

Hi-Fi WORLD

SEPTEMBER 1992 £2.00

**SIX BOOKSHELF
LOUDSPEAKERS**
a group review

**YAMAHA CDX-860
CD PLAYER**

DIGITAL CASSETTE
Philips DCC900 recorder
fully reviewed

**KEF K140
LOUDSPEAKER**

COMPETITION

win a
Nakamichi CR-7E
cassette deck

KRAKEN
a new
amplifier
from
Alchemist



PHILIPS THE 1963 COMPACT CASSETTE. 19



DIGITAL COMPACT CASSETTE IS HERE.

DIGITAL
dcc
COMPACT CASSETTE

Philips DCC is a giant leap forward for earkind. At last you can have the digital sound of CD combined with the convenience of cassette.

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Deans, W2 071-723 4630
Desgate/Galaxy, E1 071-247 0567
Francis, Streatham 081-769 0466
Harp Electronics, W1 071-636 4611
Hi-Spek, N3 081-349 1166
Hi-Way Hi-Fi, W2 071-262 9267
Hyper-Fi, Barking 081-591 6961
Studio 99, NW6 071-624 8855
Tempo, Kingston 081-547 0404
Woolfmans, Ilford 081-553 2587

South East

Adams & Jarrett, St. Leonards on Sea 0424 437165
Brittain & Hobbs, Sheerness 0795 665 551
Chew & Osborn, Epping 0992 574242
Jenners, Tenterton 0580 63230
Massey, Feltham 081-894 1138
Sevenoaks Hi-Fi, Sevenoaks 0732 459556
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Standens, Tonbridge 0732 353540
VJ Hi-Fi, Folkestone 0303 56860

East Anglia

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Levett & Ward, Colchester 0206 210 844
McCullough, Cambridge 0223 426766
Rose & Wright, Bury St. Edmunds 0284 768 586
R.C. Snelling Ltd, Norwich 0603 712 292
Wheeler, Kings Lynn 0553 774 037

South

8&8 Hi-Fi, High Wycombe 0494 535910
Bryants Hi-Fi, Aldershot 0252 20728
Burden Electronics, Swindon 0793 490613
Churcher Audio Video, Worthing 0903 230558
Cosmic, Weybridge 0932 854 522
Hemmings, Farnborough 0252 520 472
Hickmans, Swindon 0793 537 971
C.F. Lake, Slough 0753 538287
Mid-Sussex Electronics, Burgess Hill 0444 242 336
Power People, Bicester 0869 320280
P. Shee Television, Farnborough 0483 503606
Sinclair Youngs, Basingstoke 0252 28623
Suttons, Salisbury 0722 327171
Tru-Fi, Redhill 0737 766 128

Wales and West

M.A. Buzzard, Banbury 0295 250 036

Horns of Oxford, Oxford 0865 511 241
Hutchinsons TV, Cheltenham 0242 573 012
F.H. Moss, Bath 0225 465 085
Radford Hi-Fi, Bristol 0272 240 878
Radiocraft Somers, Cardiff 0222 231 166
Paul Roberts Hi-Fi, Weston-Super-Mare 0934 621 204
T.E. Roberts, Wrexham 0978 364 404

South West

Central Radio Services, Burnham on Sea 0278 782 112
Chelston Hi-Fi, Chelston 0803 606 863
Dorchester Hi-Fi, Dorchester 0305 264 977
ETS, Helston 0326 573 801
Ford & Sons Electrical, Sidmouth 0395 512 501
Hi-Fi Attic, Plymouth 0752 669511
James TV, Barnstaple 0271 43731
Manning Audio, Yeovil 0935 79361
Movement Audio, Poole 0202 730 865
Upton Electronics, Paignton 0803 551 329

Midlands

James Beattie, Wolverhampton 0902 22311
Geoff Hill, Stourbridge 0384 395 852
McCartneys TV & Video, Shrewsbury 0743 368972
Naam Hi-Fi Vision, Birmingham 021-633 4944
Queens Park Radio, Birmingham 021-427 4008

PHILIPS

INVENTORS. 83 COMPACT DISC. 1992 DCC.



FA 930 AMP



CD 950 CD PLAYER



FT 930 TUNER

encompassing all music tastes from light opera to heavy metal. And as there are over 50 manufacturers already committed to this new format, all your favourites will soon be available as well.

DCC is available as part of the superb new Philips 900 Series hi-fi, stylishly designed and offering true single remote control.

So if you want to experience this, the biggest development in audio entertainment, get down to your local Philips dealer from mid-September.

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ENL Audio Visual, Nottingham 0602 786 919
Forum Hi-Fi, Nottingham 0602 622 150
Mantor Electric, Derby 0332 48369
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F.L. Smith Electrical, Chesterfield 0246 823 167
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Stuart Westmoreland, Melton Mowbray 0664 63366

North West
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Beaver Radio, Liverpool 051-709 9898
Brooks Music Centre, Whitehaven 0946 692 116
Cleartone Hi-Fi & Video, Bolton 0204 31423
Martin Dawes, Warrington 0925 30521
Kenneth Gardner, Lancaster 0524 64328
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Goodrights, Preston 0772 57528
Gradwells Stores, Oldham 061-624 2237
Hamlets Radio/TV, Stockport 061-406 6155
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Peter Tyson, Carlisle 0228 25891
Waltons TV Manx, Isle of Man 0624 675 310
Paul Whitmore TV, Isle of Man 0624 677 007

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Amrik Electronics, Bradford 0274 722 530
D&T, Manchester 061-445 2694
J.G. Windows, Newcastle 091-232 1356
Jones, Leeds 0532 400666
G.F. Manders, Grimsby 0472 351391
Miller Brothers, Doncaster 0302 321 333
Scarborough Hi-Fi, Scarborough 0723 374 547
Thompson Bros., South Shields 091-456 2551
Yeoman & Russell, Altringham 061-941 3131

Scotland
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F.B. Craig, Hamilton 0698 882 029
Carl Dyson, Carlisle 031-554 0355
Hi-Fi Corner, Edinburgh 031-652 1885

Bill Hutchinson Hi-Fi, Glasgow 041-248 2857
Laser Audio, Kilmarnock 0563 40292
A. McKenzie, Stranraer 0776 2818
John McLachlan TV, Paisley 041-889 3026
Bruce Millers, Aberdeen 0224 592 211
Music Room, Glasgow 041-332 5012
Robert Ritchie Hi-Fi, Montrose 0674 73765
Robert Smith, Glasgow 041-248 5242

Northern Ireland
Audio Times, Belfast 0232 238 495
C.S. Supplies, Belfast 0232 241181
Lisnasure, Dromore 0762 881628
Nicholl Bros. Radio, Ballymena 0266 49616

Channel Islands
Fortuna, Jersey 0534 32549
Teleskil, Guernsey 0481 56508

and at selected branches of Dixons, Currys Superstores, House of Fraser, John Lewis Partnership and other leading department stores.

