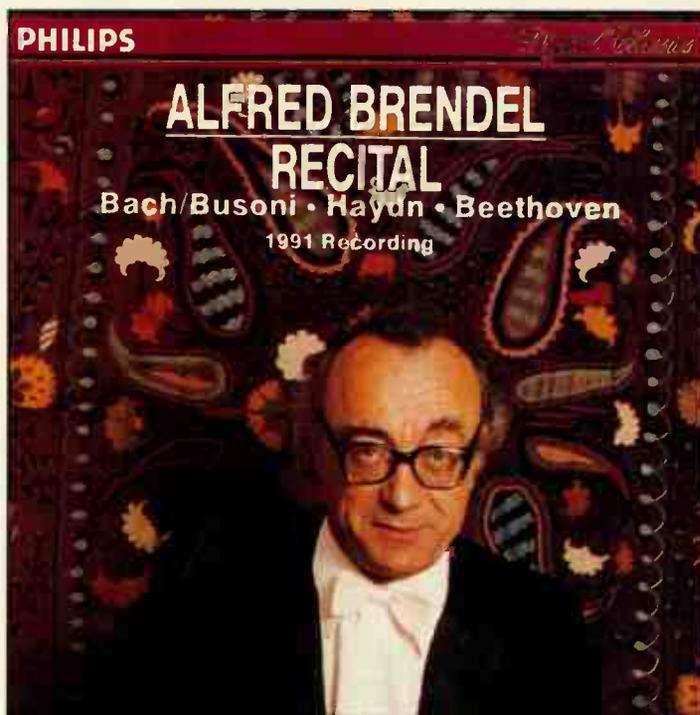
Alfred Brendel, born in Austria sixty-one years ago, but a London resident since 1974, has had a long recording career. Collectors who were around in the heady days of LP twenty or thirty years ago will recall his name frequently appearing on the Vox Turnabout label, that saving grace for people like me when full-price recordings were at a price that made them a serious proposition.

He wasn't always best served by the quality of the recording in those days, nor always by the accompanying orchestras and conductors; but the Beethoven Sonatas (a new recording of Op. 110 is represented here) although a bit patchy overall, were among the most satisfying of the cycles at bargain price. The performances may not have had the overt stylishness of Barenboim's, say, of the same period, but exuded what we would probably now term a more appropriate air of authenticity to the composer's intentions.

It's this that marks Brendel out, and where he has now, however late, come into his own. That somewhat owl-like aspect his spectacles give him suggest a professorial approach and indeed, Brendel is among the most considering and thoughtful of soloists. Yet for all the deep insight into the mechanics of a score he displays, despite his evident erudition, his performances are never dry and academic. He is one of those pianists whose study translates instantly into direct contact with the keys in performance and sweeps the audience into the interpretation.

This was nowhere more evident than in the consecutive performances in the last two Proms seasons of Brahms' First and Second Piano Concertos which received considerable acclaim. They were both evening events, where Brendel's pianism shone through the orchestral textures with immense wit and feeling, rare occasions when both truly appeared to be concertos for the piano instead of the instrument being subsidiary to Brahms' intense orchestration.

Last year, Brendel was in concert at The Royal Northern College of Music, where Philips recorded these four pieces - Busoni's arrangement of Bach's Chorale 'Nun komm der Heiden Heiland', two Haydn Sonatas and Beethoven's late Op. 110. The juxtaposition may seem odd at first sight, but by



the end of the hour, I was in no doubt that this concert - for that is how it is planned and performed - is one of the subtlest and fascinating illuminations of the context of Haydn's Sonatas I could have wished for.

ALFRED BRENDEL RECITAL
BACH (transcr. Busoni)
Organ Chorale Prelude "Nun
Komm der Heiden Heiland"
BWV 659;
HAYDN
Piano Sonata in G Minor,
Hob. XVI:44; Piano Sonata in
C Minor, Hob. XVI:20;
BEETHOVEN
Piano Sonata No 31 in A
Flat, Op. 110.
 Alfred Brendel, piano.
 PHILIPS 432 760-2.

● Busoni's transcriptions of Bach have often had something of a bad press, tinkering and re-arrangement of the 'Celestial Sewing Machine' (as poet Peter Porter called him) not being popular in some quarters. Brendel's performance redresses the balance somewhat, showing the Chorale arrangement as an exploration of Bach's tonalities and structures by a gifted pianist. While the 'walking bass' is retained as is the solemn stately polyphony of the middle voices, there is a floating cantus firmus like a blooming flower which takes us into ethereal twentieth century realms. Busoni's transcription in Brendel's hands is a musical exploration of an element of Bach's psyche and fully justifies its composition.

The link between Bach and Haydn might not seem obvious, but link there is. The two Haydn Sonatas date from

the 'Sturm und Drang' period, the wave of expressionism which swept through musical life in the 1770's. Haydn's Sonatas have tended to be overshadowed and of the two, the C Minor is the lighter, the Moderato elegaic and rippling, the succeeding Allegretto a dance movement, bright and sparkling and not at all reminiscent of starchy crinolines. There's more of a folk element redolent of food, wine and celebration.

Here we reach out to the 'Sensibility' or 'Music of Feeling' which C. P. E. Bach, second son of J. S. and a stylish performer in his own right, both wrote of and practised.

He's been called 'the father of modern piano playing'; Haydn himself said 'Anyone who knows me well must realise that I am indebted for a great deal to Emanuel Bach, that I have understood and industriously studied him.'

Haydn's C Minor Sonata shows just how much he absorbed: the complex, exciting first movement followed by a deeply expressive Andante, both introspective and emotionally charged. Brendel's playing in this movement is consummate, not simply Sturm und Drang expressionism, but thoughtful and obviously forward-looking to the Romantics and not least of all Beethoven. The Finale is as virtuosic - and demanding as much skill - as the first movement, the elaborate development combining forcefulness with agitation; full of the 'sensibility' in Brendel's hands that C. P. E. Bach demanded. He is articulate, witty, sophisticated - and turns this Sonata into a great work, endlessly fascinating in its depth and colour.

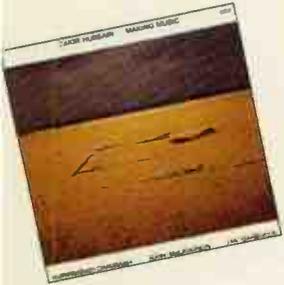
The culmination is reached in Beethoven's Op. 110. No longer should this be seen, in Brendel's hands, as a work that goes beyond the limits of the piano. Contemporary with the Missa Solemnis, it stretches the scope of what is possible, with the traditional elements of the Sonata form combined with quasi-improvisatory elements which take an emotional response also to its limits. Brendel has complete control, with an astonishing power. By the time it reaches its 'radiant transfiguration' it appears to be the inevitable conclusion of C.P.E. Bach's theories and one of the ultimate expressions of them.

The recording is clear without being too close and is as convincing as Alfred Brendel's playing. A superb disc. **EB**

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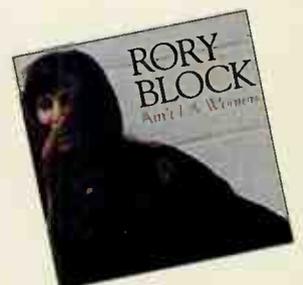
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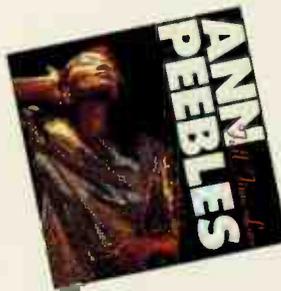
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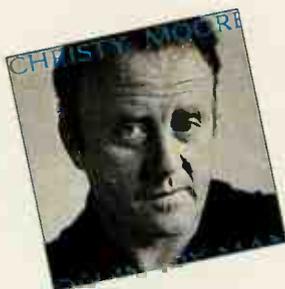
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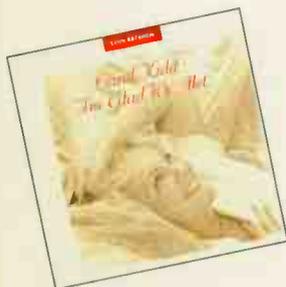
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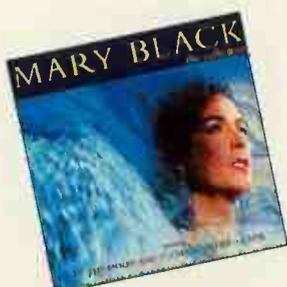
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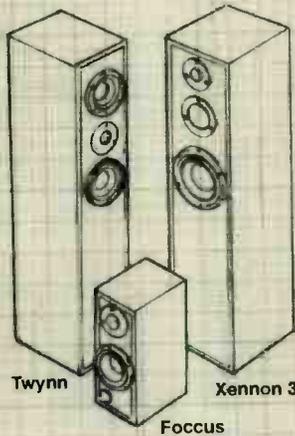
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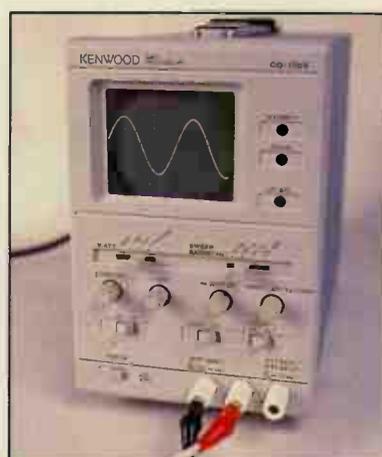
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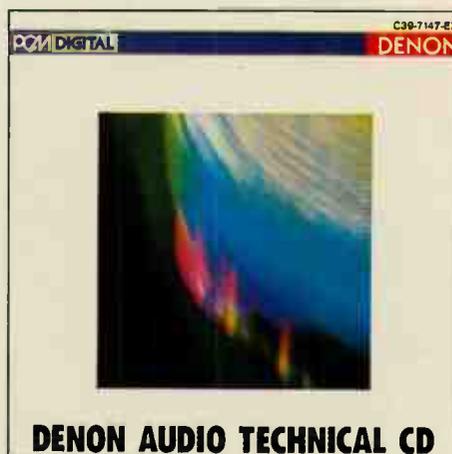
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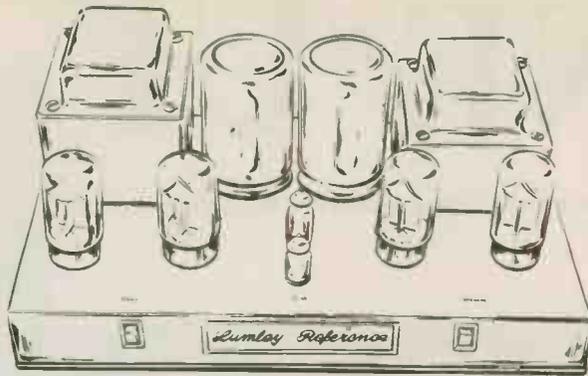
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Still under development, but nearing completion, there will be more details in the next issue.



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EXPORT ENQUIRIES WELCOME

SYSTEM TUNE-UP

Two tuner-based systems form this month's budget choices from Dominic Baker.



Our Budget Section has grown to include not only Recommended Systems and Queries but an additional section entitled Finishing Touches. This is a list and a description of products which will enhance the sound of your system.

The recommended systems this month comprise two systems based around tuners. Radio was the medium responsible for the birth of the hi-fi industry. The first receivers were crystal sets - one of the earliest was made in 1912, although all there was to hear were time signals from the Eiffel Tower or messages in Morse. In 1922 the beginning of entertainment broadcasting in Britain brought more

sophistication and rapidly increasing sales. Seventy years on the radio is still going strong and remains the only high quality way that a live performance can be received in the living room.

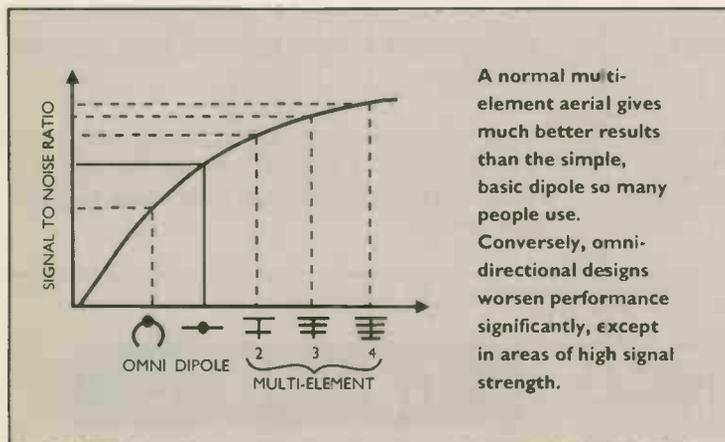
AERIALS

The aerial should be considered as important as the tuner itself. As a rough guide 20% on top of the price of the tuner should be set aside for a quality antenna depending on your reception area. For example if your tuner cost £100 then the accompanying aerial should be of the order of £20 in value, for a £200 tuner a premium of £40 should be

considered and so on.

Aerials come in several shapes and sizes. A simple dipole ('T' shaped) aerial is suitable only for use near a transmitter where a strong signal can be received. The more elements (or cross-bars - the basic dipole has only one) the aerial has the stronger the signal it will send to the tuner. The diagram below shows the relative differences between the types of aerial available.

The BBC Engineering Information Department will supply reception details such as BBC radio transmitter locations, polarization and how to get the best reception from your aerial - on request. A similar booklet, 'Radio Advertising Facts and Figures', which covers the Independent broadcasters, is available from the Association of Independent Radio Contractors Ltd. for around £2. These are both very interesting and informative packs to have if you wish to get the best from your radio.



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SYSTEM I

Denon's TU-260L tuner, partnered with a good aerial, receives a wide range of stations with a very low level of accompanying hiss.

Additionally it is highly selective, able to reject a strong station while receiving a weak one close by. This is a near ideal balance for any tuner and outstanding for one costing only £109.99.

The sound is warm and full-bodied with a sense of smoothness and lucidity. The Denon also manages to convey both scale and atmosphere well, which is of particular importance when trying to capture the realism of a live broadcast.



Denon's PMA350 amplifier (£169.99) is a particularly refined performer for the price, offering exceptional detail and focus. Its presentation is clean, which adds to the smoothness of the sound. The 350's bass is beautifully articulate albeit slightly lacking in weight. This is an amplifier with exceptional poise and control, ideally suited to CD and other line level sources.

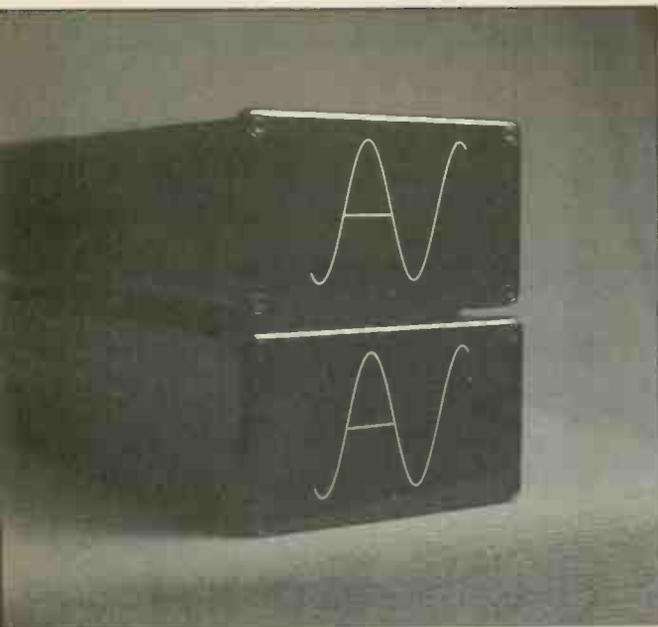


Tannoy's £124.99 loudspeaker, the 603, is the smallest in their 'Sixes' range. Bi-wired, it has a tight bass and a clear forward presentation on vocals. More differentiation of tonal colour and an increased degree of depth and focus all add up to produce a result unexpected from a small budget loudspeaker.

CONCLUSION

On the end of a good aerial the Denon produces a clear and clean sound with plenty of detail. It could be criticised for being slightly two-dimensional, but the sound from the whole system is deep, full, with a firm bass quality which is possibly due to the richness of the 603's. The characterful nature of the loudspeakers perfectly balances the light yet warm and open sound of the front end producing a near ideal match. I found that the system worked best if the speakers were placed on heavy stands and bi-wired with cable such as Mission's stranded variety. This produced a clear and even presentation with a good degree of detail and life in the treble. The best interconnects for this particular system were The Chord Company's PP2 cables which come with well soldered gold phono plugs.

Its smooth nature never offended yet was involving enough to keep listeners on their toes. Overall this grouping offers particularly good value for money.



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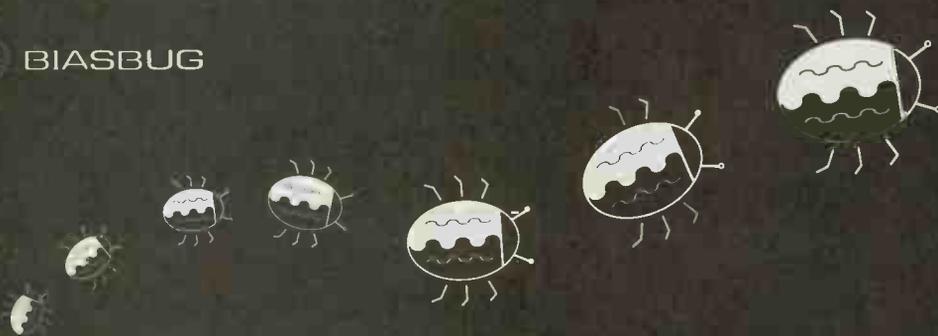
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 **BIASBUG**



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The tonal neutrality and spacious soundstage of Aura's TU-50 are two of the reasons why this £229.95 tuner offers excellent value for money. The Aura is an FM receiver only and deals with this frequency band in an admirably hiss free manner. It has a sensible range of convenience features including auto-tune search and 8 presets which make it simple to use. The sound is crisp and well-etched with a sense of timing that all too often eludes many others. The Aura TU-50 represents the ultimate budget tuner.