Some of the above dealers will stock DCC and Series 900 products in a number of stores. Please telephone the given number for a dealer near you. **Or call the DCC Information Line on 0800 212 643.**

The new Naim CDI

Getting things right the first time is a tradition at Naim Audio.

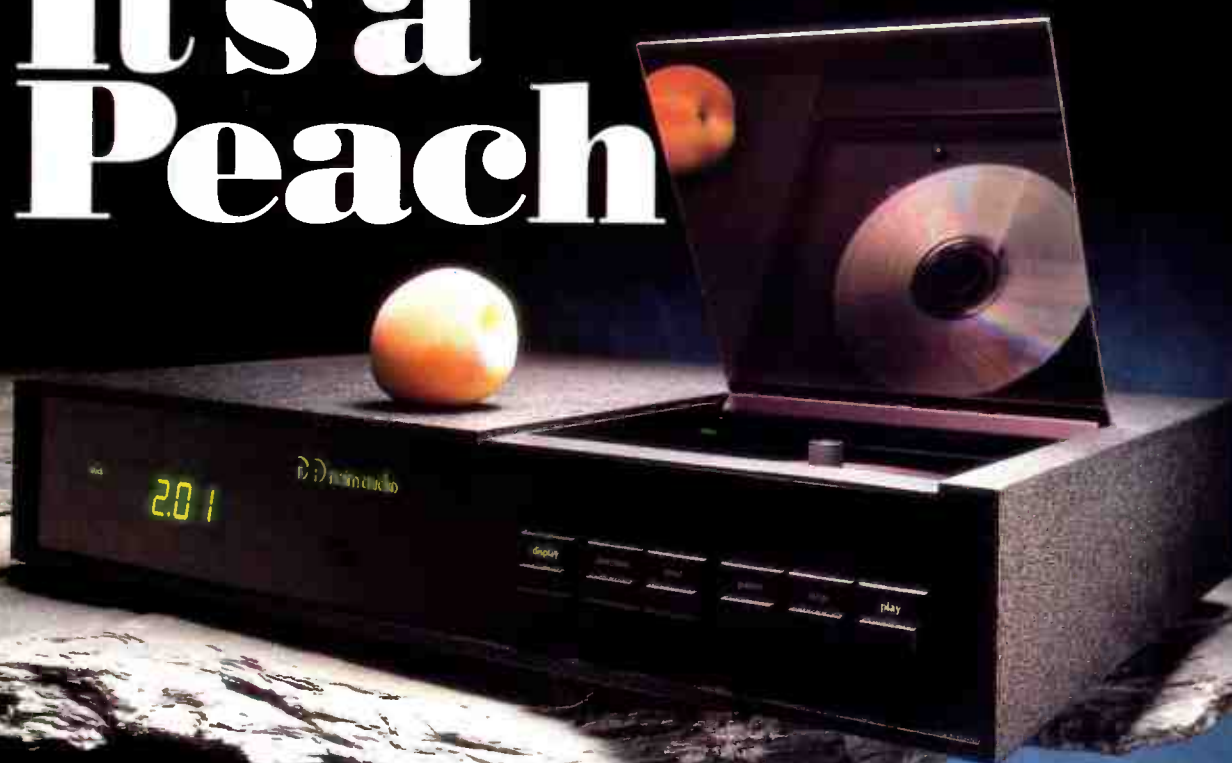
Which is why our first CD player, the CDS, has received such world-wide acclaim.

We are now delighted to introduce a second model, the Naim CDI (shown here).

The Naim CDI incorporates all of the technological innovation and expertise gained from the development of the CDS. Designed to be the best in its class and devoid of gimmicks, here is an affordable player capable of providing true musical enjoyment.

Our efforts are bearing fruit.

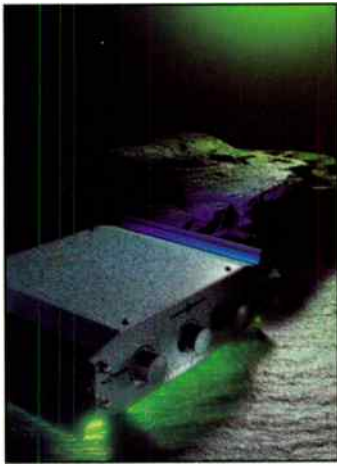
It's a Peach



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

Now you know what's in a Naim.

 naim audio



Cover Photograph by
Paul Hartley Studios 071-482 3768

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COHERENT

MPI Electronics have come up with a new "Coherent Source" loudspeaker, the Thiel Model CS3.6 at £3,495 per pair. Beneath a 3" thick sloping front baffle lies a complex cabinet design with 1" thick walls and extensive internal bracing.

A three-unit design, the tweeter is the same 1" metal dome used in Thiel's flagship loudspeaker. The other two drivers are a 4.5" mid-range built on a cast magnesium chassis using a unique double-surface, air-core diaphragm with a short-coil/long gap magnet system. This design is said to practically eliminate cone break-up and provide an exceptionally clear response. The woofer is a 10" driver with a rigid aluminium diaphragm with a unique magnet system using a specially shaped centre pole and heavy copper rings to provide a symmetrical and stable magnetic field. This operates in conjunction with a bass radiator. Floorstanding, the Thiel CS3.6 is 48.5" tall, 12.5" wide and 17" deep. Standard finishes are Amberwood and gloss black lacquer, with others available to special order.

Contact MPI Electronic UK Ltd., Wood Lane, Manchester M31 4BP. Tel: (061) 777 8533.



NEW AMPLIFIER FROM NEW NAME

Waytronics Power systems, designers and manufacturers of custom power supplies, are soon to enter the hi-fi industry with a low cost integrated amplifier. To be marketed under the 'WPS' name, it will feature five inputs, including two tape circuits, and 50watt bi-wirable outputs. Next year a high-end multiple-facility separates system will join the line-up.