Arcam's integrated 'baby' amplifier, the £200 Alpha 3, has a lean and lively character with an astonishing amount of detail. Its fast and clean presentation is ideally suited to line level inputs. The Arcam accurately reproduces the dynamics of CD with an ability to stop and start notes in a way most would find hard to match.



Mission's 760i at £119.90 comes as something of a revelation. The quality of separation, depth, ambience and detail belies its modest price tag. Tonally uncoloured and with bags of rhythm, it is an eminently listenable loudspeaker. The Mission makes supremely and consistently attractive music.

CONCLUSION

This is one of the most expensive budget systems auditioned for this section so far, but the extra expense is easily justified. The combination of the Aura's wide open soundstage and neutral presentation, the Alpha 3's fast and articulate but solid sound and the dynamic little Mission 760i's is worth much more than the sum of the parts.

A system of this calibre will benefit greatly from quality cabling and the combination of Audioquest Turquoise interconnect and the excellent Furukawa FS-2T07 loudspeaker cable proved ideal. With these cables the sound produced is dynamic, powerful and solid without being forced in any way. The tuneful bass and slightly bright treble add up to a very involving presentation full of excitement and energy.

One of the ultimate budget tuner systems, this produces a quality of sound that cannot be bettered for under £1000. For this reason the Aura TU-50 deserves the highest quality aerial that funds will allow.

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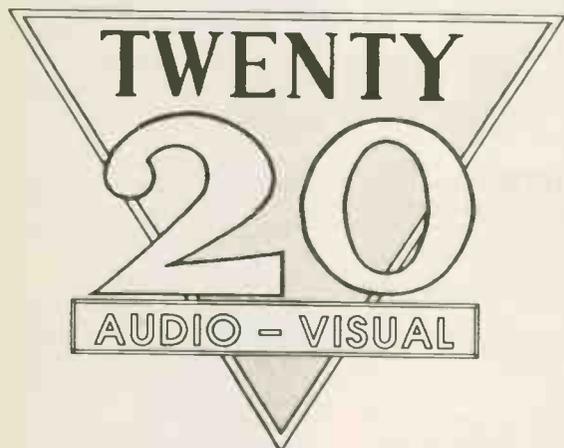
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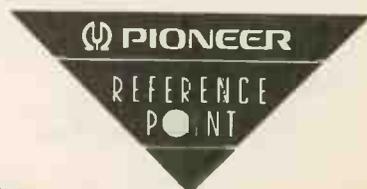
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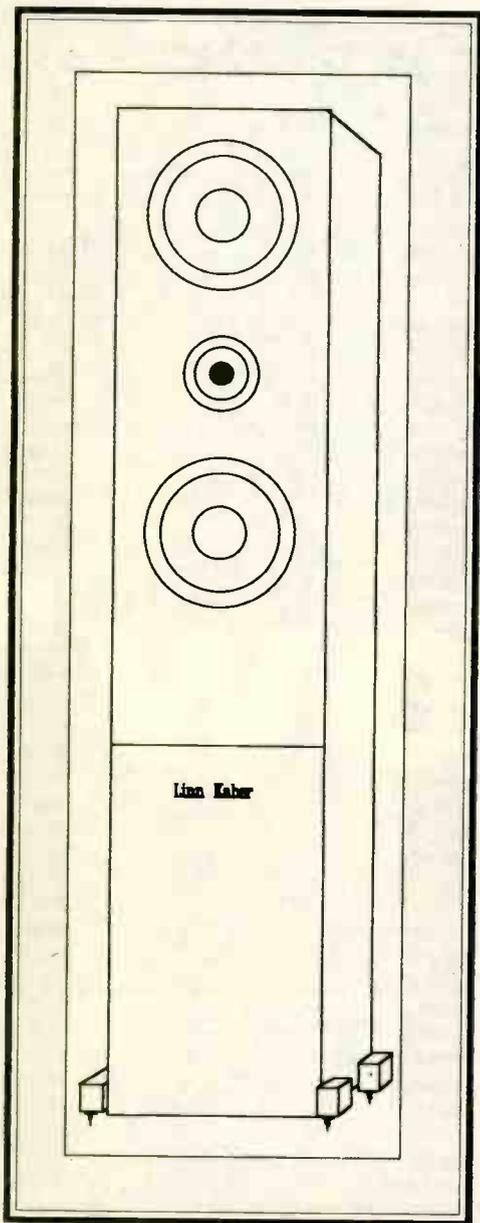
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FINISHING TOUCHES

finishing touches

Even a budget system can be tuned for maximum performance with cables, tables, mains filters and plugs. Dominic Baker's guide to affordable accessories begins this month.

LOUDSPEAKER STANDS

Most important to the system, loudspeaker stands should be considered before anything else. They will provide a solid support, allowing the loudspeakers to function properly; bass definition and midrange clarity will both be improved. Any box colouration may also be lessened by the stand effectively sinking energy into the floor.

Target is probably the most widely-known equipment stand manufacturer. Their range includes the SP stands, which at £39.95 offer excellent performance for the money.



EQUIPMENT SUPPORTS

A steel-framed, spiked table provides a rigid, vibration-free platform for hi-fi which will improve the sound of the system.

It can easily be seen that if the record deck vibrates, so will the platter and thus the record. This makes the job of the stylus unreasonably difficult and distortion sets in. A similar but not so drastic effect is evident in CD players which again use a spinning disc and read it through a moving head arrangement. Errors occur as the disc vibrates in and out of the laser's focus.

A suitable hi-fi rack will reduce the problems associated with reading software and therefore improve the overall sound. Additionally electronic components themselves are sensitive to vibration and thus any piece of hi-fi will gain from being rigidly supported. Target's TT2 and TT3 equipment supports are fully welded for rigidity and cost £69.99 and £99.99 respectively.

ISOLATION CONES

Isolation cones are designed to sink any vibrational energy away from the item they are supporting and into the mass below. If, for example, they are placed under a CD player, any small vibrations caused by the mechanical process of spinning the disc will be transmitted down through the cones into the support and away from the player. This will enable the laser to track better and isolate the circuits from unwanted excitation. This removal of unwanted energy is aided by the use of a spiked equipment support which functions in a similar manner, sinking energy into the floor.

This arrangement works best on solid floors, i.e. concrete ones rather than the suspended wooden variety.



Michell Engineering's Tenderfeet are machined from aluminium and retail for £1.95 for the small size and £2.95 for the larger cones.

ISOLATION FEET

With suspended floors, the main objective is to stop floor tremors coming up through the table into the equipment it is supporting. Sorbothane feet, which are made from a rubber material, decouple equipment from the table and isolate it from the floor. Mission's Isoplat combines vibration-absorbing feet with a platform.



The Mission Isoplat uses Sorbothane feet on a fibreboard sandwich and retails for £29.90.



The Chord Company has a large range of high quality cables in the £25 to £40 range and the facilities to custom-manufacture any interconnect that you could require.

INTERCONNECTS

When it starts its journey towards the amplifier the signal from the source component should be high quality and clean. This relatively uncorrupted musical voltage has a number of obstacles to cross before it arrives.

The first hurdle to overcome is the interface between output socket and phono plug. If the contacts are corroded, dirty or loose, then what is left of the signal after it has picked itself up will be in a sorry state. If it then has to crawl down a narrow passage - the kind of path a signal follows along a cheap patchcord - it will be knackered by the time it has to jump the final hurdle from the cable plug to the amplifier's input socket.

A good quality interconnect enables the signal to be delivered in much the same form as it left, with nothing lost and nothing gained. A high-quality cable with tight-fitting plugs, preferably gold-plated to resist corrosion, with high purity cable in-between, will allow the signal to pass relatively unhindered.

LOUDSPEAKER CABLE

As with interconnects loudspeaker cables need to be of a reasonably high quality, if for slightly different reasons. As a general rule the cable should be of a large gauge and constructed from high purity copper such as the

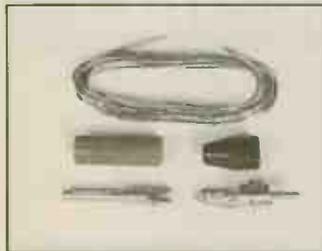
OFC varieties. This will ensure that minimal power is lost between the amp and loudspeaker and additionally produce a more controlled sound. Cable runs to each loudspeaker should be of a similar length to prevent channel imbalance.



Furukawa FS-2T07 at £3.50/m. is a recent addition to the loudspeaker cable market. It is made up from strands of high purity copper and terminated with high quality gold-plated 4mm plugs.

LITTLE THINGS

Pictured above are a few bits and pieces which can be purchased for less than ten pounds. Arcam's gold-plated banana plugs have a large bucket for soldering the loudspeaker cable, so a strong joint is guaranteed. Arcam's Wonder solder, also to be seen above, is the one to use for the purpose. The third small item is Campaign Audio Design's 'digital clamp', a 'shorting plug' which is inserted into an unused digital phono socket of a CD player and which many listeners feel improves the sound if you're using an alternative output.



Top left CAD's 'digital clamp'; top right, a gold-plated banana plug from Arcam; below, Arcam's Wonder Solder guarantees a strong joint.