Contact Waytronics Power Systems Ltd., Godinton Way Industrial Estate, Ashford, Kent TN23 1JB. Tel: (0233) 642227/642976.

FRAMEWORKS

Frameworks have added to their range of tubular-framed equipment stands with the H100 isolation platform and H175 stacker. The braced supports are finished in satin black as standard with either textured

black MDF or 10mm toughened grey glass shelves that are individually-adjustable. Each unit is spiked, and the uprights can be filled with damping material of the owner's choice. Prices range from £85 for the H100 with laminated MDF shelf to £275 for the three-shelf H700.

Contact Frameworks, Arrow Consultancy Ltd., Unit 56, Eurolink Business Centre, London SW2 IBZ. Tel: (071) 924 0633.



MORE DYNAUDIO KITS

Wilmslow Audio have introduced two new kits using Dynaudio drivers. First is the tall 1.5m high floorstanding four-way Finale, whose driver-less cabinets featured in our Chesterfield Show report recently. Its bass driver, complemented with a passive radiator, is the Dynaudio 30W-100, while the mid-range is covered by two units, a 15W-75 and the dome D-52AF for the upper-mid range. Higher frequencies are handled by Dynaudio's new Esotec D-260. The crossover uses high grade components, with top quality metallized polypropylene capacitors. As a kit, including all drivers, crossovers, terminals, damping, screws - and even glue - the Finale costs £1150. Unusually for Wilmslow, the cabinet, instead of being supplied as a flat-pack is supplied ready-built for an extra £250.

Second of Wilmslow's kit offerings is the Gemini, also with Dynaudio drivers, using an arrangement developed by American designer Joseph d'Appolito. Fundamentally, this places the tweeter centrally between two drivers, in this case a pair of Dynaudio 15W-75s which have a massive 75mm voice coil in a speaker with an overall diameter of 150mm. Tweeter is again the Esotec D-260. The Gemini's cabinet, a reflex-ported design and supplied in flat-pack form, consists of 25mm MDF with internal braces. The basic kit of drive units, crossovers, damping, glue, screws - everything required, in fact, including instructions - costs £570; including flatpack cabinet, price is £625.

Contact Wilmslow Audio Ltd., Wellington Close, Parkgate Trading Estate, Knutsford, Cheshire WA16 8DX. Tel: (0565) 650605.



PERFECT SOUND FROM GOLDRING

Goldring's 'Perfect Sound' range of accessories includes various spikes, cones and feet for hi-fi equipment of all types, and, for vinyl junkies, two substantial and heavy-looking weights for disc-stabilization finished in either black (£21.95) or gold-plate (£29.95). Cones and spikes, equally beautifully finished, for use under hi-fi separates, are height-adjustable and also available in black and gold. Packs of six cones are £24.95, eight for £32.95; spikes are £19.95 for six, or £17.95 for eight of the non-adjustable variety. Contact Goldring Products, Ltd., 8 Greyfriars Road, Bury St. Edmunds, Suffolk, IP32 7DX. Tel: (0284) 701101.

ARCAM CLOCK IN WITH BLACK BOX 5

Arcam's new 'clocked' Digital-to-Analogue converter, the Black Box 5, is now available, price £449.90. A new very stable, jitter-free master clock in the converter allows Arcam's Delta 170.3 transport (reviewed in July) to be 'slaved' from the converter. Sonic benefits are said to be improved focus and increased subtlety. Black Box 5 incorporates a hybrid 18-bit DAC incorporating multi-bit and bitstream technology based around the new Burr-Brown PCM67 chip. This combines, Arcam say, the dynamics and drive of multi-bit systems with the low level linearity of a 1-bit converter. The upper 10 bits are multi-bit, the lower eight single-bit. Black Box 5 will accept digital sources (with sampling rates for CD, DAT and DAB) through either a 75 ohm co-axial socket or Toslink optical, with absolute phase inversion in the digital domain. Outputs are via gold-plated phono sockets. Owners of a Black Box 3 can upgrade to a Black Box 5 by having the plug-in DAC board and rear panel exchanged by an Arcam dealer or the factory at a cost of £250. Black Box 3 itself, using Arcam's differential bitstream technology, will remain in production until at least 1993, but at a reduced price of £299.90 from 1st August 1992.

Contact Arcam, Pembroke Ave., Denny Industrial Centre, Waterbeach, Cambridge CB5 9PB. Tel: (0223) 861550.



MAPLIN VALVE KIT

Maplin Electronics are offering a valve power amplifier in kit form, delivering 95watts in Class A/B1. Best news of all is that the Velleman K4000 Stereo Tube Amplifier costs £499.95. Claims for its sound quality include "a smooth top end, open mid range and deceptively powerful bass" with a "tangible holographic sound stage." Full specifications are on p581 of the Maplin 1992 catalogue, which costs £2.75 from W.H. Smith, local Maplin branches or £2.95 through the post.

Contact Maplin Electronics plc, P.O. Box 3, Rayleigh, Essex SS6 8LR, Tel: (0702) 552911.

REAL MUSIC SPEAKERS

RMC have produced a compact transmission line loudspeaker, the RM30T, using highly respected Dynaudio drive units, which, the Real Music Company say, makes the design exceptionally dynamic and fast. Price will be around £1000. Contact Real Music Company, 37 Morell Avenue, Horsham, West Sussex RH12 4DD. Tel: (0403) 63710.

CREEKSPEAK

Creek's long-awaited "budget audiophile" loudspeaker, the £119.90 CLS10 has been launched. "It's a gutsy little performer," says Keith Rodgerson, Senior Product Engineer, who also designed the CD60 Compact Disc player. A compact reflex design, which can be used near rear walls, the CLS10 has a custom-designed bass driver with a precision vacuum-formed polypropylene lightweight cone. The tweeter is magnetic fluid damped and carries an exclusive varnish coating to damp unwanted out-of-band resonance, claimed to give cleaner transient attack without ringing or 'spitching'. Creek Audio Systems, Rosehall Industrial Estate, Coatbridge, Strathclyde ML5 4TE. Tel: (0236) 20199.

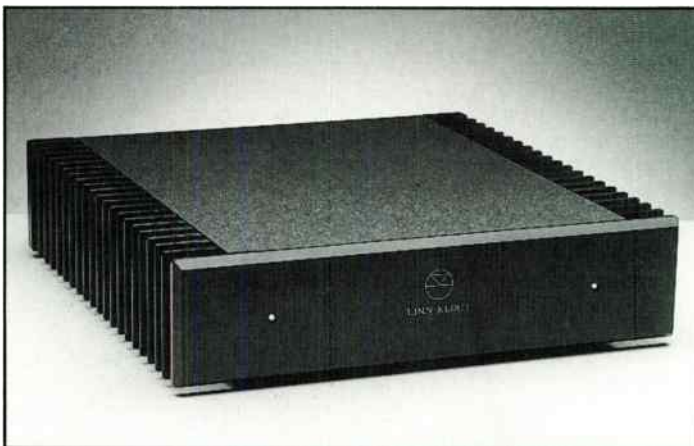


MAY'S OUT, SO'S THE KLOUT

Linn's new 80watt per channel Klout power amplifier is, the company reports, "designed to be the LP12 of power amplifiers". The design uses 'surface mount' components for both improved audio performance and heat dissipation. Protection circuitry protects the Klout against current overload, short-circuits and overheating. Outward looks match Linn's other recent products. Available from August, price will be £1694. First impressions from one of our spies suggests it's a strong addition to Linn's amplifier range. With Kans it produced a more open sound, adding an octave to the bass and keeping a very firm grip on the low end.

Our spies have also noted that Linn are replacing their successful moving coil cartridges, the Asaka and Troika, in the wake of the discontinued Karma. The replacement cartridges, respectively named Klyde and Arkive, will retail at roughly similar prices to the existing Linn cartridges. As yet, little has been disclosed about them, although a prototype Arkive has been spotted, without its removable body, a la Lyra. Reputable sources suggest that it is a considerable improvement over the Troika, although this is unsubstantiated at present.

The existing cartridge trade-in scheme is to be discontinued, however, when stocks of the Asaka and Troika are exhausted. At present, there are no plans to reintroduce the trade-in scheme with the new Klyde and Arkive. Linn Products Limited, Floors Road, Waterfoot, Eaglesham, Glasgow G76 0EP. Tel: (041) 644 5111.



SYMPHONY SUITE

Erricks of Bradford, recently taken over by Cleartone, have opened the 'Symphony Suite' on the first floor, "the finest hi-fi department in Yorkshire," they say. Tel: (0274) 727611

trade winds

trade winds

trade winds

Hi-Fi World brings you all the latest

news from the hi-fi industry

trade winds

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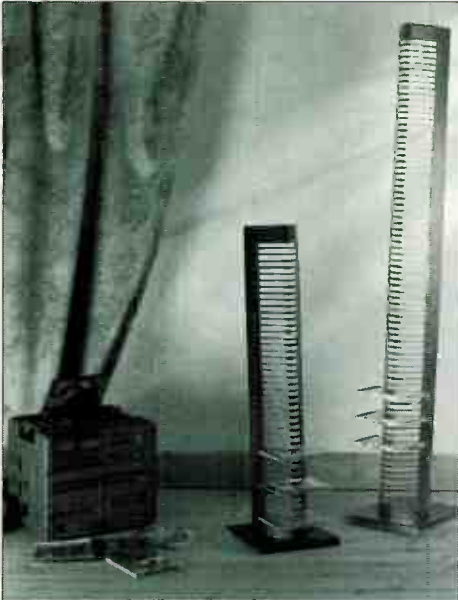
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LEANING TOWER

Compact Disc storage racks with a difference come from Bliss of Warwickshire. Made of epoxy powder-coated black steel with a self-assembly base, the 'Pisa' racks are available in two heights - 1270mm and 750mm - and hold either 80 or 40 CDs. Mail order prices (including VAT, postage and packing) are £67.50 for the higher and £47.50 for the shorter.

Available from Bliss (Flights of Fancy) Ltd., Unit 29/3 Kinwarton Farm Road, Arden Forest Estate, Alcester, Warwickshire B49 6EH. Tel: (0789) 400077.

MICRO-FI FROM GOODMAN'S

Goodmans' latest slimline midi system, the £250 Micro 1250, is a mere 150mm wide. Standing the same height as the loudspeakers supplied with it, the main unit is a 12.5 watt two piece divisible stack, including a three-band preset tuner, clock/timer facility as well as a single cassette deck with microphone input and mixing facility. As the player is barely the width of a cassette, a twin deck would be difficult to achieve.



Contact Goodmans Industries Limited, Units 2 & 3, Mitchell Way, Portsmouth, Hampshire PO3 5PR. Tel (0705) 673763.

IN BRIEF

PENTA SHOW '92

It's show-time again. Hi-Fi World will be taking a stand at the annual Penta Hi-Fi Show, sponsored by Hi-Fi News in September. Staff will be displaying their knowledge and pony tails (in the case of Alan), a natty line in suits (Eric) and Hi-Fi World's very own range of sweatshirts and T-shirts modelled by Noel. Trade days are 10th and 11th September from 10am to 6pm, public days 12th and 13th September at the same hours. A courtesy bus will run from Hatton Cross Underground station on the Piccadilly Line to and from the Heathrow Penta Hotel during the public hours. Admission will be £2.50

YORKSHIRE SHOW

Yorkshire's Sound With Style shops will be holding a show at the Moat House Hotel at Warmsworth, Doncaster on 1st November 1992. Details from either of the Sound With Style shops at Sheffield (0742) 737893 or Doncaster (0302) 321421.

ABUNDANT LEAKS

Station Sounds of Worthing have told us they have a selection of Leak Troughline tuners along with a range of other vintage items. The location may be unusual, but then so is the stock - classic Fishers and Dynacos, apart from the Leaks. Station Sounds, Down Platform, Worthing Central Station, Worthing, Sussex BN11 1UR. Tel: (0903) 239980.

UNISIS APOLOGY

In last month's issue, we inadvertently mis-spelt the name of Tube Technology's Unisis integrated. We apologise to both Tube Technology and to Unisis Computers for any misunderstanding caused.

THUS SPAKE . . .

Zarathustra Designs have relocated to 11 Westview, East Hedleythorpe, Co. Durham DL13 4PT. Tel: (0388) 730960.

TGI IN PROFIT

After making a loss last year, TGI, the parent company of Tannoy, Mordaunt-Short et. al. have announced a profit for the year ending 1992, 'despite difficult market conditions in the U.K. and North America.' TGI have expanded into Europe, acquiring a majority share of the Tannoy distributor in the Netherlands and appointing distributors for the company's ranges in Germany.