MAINS DISTRIBUTION

Higher up the Hi-Fi ladder it is a sin to even consider a multiway mains block, but not everyone can afford or even justify separate mains spurs of heavy duty cable for each piece of equipment. One of the best alternatives is Campaign Audio Design's 4-way distribution unit which is hard-wired and soldered to aid main transfer. A high quality MK plug - which even has a silver-plated fuse holder - is connected with screened mains cable to reduce RF interference.

Regular cleaning of the mains plug pins using wire wool will keep contacts clean and free from corrosion.

The standard 4-way distribution unit with 1m of cable is £28.96. With a voltage dependent resistor (VDR) which smoothes out mains spikes, and 1.5m of cable (necessary due to the VDR's 10ns response time) price is £34.46.

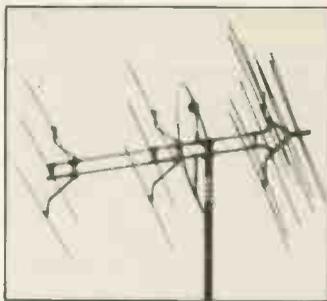
Going one stage further to achieve a good mains supply to your equipment the figure of eight or IEC power lead can be replaced with a high quality screened version too. Campaign Audio Design manufacture both.



EXPENSIVE TUNER??

THEN HAVE THE AERIAL IT DESERVES

You spend many hours and quite a lot of money choosing that new tuner, so don't ruin the whole effect by fiddling with bits of wire or old aerials. Have the full benefit of the multipath-free, clean signal which only a well designed and properly installed dunit can achieve. If D.X. is your scene, then go for the ultimate in rotating high gain narrow beam systems like our G.23 with 19dB forward gain, 38dB F. to B. and Acc. Ang. down to 15 Degrees or have a "one off" special built, up to 32 elements.



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Why a Hi-Fi Tuner needs a Good Aerial

For optimum sound quality, a hi-fi tuner must have a strong signal of around 1mV. The question is: how do you get it?

INDOOR V OUTDOOR AERIALS

Simple wire types only provide enough signal within a few miles of a transmitter. Having limited directionality they are prone to receiving reflections from buildings that produce multipath distortion.

Powered indoor aerials and expensive hi-tech designs costing up to £50 or so give no more signal than a simple, horizontal dipole. Their only benefit is smaller size.

Indoor aerials that sit close to the tuner provide a signal strong enough for good sound quality only when a transmitter is within a few miles. The wire dipoles supplied with tuners are only intended to get you going.

LOFT AERIALS

Loft aerials have the advantage of height and, if there are many elements, gain as well, so they provide a stronger signal than a simple dipole indoor aerial. In areas of reasonably high signal strength - which usually means within ten miles or so from a transmitter, a loft aerial may be satisfactory.

Usually with three elements, a director rod, reflector rod and dipole element in between, loft aerials are also directional; they must be pointed toward the transmitter. They reject interference and reflected signals better than dipoles, giving a cleaner signal to the tuner.

The best mounting position is high up in the V of the roof, away from metal objects like water tanks. A long downlead will be needed, preferably of good quality to minimise signal loss.

BALCONY & WALL MOUNTING AERIALS

Balconies in blocks of flats have the great advantage of height, which can allow a much stronger signal to be obtained. However, the balcony needs to have an unobstructed 'view' of the transmitter, meaning it must point in the right direction.

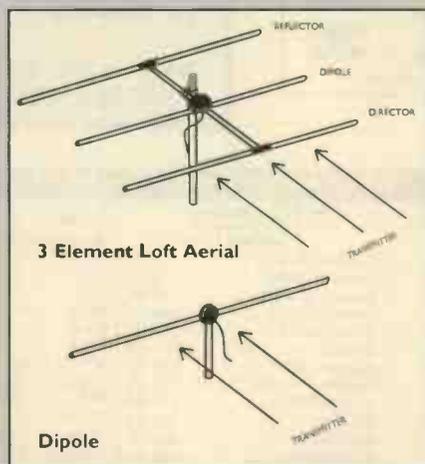
It is sometimes possible, if a little difficult, to wall-mount an aerial on a stub mast attached outside a window. This is useful in flats where planning permission or freeholders' consent is not necessary. Hanging out of a window with a power drill can be dangerous however. Consider using a professional installer. And make sure the window wall faces toward the transmitter of course.

OUTDOOR AERIALS

In most locations, only an outdoor aerial will give a signal strong enough and clean enough (i.e. free from interference and multipath reflections) to provide true hi-fidelity from a good tuner. Its main benefits are height, crucial for obtaining a strong signal free of reflections, and size.

Multiple elements increase gain (relative to a dipole) and directionality. An outdoor aerial will commonly have four or six elements. Surrounding the basic signal collecting dipole, to which the downlead is connected, are directors in front and reflectors behind.

Multi-element aerials are used in areas of medium to weak signal strength, meaning up to around forty miles from a transmitter. Any further away is judged as a 'fringe' area and will demand even more elements.



ALL-ROUND AERIALS AND WHIPS

Whip aerials, vertical dipoles and all-round aerials (curved horizontal dipoles) provide less signal than a simple, straight dipole, so they are suitable only for areas of high signal strength.

Although whips and curved dipoles offer all-round reception, this means they provide little rejection of reflections, interference and distant stations, so they are not especially suitable for hi-fi use.

AERIAL AMPLIFIERS AND ROTATORS

Aerial amplifiers are useful to compensate for losses in a very long downlead or to provide enough signal for distribution around a house. Otherwise, amplifiers merely boost noise and rubbish from an aerial by the same amount they boost wanted stations, giving no gain in quality, even though the signal strength meter of a tuner might go up.

Rotators are used to swing a directional aerial around, to receive more stations. A better solution in many ways is to have two aerials pointing in different directions, with their outputs dplexed together or, for more signal but less convenience, two downleads with an aerial switch at the bottom.

ATTENUATORS

When it's necessary to use a directional aerial to cut down reflections from tower blocks, an in-line attenuator can be used to cut down an over-strong signal (10mV).

AERIAL INSTALLERS

The best and overriding reason for getting an aerial installed is personal safety; roof work is very dangerous. Installers are also very quick and well equipped: DIY may take the best part of a day. Local installers should know about area-specific problems, the location of repeat and fill-in transmitters, and such like - all matters that are likely to be a mystery to most people.

Finally, good installers should have a Field Strength Meter that not only enables them to see whether an aerial is giving the required result, but can prove this to the satisfaction of the customer. Around 1mV is wanted, meaning powerful stations will come in higher (say 3-5mV) but weak ones a bit lower (0.3-1mV). If for no other reason, knowing that the aerial works properly is enough reason for using an installer.

Discuss this matter with them first though. In some areas, it may be impossible to obtain such a strong signal, no matter what aerial is used, get a variety of opinions if necessary.

CONFEDERATION OF AERIAL INDUSTRIES

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

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25 watt for EL34/6L6PP 6K-4/8Ohm	51.00	25 watt 300B/2AEPSE 1K2-4/8Ohm	96.50
50 watt for KT88/6550APP 6K-4/8Ohm	69.00	25 wt for EL34 /66550PSE 1K5-4/8Ohm	96.50
50 watt for 845PP 11K-4/8Ohm	119.00		

All the above have frequency response well beyond audible range. PP=Push Pull, PPP=Parallel Push-Pull, SE=Single Ended, PSE=Parallel Single-Ended. All are for Class A operation.

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AUDIO NOTE 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 and silver foil coupling capacitors, Black Gate and Cerafine electrolytics, acid-free silver solder, output transformers and valves. In addition to this we can supply various silver cables and wires for internal wiring.

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Topcap silver plated	7.60	0.39µF/1000v DC	8.25
		1.2µF/1000v DC	11.80
		0.22µF/1600v DC	6.45
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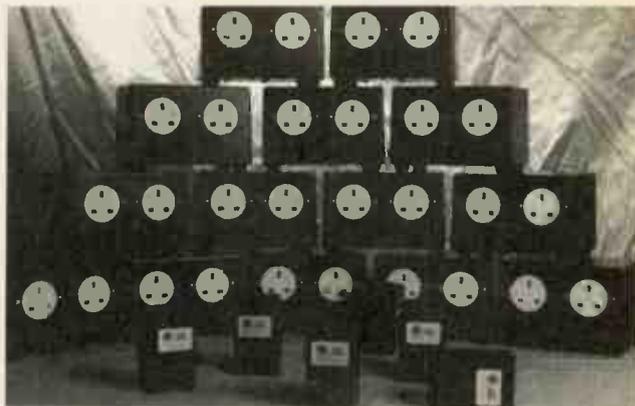
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220µF/16v FK type	5.55		
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Tel/Fax: 081-555 1222

World favourites

Hi-Fi World's revamped, comprehensive, selection of preferred products out of those we have reviewed in the last eighteen months, with the issue in which the test appeared.

COMPACT DISC PLAYERS

SONY CDP-497	£160	Superb starter CD. Packed with facilities.	Aug 92
DENON DCD-580	£180	Advanced Interpolative 20-bit based player. Rather 'grunty' and rough-edged, but with a good sense of rhythm and fun.	Dec 91
TECHNICS SL-PG500	£200	MASH player. Simply one of the finest CD players on the market, packed with life and detail. Astonishing value.	Aug 92
MISSION DAD5	£300	Bitstream based player. Very even handed, with forceful bass. Some lack of spaciousness.	May 92
PIONEER PD-8700	£300	Single-bit player, with 'stable-platter' CD turntable. Fast and pacy, with good dynamic range.	Dec 91
ROTEL RCD-965BX	£300	Bitstream based player. Calm, open and sophisticated performer.	Oct 91
PIONEER PD-9700	£400	Advance on the PD-8700 listed above. Very smooth and sophisticated sound, tonally even. Well built.	May 92
ARCAM ALPHA	£420	Offers a warm, full-bodied sound with a big, rich bass.	May 91
CREEK CD60	£500	16-bit player. Excellent rhythmic properties and a superb bass performance.	Apr 92
CARY CAD-855	£900	16-bit Rotel player, with Cary-designed valve output stage. Packed with ambience and musicality.	Feb 92
MARANTZ CD-94 II	£900	16-bit player. Superbly built, with deep bass and extremely full instrumental colour.	Feb 92
SONY CDP-X77ES	£1000	Low-bit player. Very clean, smooth and analytical. Well built, but lacks enthusiasm.	Feb 92
MICROMEGA SOLO	£1350	Philips Bitstream chipset, with distinctive transport mechanism. Very light and musical, but with a deep, well controlled bass.	May 92
NAIM CDI	£1598	Single box, 16-bit player. Close to the two box CDS, very disc dependent, has vital tingle factor.	Apr 92
TEAC X-1	£2300	Superb 20-bit player. Convincing, idiosyncratic and characterful. Has plenty of flair.	Jun 92
NAIM CDS	£2937	Two box, sixteen bit player. De rigeur for Naim-based systems. Musically informative, has both punch and delicacy.	Sep 91

COMPACT DISC TRANSPORTS

ARCAM DELTA 170.3	£650	Smooth. Draws the listener into the performance. Improves on all the strengths of the 170.	Jul 92
TEAC P-500	£650	Can be too restrained for some tastes, but subtle and highly detailed.	Feb 92
MERIDIAN 602	£1500	Well built, near silent in operation. Strong sound, but tends to blandness with the wrong DAC. Matches 606 DAC.	Mar 91
MICROMEGA DUO	£1745	CD-ROM based transport. Defines refinement and air, but without sacrificing impact.	Nov 91

DIGITAL TO ANALOGUE CONVERTERS

QED DIGIT	£125	Based on Philips Bitstream. Excellent value, with no rough edges. Co-axial input for CD only.	May 92
MICROMEGA MICRODAC	£299	Philips Bitstream-based. Typical Micromega sound, very musical and refined, lacks the cutting edge of detail.	Mar 92
MISSION DAC 5	£299	DAC7 based. Clean, forward mid-range, capable of portraying real subtleties. Bass lacks firmness.	Jul 92
ARCAM BLACK BOX 3	£360	Fine sounding DAC. Now looking a bit tired against stiff opposition.	May 91
AUDIO ALCHEMY DIGITAL			
DECODING ENGINE	£376	Tiny Philips Bitstream-based DAC. Very broad and smooth presentation.	Feb 92
SUGDEN SDA-1	£650	16-bit Philips based. A wide open window for the transport to flow through. Very neutral.	Jun 92
AUDIOLAB 8000DAC	£695	Philips Bitstream-based. Well built and flexible. Typical Audiolab sound, very silent and neutral.	Jan 92
MERIDIAN 606	£1221	New DAC7 version. Rather laid back, but also easy going and possessed of a very natural sound.	Jan 92

TURNTABLES

SYSTEMDEK IIX-900 (NO ARM)	£190	Suspended-chassis turntable, easy to set up. Surprisingly natural sound, if not as detailed as some. Suits Rega, Moth and Helius arms.	Aug 91
PROJECT 2	£245	Czech built turntable with much to offer above the Systemdeks and Regas. Very coherent.	May 92
REGA PLANAR 3	£250	Built to last. Transparent and lucid, although can sound bass light. Sets the standard to beat.	Aug 91
THORENS TD166/VI/UK	£270	Fitted with Rega RB 250 arm. Good basic deck, with tweakability.	Jun 92
MICHELL MYCRO	£397	(with RB300 arm, £539) Falling between the Syncro and the Gyrodec, the Mycro has superb mid-band clarity and poise.	Apr 92
PINK TRIANGLE	£449	Neutral sounding turntable with excellent soundstaging and decent bass. Best with a Linn, Rega or Roksan arm.	
LITTLE PINK THING		Improved GT1 version also available.	May 91
ROKSAN RADIUS	£550	(with arm) Isn't tripped up by unsettling music, the Radius acts a good mid-price turntable.	Nov 91
THORENS TD-3001BC	£650	Arm-less Thorens, good match for Rega RB-300 or Naim ARO. Easy to use turntable that gets very close to the Linn LP12.	Apr 91
PINK TRIANGLE EXPORT	£676	Terrific soundstaging properties, good bass and a neutral performance that considerably improves upon the LPT.	Jun 91
VOYD VALDI	£699	Similar to the Pink Triangle, the two-motor Valdi is an expressive performer, best suited to Audio Innovations equipment.	Jul 91
ROKSAN XERXES	£785	Highly analytical and exciting turntable. Can be almost CD-like in its presentation.	May 92
PT ANNIVERSARY	£1200	Very neutral turntable, but with a lot of magic. Excellent imagery and detail. A natural partner to the SME V.	Sep 91/May 92

TONEARMS

MQRCH DP-6	£665	'Unipivot plus' tonearm. Plays music with a silken and rich quality. Perfect match for the Da Capo cartridge.	Jul 92
SME SERIES IV	£828	Scaled down version of the legendary SME Series V. A precision measuring instrument only bettered by the V.	Mar 92
SME SERIES V	£1232	A masterpiece of precision engineering, with a confident sound.	Sep 91/May 92

CARTRIDGES

GOLDRING 1012	£45	Excellent value. Well balanced performer, rich and full without warmth. Very spacious and clear.	Apr 91
ORTOFON MCI5	£100	Moving coil cartridge at moving magnet price. Has a tight grip on rhythm.	Jun 92
ROKSAN CORUS BLACK	£110	Moving magnet cartridge, based on Goldring design. Exciting and detailed, with great speed.	Sep 91/May 92
SHURE VST-V	£150	One of the finest moving magnets currently available. Excellent tracker.	Jul 92
GOLDRING ELITE	£200	British made moving coil. Good value, smooth and detailed, but can sound a trifle brittle at times.	Apr 92
GOLDRING EXCEL	£499	British made high-end m-c. Refined and lyrical presentation, slightly dull at times.	Oct 91
LYRA LYDIAN	£500	Scan-Tech designed moving coil cartridge. Magical sound, even better nude!	Aug 92
MQRCH DA CAPO	£500	Scan-Tech designed moving coil cartridge. Musical and accurate, without any flaw.	Feb 92/May 92
AUDIONOTE IO	£1295	Very low output cartridge, with high silver content. Needs step-up transformer. Very musical, can show up how poor most cartridges are.	Nov 91

CASSETTE RECORDERS

TECHNICS RS-BX404	£130	Terrific value and good sound for the money.	Sep 91
TECHNICS RS-BX606	£170	Three head deck. Superb value, capable of seeing off much more expensive machines.	Nov 91
SONY TC-K570	£200	Three head deck. Difficult to tune tapes, but prerecorded tapes reproduce with clarity; excels with premium tapes.	Feb 92
SONY TC-K677ES	£240	One of the first low-cost three head decks. Can be grainy and slightly bright, but makes for stable recordings and playback.	Sep 91
JVC TD-V541	£280	Three head deck. Good for both recording and playback, especially of prerecorded tapes. Easy to use.	Dec 91
DENON DRS-810	£300	Drawer loading cassette - just like CD. Sweet sounding, but a bit expensive.	Jan 92
NAKAMICHI			
CASSETTE DECK 2	£350	Makes fine recordings with metal tape. Excellent with pre recorded tapes. One of the finest two head machines about.	Mar 91
CASSETTE DECK 1.5	£500	Scaled down version of the Cassette Deck 1, without rivals at the price.	Jan 92
CASSETTE DECK 1	£600	In the light of the 1.5, this fails to be such good value, but still a sound three head deck.	Apr 91
PIONEER D-500	£600	Very smooth sounding DAT deck, but still slightly coarser than the original source.	Apr 92
TEAC V8000S	£699	Dolby 'S' deck. Easy to use. Very stable sound, with instrumental textures close to perfect.	Jun 92
ARCAM DELTA 100	£850	Dolby 'S' deck. Excellent sound quality, close to the original source. The best Dolby 'S' deck around.	Apr 92
NAKAMICHI CR-7	£1500	No 'S', but auto tape tuning that copes with anything. Probably the best analogue recorded sound available.	Aug 92