MERIDIAN OFFER

Meridian, now restructured after a management buy-out, offer customers a two-year guarantee on equipment purchased from a recognised Meridian dealer from 1st June 1992. Throughout July, August and September, customers buying a new piece of Meridian gear will be given a discount voucher worth 10% of the purchase price which can be used against the next buy. Vouchers will be valid until 31st December 1992. Contact Meridian Audio Ltd., 14 Clifton Road, Huntingdon, Cambridgeshire PE18 7EJ. Tel: (0480) 434334.

ROTEL REDUCTIONS

With sterling now stronger against the dollar, Rotel have taken the opportunity to reduce prices. A few examples include the RA940BX 40watt integrated amplifier, now down to £199.95, the 60watt RA960BX at £249.95, the RCD955AX multi-bit CD player now £229.95 and the Bitstream RCD965BX down to £279.95.

Gamepath Ltd., 25 Heathfield, Stacey Bushes, Milton Keynes MK12 6HR. Tel: (0908) 317707.

DELTEC DOWN, BUT NOT OUT

Deltec Precision Audio Ltd. ceased trading on 12th June, but were reborn on the 25th as DPA Digital Ltd. DPA will be manufacturing and supplying the same Deltec range, and will honour existing Deltec product guarantees.

DPA Digital Ltd., Unit 7, Willowbrook Technical Units, Crickhowell Road, St Mellons, Cardiff, CF3 5EF. Tel: (0222) 795621.

MATSUSHITA DCC

Matsushita, parent company of JVC and Technics, will be releasing a DCC player soon in Japan at a price of 135,000 Yen. A prototype was displayed at the Technics/Panasonic trade show a few months ago. Speculation is rife that it will be marketed in Europe not long after Philips distribute their DCC900 (see this issue.) in September. Price would convert to around £600.

ADCOM COME IN TO UK

Celestion have announced that they have won exclusive distribution in the UK of American Adcom electronics. Until now little-known in this country, but a big name in the States, Adcom make high quality amplifiers, tuners, Compact Disc players and multi-room systems.

Adcom's amplifier range starts with the competitive £299 GFP345 pre-amplifier and GFP53511 power amplifier at £350. Up at the top end is the awe-inspiring GFA565 monoblock which delivers 300 watts. Celestion International Ltd., Ipswich IP3 8JP. Tel: (0473) 723131.

WIN FURUKAWA FA-2010 BALANCED ANALOGUE INTERCONNECT CABLES

(1 metre pairs)

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



ELECTRIFYING LETTER

Here's a message from Eartha Kitt the patron saint of hi-fi, a real humdinger.

Safety - In the little old town of Electron, way out beyond anode land, lies the grave of a hi-fi mechanic who lies earthed at his positive end.

To give him his due he had brains but he was just a bit careless one day when connecting his set to the mains.

The moral of this little story is plain for all to see, if you don't want a short circuit to Glory, don't frolic about with H.T. (Anon)

ELECTRIFYING ESCAPE.

A reward is offered for information leading to the capture of Eddy Current, charged with the induction of an 18 year old coil called Milli-Henry, found half choked and robbed of valuable joules.

The unrectified criminal, armed with a carbon rod, escaped from Weston Primary Cell where he had been kept in ions.

The escape was planned in three phases. First he refused the Electrolytes, then he climbed through a grid despite the impedance of Wardens and finally went to earth in a magnetic field.



FREDDY AHMET

readers' reply

Send your letters to:

Hi-Fi World Letters

Page, 64 Castellain

Road, Maida Vale,

London W9 1EX.

He has been missing since Faraday. What seems most likely is that he stole an A.C. motor. This was of low capacity and he is expected to try and change it for a megacycle and return ohm by a short circuit.

He may offer resistance and is a potential killer.

(Anon)

**Francis B. Rowland,
Melton Mobray, Leics.**

Hmm! Is this the J. R. R. Tolkien of the hi-fi industry? Where did we say Furukawa-seeking letters had to be totally off the wall? O.K. You win the cable! **AS**

PLASTERED GARRARD

I would like to say how much I enjoyed Noel Keywood's article in the July edition; in particular his comments on the Garrard 301 or 401 turntables and also the article on Radlett Audio.

I have had a Garrard 401 since approximately 1968. For a '401' to realise its full potential the deck should be mounted in a substantial 'board' i.e. 1" thick steel plate, slate or marble.

My 401 turntable is mounted in a 3/8" thick steel plate. To the underneath of this has been poured a Plaster of Paris mix to a depth of about 4". The idea of this is to 'slug' any vibrations from the motor assembly. Credit for the the Plaster of Paris modifications belongs to Peter Soper of Slate Audio who gave me guidance on this matter, and who incidentally owns and uses a 401 turntable.

The whole plinth should then be mounted on squash balls to give compliance, preferably on a substantial wall shelf.

The deck itself requires routine maintenance as laid

down in the instruction manual. Modification can include a hard turntable mat and clamp.

The tonearm is an Alphason Zenon MCS with (at the moment) a Mayware cartridge. The rest of the system is as follows: Leak Stereo 20 power amp, Audio Innovations Series 200 preamp, Leak Delta FM tuner, Tannoy 12" HPD loudspeakers in Chatsworth enclosures.

**M. Bickley,
Birmingham.**

The Japanese have been buying 301s and 401s for years and mounting them in extraordinary plinths. It seems we never did pay the attention to these turntables that they possibly deserved. **NK**

MONOTONE

I feel obliged to reply to Nicen Hansome (Stereo Pictures)

The goal of hi-fi is a neutral tone with no artificial coloration. Please continue to have the same ideal for your pictures.

Monochrome Rules - O.K.
**Andrew Borland,
Wimborne, Dorset.**

We shall maintain our single-ended, directly-heated, horn-loaded mono photographs. **AS**

Continued on page 72...

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Stubbington Fareham,
Kent

Dear Sir,

I thought I would drop you a quick line to say thank you to the team for delivering my system last Friday night.

Despite the late hour, both Adam and Jas showed no (obvious!) signs of wanting to 'install and run'. In fact, just the opposite. Especially when it came to choosing a pair of Stax headphones at the last minute, they were both very patient and relaxed about the whole thing. Very important from our point of view I would say.

Anyhow, this afternoon, after pussyfooting around at 'sensible levels' of music, I decided to warm the AE1's up a bit. After putting the house sound insulation to the ultimate test I discovered that the neighbours couldn't hear a thing. Not to be beaten I invited some round for a demo. After a short while they left looking very sick indeed. More customers? I don't know, but I got the impression a few 'stack systems' could be heading for the tip this week-end.