TUNERS

DENON TU-260L	£110	Excellent budget AM/FM tuner. Easy to operate, good all-rounder with a fine sound.	Mar 92
NAD 4225	£160	Warm sounding, but detailed budget AM/FM tuner. AM poor, looks dated.	Jun 92
AURA TU-50	£230	Superb FM-only tuner. Produces a delightful, three-dimensional sound. A cracker	May 92
YAMAHA TX-950	£260	Fine all-rounder, with a good AM section.	Jul 92
KENWOOD KT-7020	£270	Silky smooth sound, but very insensitive and needs a good aerial.	Feb 92
MUSICAL FIDELITY T1 Mk II	£270	Sweet, delightful FM performance. Distinctive sound, lags behind on insight and can be too warm.	Oct 92
ARCAM DELTA 80	£340	AM/FM analogue tuner. Realistic sound quality, but slightly insensitive.	Jan 92
NAIM NAT-02	£853	Little box, big money, dead good. Try and find better unless it's a . . .	May 91
NAIM NAT-01	£1377	The best tuner currently available. All else is mere artifice. If you want better radio reception, go and live in the BBC's studio.	Mar 92

INTEGRATED AMPLIFIERS

NAD 3020i	£150	Budget classic, although its crown has slipped a bit of late. Typical warm NAD sound.	Aug 91
HARMAN-KARDON HK6150	£159	Good sounding starter amplifier. Great dynamic range. Excellent bass.	Jun 92
DENON PMA-350	£170	Packs a lot of punch for the money. Phono stage lags behind the line inputs.	Mar 91
PIONEER A300	£180	Slimmed down A-400. Poor phono stage, bit brash, but exciting and glossy.	Apr 91
SUGDEN A25B	£203	Surprisingly warm and well rounded for the price. Worth seeking out.	Dec 91
ARCAM ALPHA 3	£200	Lean and lively, with an astonishing amount of detail. Excellent line stages.	Oct 91

MISSION CYRUS ONE	£200	An excellent all-round performer. Equally good on disc or line stages.	Mar 91
CREEK CAS 4140 S2	£230	Bit soft and rounded, but with a pleasant character. Easy on the ear.	Nov 91
PIONEER A-400	£240	The amplifier that shook up the UK hi-fi industry. Very hi-fi sounding, but can sound good with high-end equipment.	Nov 91
AURA EVOLUTION VA-100	£270	Full of refinement, although not the best measuring amplifier around.	Jul 92
ION OBELISK 100	£299	Plenty of detail and ambience. Good imagery but not the warmest sound.	May 92
MISSION CYRUS 2	£380	Best with PSX power supply (£300). More powerful, dynamic and well balanced than almost any of its price rivals.	May 92
AUDIOLAB 8000A	£430	Very neutral and superbly built. Good bass, great imagery, but can be sterile.	Apr 92
SUGDEN A48B	£460	Gentle performer, but never masks the music with warmth. Tonally very even.	Apr 92
AMC CVT-3030	£500	Valve hybrid amplifier. Has valve and transistor virtues in a reasonably priced package.	Aug 92
AUDIO INNOVS. SERIES 500	£990	Sweet sounding valve design. Good looking, but a little system dependent.	May 91
AUDIONOTE OTO	£1250	12w valve amplifier. More in tune with music than hi-fi. Superb dynamic range.	Jun 92
TUBE TECHNOLOGY UNISYS	£1299	Superbly built chrome valve amplifier. Pacey and musical.	Aug 92
COPLAND CTA-401	£1495	Solidly built Swedish valve amplifier. Very refined and unfatiguing sound.	Feb 92

PREAMPLIFIERS

NAD 1000	£180	Wonderful value. Relaxed, smooth and easy on the ear. Best with 2100 power amps.	Jun 91
QUAD 34	£336	Civilised, smooth and unintrusive. Not especially transparent, but relaxing and built to last. Clever tone controls.	Jun 91
AUDIO INNOVS. SERIES 200	£349	Valve preamplifier. Good value, rather colored but very dynamic. Best with Innovations equipment.	May 92
AUDIOLAB 8000C	£375	Superbly made solid state pre, without flaw. Clean sounding, if a touch sterile. Excellent all-rounder.	Jun 91
CROFT SUPER MICRO A	£649	Valve preamp. Great mid-band, Good soundstaging properties, a bit warm & euphonic.	Oct 91
MICHELL ARGO+ISO	£687/£393	(+£155 for optional Hera PSU) Pure detail, incisiveness and the beauty of the highest of high end, at a median price, especially with the Hera power supplies. Line-level only, hence an Iso required for vinyl replay.	Oct 91/Jul 92
CONCORDANT EXCelsIOR	£900	Valve preamplifier with MM phono + 2 line stages. Magical and realistic sound quality, deep soundstage. Superb for recordings.	Dec 91
JOHN SHEARNE PHASE ONE	£1099	Attractive preamplifier with matching power amplifier. Valve-like lucidity and sweetness. Suits neutral equipment.	Aug 91
ALCHEMIST FREYA	£1150	Line level preamplifier, with distinctive styling. Detailed and commanding sounding, may sound too bright in some systems.	Oct 91
LINN KAIRN	£1295	Remote control preamplifier. Flexible, but can sound too forward. Best suited to Linn equipment.	Aug 91
FINESTRA	£1399	Very transparent op-amp based pre, which features absolute phase integrity in design to produce superb imagery.	Feb 92
E.A.R. G88	£5246	Exceptionally solidly built valve pre, with a 'bolted down' sound to match. Can sound awesome.	Nov 91

POWER AMPLIFIERS

NAD 2100	£290	Matches 1000 pre above. Powerful (150 watts), yet relaxing sound with big bass. Easy to bridge by adding another 2100. Very good value.	Jun 91
QUAD 306	£395	50 watt stereo solid state amplifier, well suited to the ESL-63 loudspeakers. Beautifully built, smooth sound, but can lack bass and transparency.	Jun 91
CONCORDANT EXULTANT	£500	Modified Quad II mono amplifiers. Colder sounding than the original. Good value. Good match with Excelsior preamp.	Jun 92
AUDIOLAB 8000P	£545	Powerful solid state stereo power amplifier. Clean, natural sound with a slick styling to match. Very well made.	Jan 92
CROFT SERIES 5	£548	Stereo 25 watt valve amplifier. Can be bridged. Rich, warm sounding. Good with ProAc loudspeakers.	Oct 91
QUAD 606	£570	100 watt stereo solid state amp. Very smooth and civilised. Similar to 306, but with more power and deeper bass.	Jun 91
LECTERN	£699	50watt solid state power amplifier, designed to match the Finestra. Superbly transparent.	Feb 92
MF PI80/CRPS	£799/£499	Stonky power amplifiers. Powerful and refined, especially with CRPS supply.	May 91/Jul 91
JOHN SHEARNE PHASE ONE	£1199	Matching power amplifier to Phase One preamp above. Attractive finish, sweet sound.	Aug 91
AUDIOLAB 8000M	£1190	150 watt solid state monoblocks. Typical Audiolab look, build and sound; crisp and clear but can also be clinical.	Sep 91
ART AUDIO TEMPO	£1398	20 watt triode monoblocks. Attractive looking, vibrant sounding, ambient and subtle.	Dec 91
ALCHEMIST GENESIS	£1400	100 watt valve monoblocks. Powerful sound. Very cable dependent but with plenty of dynamic range.	Oct 91
AUDIO INNOVS. SERIES 1000	£1499	50 watt valve monoblocks. Great looks, powerful sound. Shows just how loud fifty watts are!	May 92
ART AUDIO MAESTRO	£1927	Pentode/Triode switchable valve monoblocks. Beautiful looking, sweet and involving.	Jun 91
E.A.R. 549	£4372	Massive 200watt valve monoblocks, designed for studio use. Awesome sound can be too intense for some, but can produce uncanny solidity of images.	Nov 91
MUSICAL FIDELITY SA-470	£6000	Massive powerhouse that appears to have no limits whatsoever (unlike those who try to lift it).	Jun 91

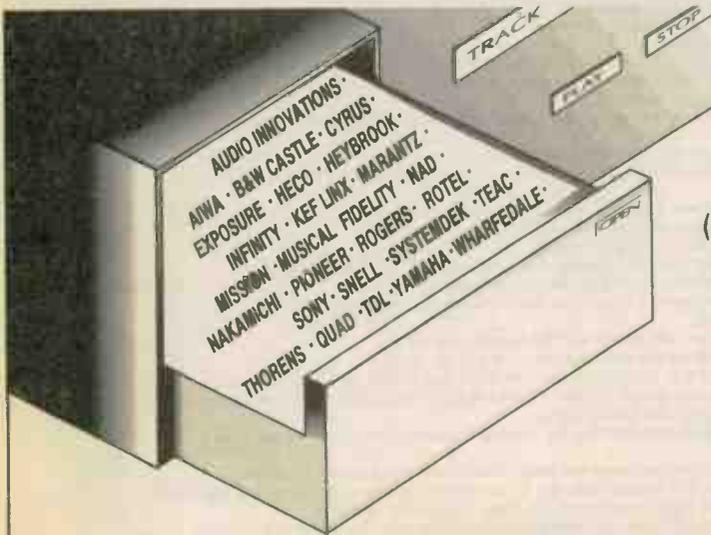
LOUDSPEAKERS

GOODMANS MAXIM 3	£110	Excellent budget small box. Forward sound, without undue box coloration.	May 92
MISSION 761i	£169	Not a perfect loudspeaker, but is full of bass and a lot of fun and entertainment for the money.	Feb 92
MISSION 780	£180	Not without flaws, but the accent is on the music. Good small design.	Sep 91
B&W DM610	£200	Very competent and musical. Loads of life and energy.	Sep 91
ROGERS LS2a2	£209	So far the most correct loudspeaker we have discovered at the price. Sweet and even-natured. A bargain.	May 92
HEYBROOK HB1 Mk III	£249	Powerful, efficient loudspeakers. Loads of welly, loads of bass, but smewhat unrefined.	Apr 91
TANNOY 609	£250	Cheapest Dual Concentric loudspeaker in the range. Fast and fun, but occasionally a bit unobtrusive.	Jan 92
NAD 8100	£300	Fine floorstanding loudspeaker that goes deep and loud. Terrific sense of fun.	Aug 91
EPOS ES11	£330	Two way reflex loudspeaker with a civilised but giant-killing sound quality. Excellent imagery.	Apr 91/Jan 92
TRIANGLE COMETE	£375	Highly efficient small box loudspeaker with a superb mid-band. Great for valve amplification.	Apr 92
WILMSLOW FOCCLUS	£400	Kit loudspeaker, based around DynAudio drivers. Very transparent and detailed for the price.	Feb 92
KEF 101/2	£495	The baby of the KEF Reference range. Very system dependent.	May 91
CELESTION 100	£499	Two way box, with metal dome tweeter. Need powerful amplifier and careful positioning, but has insight and good tonal accuracy.	Dec 91
NEAT PETITE	£525	Baby two-way. Tight, fast, great stereo and good dynamics. Few little boxes come close.	Aug 91
PENTACHORD	£534	(£1059 with subwoofer) Finished in real wood, these Bandor-based units are superbly transparent. With the sub-woofer, they go deep too.	May 91
PROAC STUDIO 1 MK II	£612	Two-way reflex loudspeaker. Easy to listen to and well-balanced, although somewhat colored.	Aug 91/Jan 92
KEF Q90	£649	Uni-Q design with ABR. Efficient, dynamic and capable of going very loud indeed.	Jan 92
REL STADIUM SUBWOOFER	£695	Mono, self-powered subwoofer that works! Very flat frequency response.	Jan 92
B&W MATRIX 805	£795	High quality small monitor loudspeaker. Detailed and fast and capable of playing very loud. Used at Abbey Road.	Jan 90
AUDIOPLAN KONTRAPUNKT	£799	Small box loudspeaker. Very smooth and sophisticated sound, great with a valve amplifier.	Apr 92/May 92
AUDIO NOTE AN-J	£799	(£999 for silver wired version) High efficiency loudspeakers using paper cones. Good soundstaging with a very convincing, natural sound. Derivative of Snell design.	Jun 91
HEYBROOK SEXTET	£899	Revealing, lucid floorstandings. Not smooth, but tight and fast-paced. Need careful partnering.	Oct 91/Feb 92
PROAC RESPONSE ONE 'S'	£918	Excellent small box design. Can convey the spirit, drive and passion in music in a small room.	Jul 92
KEF 103/4	£995	Capable of showing up every detail and defect in hi-fi or rording, the 103/4s image well and go very loud indeed.	Oct 91
MAGNEPLANAR MG1.4	£1190	Electro-magnetic planar design. Needs long room. Can create an open, relaxed and easy musical performance. Lacks detail.	May 91
APOGEE CENTAUR MINOR	£1200	Hybrid ribbon design. Great imaging and detail, good value for panel fans.	Jul 92
ATC SCM-20	£1388	True monitor loudspeaker. Requires powerful, high quality amplifier but virtually indestructable and full of high speed insight. Could be too intense for some listeners.	Jan 91
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CELESTION DLP 600	£349	Digital signal processor for the Celestion 600 series loudspeakers, sounds like a £400 upgrade.	Jun 92
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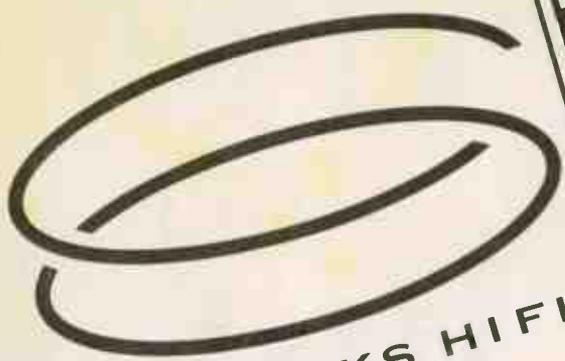
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TANNOY TOO BRIGHT

I recently purchased a pair of Tannoy 605 loudspeakers. In the beginning of the 'burn-in' period everything seemed OK. They were being used on audio stands of an unknown brand. The sound from them did seem to be a little thin and bright, but nice. It was now time to get a new pair of stands to fit the hexagonal shape; I had been looking at the ones that Tannoy manufacture - the 655 stand. I noticed that the tops and bases were made from Medium Density Fibreboard and the centre pillar of aluminium, priced around £80. I decided to make a pair myself with some help from the local DIY shop. I came up with a pair of stands of the same quality for around £45.

It was now time to cable up the Tannoy 605s to my JVC RS33L 'Super A' receiver. I was using QED 42 strand cable, non bi-wired at that time.

Bolting the speakers to the stands made the mid-frequency sound poorly integrated with distortion in the higher frequencies. After some experimentation I found that the 3.3 MFD polypropylene capacitors mounted on the crossover were the cause. Tannoy also recognised this problem and sent me a new pair of capacitors which I fitted.

The speakers now sound more integrated and without the distortion when they were bolted to the stands though the Tannoy 605s still sounded bright. To reduce this and improve the integration I've now bi-wired using QED 79 strand for the bass driver and QED 42 strand for the treble drive unit fitted with 4mm banana plugs. I even had to experiment with the way they were connected to the banana plugs. The strands of wire were untwisted, but are kept straight going into the banana plugs and around the terminals on the amplifier. Why should the Tannoy 605 be so sensitive? Is it because of the frequency in the 30kHz (sic) region or is it its resonance?

I would appreciate your comments or any suggestions.

**Paul Rowe,
Camborne,
Cornwall.**

Building your own loudspeaker stands may have saved you £35 in outlay but when you consider the time it took it probably works out that they cost you considerably more than the £85 that Tannoy ask. Additionally, building a pair of stands is not



BUDGET QUERIES

as easy as bolting two pieces of MDF either side of an aluminium tube. If you talk to any competent stand designer they will inform you that they are designed to resonate at a particular point. They are a carefully balanced piece of engineering and difficult for the average person to copy with any success. Assuming that your stand does not have any serious resonance problems you will find filling the aluminium uprights with dry sand and lead shot is beneficial, as Ken Weller of Tannoy suggests below. The best way is to pour small amounts of lead shot in first followed by the dry sand to fill in the gaps.

The attention to detail that you have shown with your loudspeakers is highly commendable but unfortunately a lot of it is lost due to your JVC receiver. This model was one of the bottom of JVC's 1980-83 range and as such is long overdue for replacement.

You do not mention any front end other than the tuner part of your receiver so I will have to assume that this is your primary source. If this is the case then you will be in need of both a new tuner and amplifier. An excellent tuner at a very

Write in with your budget-level problems or queries to Hi-Fi World, 64 Castellain Road, Maida Vale, London W9 1EX.

reasonable price is Aura's TU-50 which at £230 is an absolute steal. This is an FM only tuner; if you require AM the Denon TU260L is an ideal alternative.

The Tannoy 605s are a very high performance loudspeaker and thus deserve a quality amplifier. The Audiolab 8000A, Harman Kardon 6550 and the Mission Cyrus 2 would all provide suitable driving partners. The 8000A will give a neutrally balanced sound, the Cyrus 2 a very detailed presentation and the 6550 the most controlled and tight result.

Bi-wiring your loudspeakers, as you will have noted, brings about a worthwhile improvement in sound quality; however I would suggest that you use the same type of cable for both the bass and treble units. Each

has its own character and the mixture in the bass and treble makes the speakers sound disjointed. The cables I would recommend would either be Furukawa's very smooth and detailed FS-2T07 at £3.50 per metre or Mission's solid core at £2.50 per metre. **DB**

In response to your enquiry about the sensitivity of the Tannoys to their surroundings we spoke to Ken Weller of Tannoy Ltd. who has written the following reply.

The sound from the 605 has the virtues of both transparency and a lack of colouration. Because of this it is always going to allow you to hear any upgrades that you might make to your system. Conversely of course, it is also going to show up any problems in the signal that is being fed to it.

The greatest problem in the system is likely to be the JVC receiver, which I understand is five years old or more, and my experience of such products from that time is one that tells me it may well be responsible for the thin and bright aspects of the system's sound quality.

However, by experimenting



Tannoy's 605 loudspeakers are capable of excellent results, but care must be taken when selecting stands, cables and accompanying equipment.

with the stands and cables you may well be able to modify the sound for the better.

Obviously I am unfamiliar with your stands so I don't know what effect they may be having on the sound quality of the system. Either way they should have downward-facing spikes and be filled with dry sand or preferably lead shot.