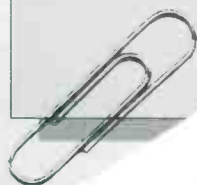
I may actually be forced into committing a crime to obtain the funds for an LP12/Nakamichi etc to complement my new equipment. So if you recognise me on a building society video recording on 'Police Five' don't say a thing. It'll be to your advantage in the end! Robbery or not, you can be assured when I'm in the position to buy the rest of the gear I'll be knocking on your door.

Until then. Thanks again for everything.

Regards

Bob Murdoch

Bob Murdoch



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“I have of late, but wherefore I know not, lost all my mirth.” Alright, starting a column with a quotation from Hamlet is somewhat pretentious, but if I'm honest, it describes my recent feelings toward hi-fi, up until this month.

Somewhere along the road, I'd grown jaded and tired of constantly chopping and changing my system for reviewing. It was interesting to see how these components and tweaks changed the sound of my system. But basically the system was no longer giving me musical pleasure. As a reviewer, this was very disturbing.

My thoughts raced. How could I inject life and musicality into my system? Was this some form of Linn throwback, or had the Pink vs. Voyd battle left me shell-shocked?

In order to overcome this confused state, it was necessary to more or less begin again in hi-fi. This 'system fatigue' meant that I was watching more television than listening to hi-fi (always a bad sign - 'Red Dwarf' I can accept, but you know there is a problem when you turn off Mahler to watch 'Wheel Of Fortune'). This made it easy to purge myself of hi-fi completely and start from scratch.

Favourite Track Craving

After about a week of deliberately not listening to music, I began to crave my favourite tracks once again. Before the craving got so bad that a Dansette would sound like high-end, I began to rebuild my system, listening to as many alternatives as possible, beginning at a comparatively low price level.

It started one Saturday with a simple system consisting of a Rega Planar 3 turntable, Linn K9 cartridge, Naim Nait 2 amplifier and Epos ES11 loudspeakers, which would cost around about £1100 all in. This system reeked of musical enjoyment and listenability. So much, in fact, that I was frankly embarrassed by my own system's performance. Mine had the edge in detail, control and had a far deeper bass performance, but in fundamental terms, it outperformed my own system at the time.

I felt that, although the little Nait huffed and puffed with the ES11s at high levels, the musical magic was there in abundance. Moving over from a Rega to an LPI2 helped things greatly, adding detail and sophistication, although I would have preferred to put the Pink Triangle's balance of virtues into the system.

This left me bent, but

unbowed. I vowed to find a system that would approach all aspects of hi-fi: musical performance with all the subtleties that a really mega-bucks American High-End system can produce. I do not have an unlimited budget however, so such products cannot be in the Goldmund/Krell Reference/Wilson WAMM class. I also have a small-ish room that cannot cope with large loudspeakers, however much I want to shoe-horn large Townshends or ProAc Response Threes in.

Returning to my system, I proceeded to rebuild from the top. Although I have in the past remarked on the abilities of The Voyd, I found the Pink Triangle Anniversary and SME V pick-up arm ultimately suited my freshly-



Feedback from Alan Sircom sircom's circuits

rediscovered listening criteria better. There are a number of other turntables that could offer competition to the Anniversary, yet remain untested at the present; these include the Notts Analogue Mentor, the SME Series 30 and the VPI TNT. These turntables have impressed me in systems that I have heard elsewhere, but they would have to be substantially better than the Anniversary in my system to justify their higher cost.

At this level, the cartridge can make all the difference. It can make or break the turntable. At present, I have found a number of cartridges that are a good match for the turntable. In current production, both the Denon DL-304 and the Lyra Lydian tested in this issue suit well, although the system became magical when the Lydian tracked the groove.

This turntable combination (neutral Pink and SME, with a musical Lyra cartridge) has successfully seen off a variety of similarly priced turntables. Until very recently, however, I have had less success with amplification.

A number of integrateds, pre and power amplifiers have passed through my system, all of which have proved interesting, yet still I return to the John Sheame Phase One. It may not have quite the grip that the Naim amplifiers have over the timing aspects, yet it has a

smoothness and refinement that is difficult to better. Current production amplifiers have been further improved, but I have yet to hear these changes.

Problems Pipped

Surprisingly, it was here my problems began. The DynAudio Contour 1.8s do not thrive successfully with the John Sheame power amplifier, because of its original difficulties with sub-eight ohm loudspeaker loads. A large American power amplifier from Adcom and an old Pink Triangle Pip II preamplifier were substituted. These drove the DynAudios successfully.

Sadly, the Pip was on a very short leash and had to be quickly returned, once the review was completed. From here the system effectively collapsed. No pre-amplifier in my possession could wake the DynAudios from their slumber. I tried using other loudspeakers with the Adcom, but that was not the answer either.

Eventually, I managed to obtain a second-hand Pip II preamplifier, a three-box device, and from here, the system became music again. Even so, the DynAudio monitor-esque sound can sound lacking in magic - excellent for determining changes in source components, but slightly too dry for some tastes.

Ultimate salvation came from ProAc. Their little Response One

'S' loudspeaker, reviewed last month, gave me the magic that is needed to play music for entertainment, instead of using music as a review tool. I don't think that the ProAc's are as suited for reviewing, because of their slight colouration, but they have the ability to keep one playing music.

Even now, my system is still evolving. This month, the abilities of the Albarr power amplifier, bearing in mind its cost, left me surprised and impressed. I want to hear the bigger Albarr power amplifiers soon. Cables, tables and stands are all continuing to be investigated, as will room tuning devices. Also, there is the lure of the high end, but my wallet is scared of such a journey

at the moment. It is no use investigating such areas, however, with a base system that doesn't perform properly.

Eventually, I will have to invest in a good Compact Disc player, but both my bank manager and I keep putting such a day off. As with many connected with the audio industry, my bank manager is a keen follower of the business and already has little wax voodoo figures of the manufacturers of high end equipment, just in case.