Before you bolt the speakers to the stands place four small 'peas' of Blu-Tak on the small feet 'bumps' on the underside of the loudspeakers and just do the bolts up enough to



hold the speakers in place, but no more.

Better speaker cables would clearly help, but in particular a thin solid-core cable for the treble units would provide an overall smoother sound for the system.

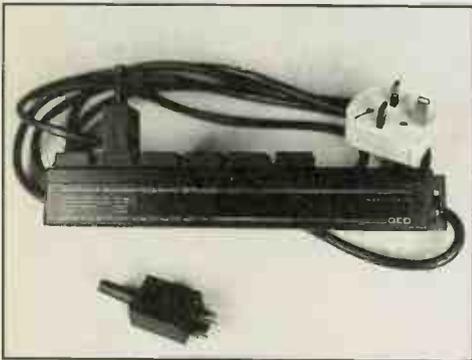
I understand that we provided replacement capacitors at Mr Rowe's request, but feel this unlikely to be the cause of the problem as sample variations with the types specified are extremely small.

It's easy to blame the speakers for any problems with the overall sound quality of a system - there they are, sitting in front of you, making horrible noises. But it's worth remembering that when a problem occurs in a hi-fi system the effect is always heard through the loudspeakers, even though they may not be (and probably aren't) the source of the problem, although high-quality, wide-bandwidth may emphasise any such problems.

**Ken Weller,
Tannoy Ltd.**

MORE THAN FOUR WAYS

I would be grateful if you could advise me on where I could get



QED'S DU6S is designed specially for hi-fi and protects equipment from mains-borne interference.

a six-way mains distribution socket for my Hi-Fi in black. I have seen one made by Bandndge but it is only 4 way.

**Peter Meer,
Bradford,
Yorks.**

The problem is mains adaptors. There must be thousands of

people who have the same question. What does one do where it's impossible to wire each component to the mains and has to use adaptors? What type of 4-way 13 amp or, as I have been recommended to use, a QED 6-way?

**Donald W. Neill,
Greenock,
Strathclyde,
Scotland.**

To answer both queries, QED Audio Products make a 4-way DU4S and a 6-way DU6S distribution unit in black. These QED distribution units also have the additional benefit of having built-in protection against symmetrical and asymmetrical mains-borne interference. For this reason they are ideally suited to Hi-Fi equipment. QED audio accessories are available through nearly all Hi-Fi retailers, but in case of difficulty, their address is: QED Audio Products, Ridgeway House, Ridgeway Close, Lightwater, Surrey GU18 5XU. **DB**

DUAL PURPOSE

I have a Dual CS 6170 turntable fitted with the Dual TKS 55E (Ortofon) cartridge. Unfortunately, the cartridge has developed a fault and needs replacing. Can you please let me know the present Dual importer so that I can enquire about a replacement.

Or, could you suggest alternative cartridges suitable for use with this arm - to include MC if possible - to be as high a quality as possible within the limits of the arm.

**P. Hill,
Leicester.**

The present importer for Dual equipment is Ram Projects Ltd. whom I contacted about the TKS 55E cartridge.

This model is apparently no longer in production so a replacement is not possible. However if it is only the stylus that is damaged the Diamond Stylus Co. do manufacture a suitable replacement, the DSC 433 which retails for £25. Diamond Stylus Co. replace-

ments are stocked in Lewis' of Leicester or the local Sony Centre.

If a replacement cartridge is needed then either the Ortofon OM10 or the Arcam E77 would make ideal replacements. These are both moving magnet cartridges which have a high compliance. Most moving coils are, by comparison, low compliance and in addition there is no decoupling of the body from the tonearm. Much of the vibrational energy created by the playing of a record is therefore transferred through the cartridge body and into the arm. Thus the tonearm for a moving coil cartridge should be as rigid as possible. In practice something like the Rega RB 300 tonearm on the Rega Planar 3 deck is the absolute minimum requirement for the correct application of M.C. technology. **DB**

NOT MOTORING

Please could you help me by providing a small amount of vital information. I own a Thorens TD 166 MKII record deck which has given me years of good service. Unfortunately the motor has ceased to work, therefore could you provide an address or telephone number of a Thorens distributor so that I can get my beloved machine working again with the much needed part?

**R. Kassal,
Hastings,
E. Sussex.**

Portfolio Marketing, who carry stocks of all Thorens spare parts, are the people that you need to contact. The address is: Portfolio Marketing, 67 New Road, Little Kingshill, Great Missenden, Berks. HP16 0EU.

A new motor for your TD 166 will cost approximately £50, depending upon the exchange rate with Germany. You might also be interested to know that Portfolio Marketing can also supply a series of upgrade steps for your TD166. These range

from a felt mat at £12 to a new armboard at £20 which enables a Rega tonearm to be fitted. The Rega RB250 is £99 and would extend the performance of your turntable enough to last the best part of the next decade. **DB**

GONE UNSTABLE

I have a Technics RS-BX404 cassette deck which I have been very pleased with until just recently. However, I have



The Ortofon OM10 has long been a favourite amongst Dual turntable owners.

noticed that on some tapes there is a pitch instability at the very start of each side, but if the tape is wound on for about a minute or so, the sound is fine.

The tapes which give problems are Maxell XLII C90, MX C60, TDK MA C60 and BASF CEII C100. I have cleaned the capstan and pinch roller very thoroughly but the problem still exists.

**Ian Bishop,
Cardiff.**

This is the second letter we have received about pitch instability problems at the beginning of tapes played on Technics cassette decks.

Last month we explained what we thought the problem was and upon phoning Alan Ainslie at Technics' Technical Department our suspicions were confirmed. The problem you are experiencing is due to the lack of synchronisation between the pinch wheel and hub drive. This fault was present on a very small number of 404 and 606 cassette decks; most have already been rectified by the replacement of a diode on the control circuit which is similar on both decks.

Technics advise anyone who suspects that they have one of the few decks that experience this problem to return it to the dealer they purchased it from. The repair will be quickly carried out at no charge. **DB ●**

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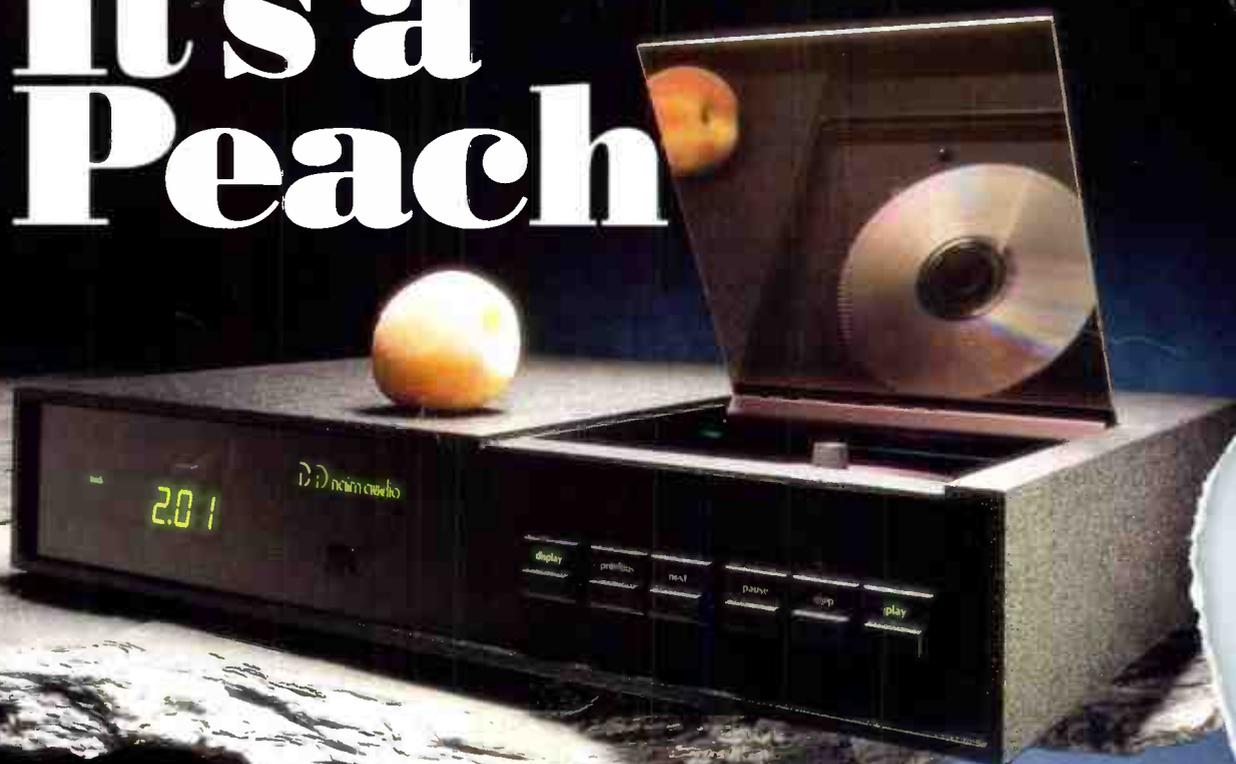
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