The Shining

Finally, after a long period of difficulty, the system begins to shine once more. I suppose that I have taken a roundabout route, one that could be far simpler if I had followed a manufacturer's philosophy to the letter. Instead, my voyage of self-discovery has been paved with both epiphanies and pitfalls, but no-one said it would be easy, trying to keep an open mind. As it stands, I believe that my system is now on an equal footing with a self-balancing system, such as the Linn/Naim or Voyd/Innovations/Snell, but I know that there is more to come ●

The Motor Fairs I used to visit at Olympia with my father, long, long ago, left a lasting impression on me. Coming to London in my childhood was a tremendous excitement: all those cars and buses, roaring underground trains and escalators; even jets screaming overhead on their way to Heathrow as you queued to get in. It was another world.

Olympia was also the home of the annual Audio Fair, an event almost as huge and glamorous as the Motor Fairs, even though I wasn't an impressionable child any more when I visited them.

Of all Britain's hi-fi manufacturers, Quad had the most widely recognised and admired image and it was the Quad stand in particular that I remember, probably because their products looked so desirable in every respect; Quad make hi-fi look attractive. So it was Quad I phoned about the date of the last Audio Fair at Olympia, a passing that in retrospect I greatly regret. We decided between us that the last Audio Fair must have been in 1972 or 73 (when, astonishingly it seemed to me, as a novice journalist I was suddenly made Editor of Hi-Fi Answers).

Since that time, the British hi-fi industry has not really been able - and often it has been unwilling - to go out to all those thousands of people - its customers - who'd love to experience the thrill of listening to music through a proper hi-fi system. Curiously, there must be more hi-fi companies in Britain than ever before, yet all

the indications are that the market for their products has been steadily declining since the late seventies. That's why I so regret the loss of a large, glamorous and easily accessed national Audio Fair, somewhere people can see all the technology, ingenuity and

backed by a large swathe of major manufacturers, including Quad, Linn, Tannoy, Sony, Sharp, Technics, JVC, Amstrad, Pentax, etc. and, of course, Hi-Fi World. They're all 'founder members' - like us.

Hi-Fi World will be there in strength, supporting (!) News

kaleidoscope

Reflections from Noel Keywood

variety that audio has to offer. A fair is also a superb place to decide what to buy, and a good day's entertainment as well.

Olympia always pulled in the crowds and showed the widest range of goods; not just top end esoterica, nor bottom end midi systems and AV; real hi-fi could be viewed alongside 'audio' (now pretentiously labelled 'hi-fi'). The passing of Olympia was a significant loss to British manufacturers in particular, since they lost their own national showcase event.

The Fair sank because of cost escalation and hassle, largely brought about by the pre-show mayhem caused by 'industrial action' from the stand builders. Hopefully, those days and practices are over.

Now Britain is again going to have a national audio fair. From 16th-20th of September 1993 (yes, next year - not this one!), at Olympia, there's to be a consumer electronics show called Live '93. It's being

International who are organising the event. Since they publish the Sun, News of the World, Today, The Times and The Sunday Times, quite a few people should get to know about this little gathering. I hope it'll be every bit as big and glamorous as the Audio Fairs I remember with affection from the past.

Hi-fi has dropped from number two as a buying priority to number nineteen, Philips marketing boys tell us. People now place more importance on getting a new pair of trainers.

But just a minute. Do people really not want to listen to music any more? Could it be that life has become so hectic, or superficial, or now possesses so many other options that listening to music is becoming a redundant pastime, less attractive than running around in training shoes, or watching TV or a video?



It would seem almost impossible that an important and enduring part of our culture was apparently withering away. People have always enjoyed music; it transcends every cultural barrier and has existed since man moved from mere existence to a level of civilisation capable of providing the leisure time necessary for art.

The continuing high price of CDs seems to be another source of dissatisfaction that may have dampened people's enthusiasm, or even robbed them of the ability to enjoy music. This is a situation we get plenty of complaints about.

Viewed in this light, perhaps it isn't surprising that Britons would now rather buy trainers. Hopefully, with the aid of a large national exhibition, people might once again be able to see how they can improve their enjoyment of music and hi-fi will cease to be such a low priority ●

No matter how hard I try, I cannot dissuade some of my friends and colleagues from considering building their own valve amplifiers. Besides my protestations, the main stumbling-block frustrating these would-be constructors is knowing where to start. This month I have finally succumbed. But an article which detailed every stage of a valve amplifier design would not be appropriate in a general hi-fi magazine. So instead, I thought I would consider some of the issues and precautions that readers might like to ponder before spending lonely hours

with only a soldering iron for company.

Firstly, let me demolish a few possible misconceptions. The first is that a kit, with easy-to-follow instructions - where all parts are supplied - can be undertaken by an electronics novice. A starry-eyed valve aficionado is in grave

danger of running into what I call the PHRASE BOOK PHENOMENON. This derives from the all-too-common experience when approaching a busy commuter in Frankfurt, Paris or Rome and having your carefully rehearsed phrase greeted with a courteous but utterly unintelligible reply.

Why unintelligible? Because it's given in a language you don't understand. That's why you needed the phrase book! The concept is fundamentally flawed. So it is with kit electronics. Ever with all the necessary instructions, unless the kit works first time, the novice constructor is

recorded message

Left by Richard Brice

confounded.

The second conventional wisdom which needs overturning is that construction can save you money. This is nonsense; even in a profit-oriented world, manufacturers and retailers are not as greedy as all that. It seems to me that the golden rule where construction is concerned is this: unless you are keen to find out, or already have a good understanding of, the form and function of electronic circuitry, do not undertake to build your own equipment. On the other hand, if you are keen to find out what makes electronic things tick, building it yourself can give you the most satisfying and lasting insights that it is possible to achieve.

But what about valve amplifiers - are they not an avenue of particular pleasure and special danger? Yes; the first danger is financial. A high quality mono-block amplifier with an average power output of 20 watts will cost £100 in wound components alone. Add £30 for the valves, £40 for the chassis and you can see you will not escape spending less than £400 for the stereo pair - and that's before you start building! Do you still believe manufacturers overcharge for this equipment?

The second danger is mortal! Valve amplifiers require very high voltages and high voltages hurt people. I first became interested in valves by fixing tube guitar

amplifiers. I vividly remember during one session of 'de-bugging' the power supply of a big 50 watt amp, I accidentally got myself across the outers of the two windings of the power supply transformer and received a shock of about 900V AC! When I came to, I remember thinking "Who's making that moaning noise?" and realised it was me!

Perhaps the most difficult decision of is the choice of power output. Aim too low and you're unlikely to be satisfied with your under-engined loudspeakers for long. Aim too high and - especially with valves - you are into the thin-air stratosphere of potentially lethal power supply voltages and blisteringly hot valve glass envelopes. As a rule of thumb, above 35 watts tube amplifiers become frightening. So, if you want to build an amplifier to listen to music loud, if you value deep bass and still wish to live to three-score years and ten, take my advice - use MOSFETS.

In Fig.1, you'll see a design for a 20watt Class A beam tetrode amplifier. It's not intended as a guide for step-by-step construction - you'll notice for instance that the feedback resistor is left undefined since this is construction and layout dependent - but it is given as a guide for a sensible starting point for a potential constructor. It is neither too small to be puny, nor too large - or costly or dangerous - for the



kitchen table.

The choice of the 6L6 as the output valve betrays my guitarist's background. This was the tube employed in many of the great guitar amps of the Forties and Fifties. It's a great, and still undervalued, bottle. Like a stubby EL34 to look at, it's a beam tetrode, not a pentode like the Mullard valve. And I reckon beam tetrodes have the better sound. The phase-splitter stage is a conventional paraphase type - note the different plate loads. The first voltage-amplifying stage employs an EF86 pentode. This is not a valve I particularly like; the (pin-incompatible) 6BR7 always gives me better results, but it's not cheap. It's worth

buying half a dozen EF86's and choosing the best examples by experimentation.

The power supply uses silicon rectifiers. If you're building it yourself, don't listen to the purists: steer clear of thermionic rectifiers, they always require an awkward 5V filament supply. The CZ4 thermistor stops the h.t. reaching valve and capacitor destroying potentials before the heaters have warmed up.

Once again, I must stress that this is a column not a constructional article. But I hope it will help by acting as a springboard for those interested readers who consider building their own amplifiers.

Have fun - all you have to fear is financial ruin and electrocution! Don't say I didn't warn you!

E.A. Sowter Ltd. (0473-252734) can make suitable wound components to order for amplifiers of this size and class. Suitable types would be:

- 6727 - 20 watt output transformer Ra-a = 9k
- 6731 - Mains transformer 86VA
- 5251 - Smoothing choke

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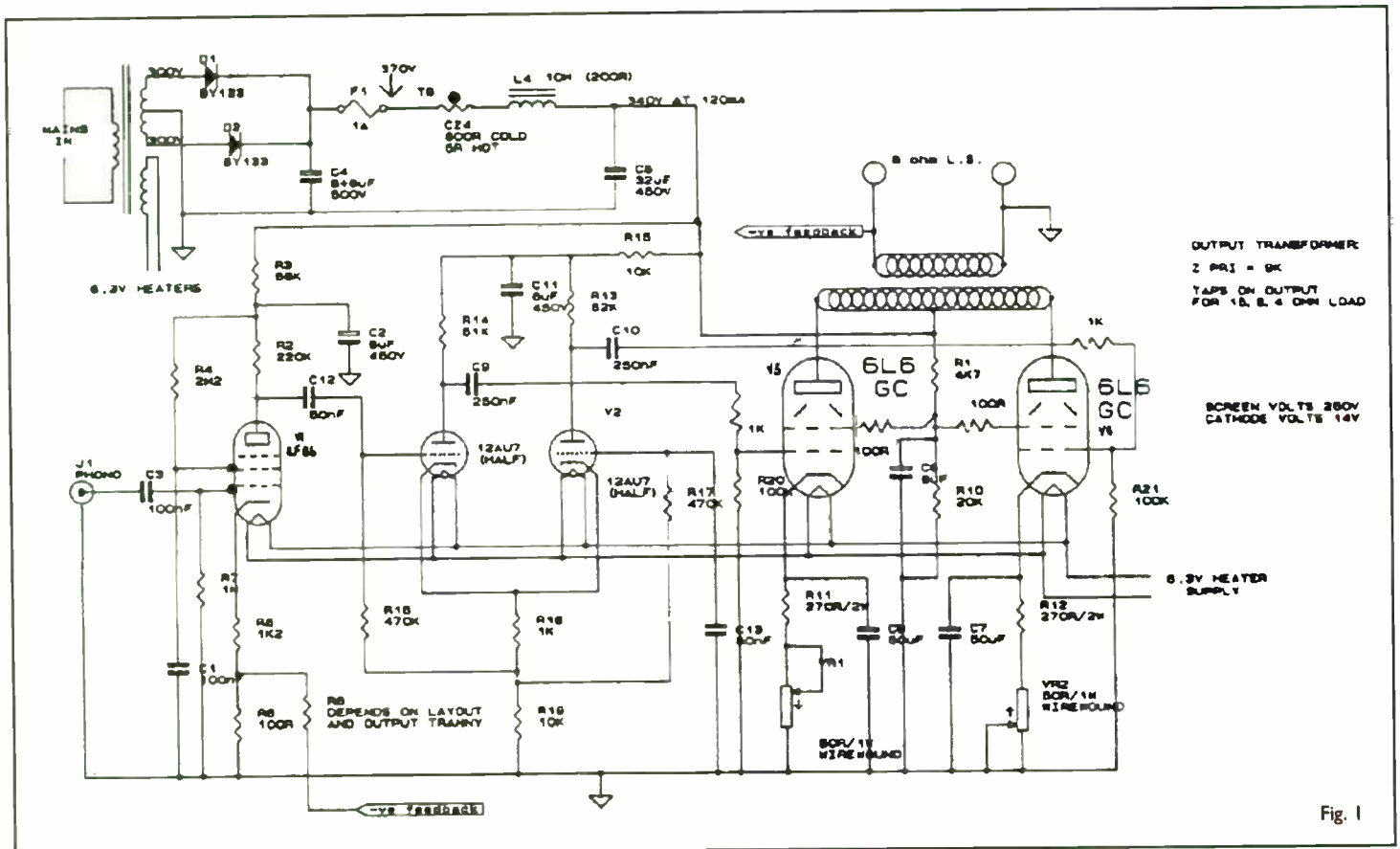
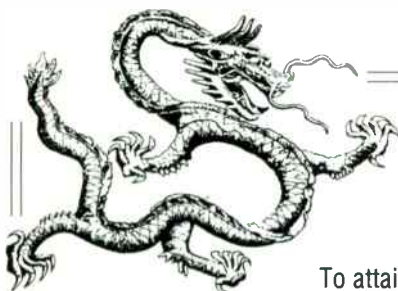


Fig. 1



Golden Dragon

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In Norse mythology, the Kraken was a sea-monster that appeared from time to time off the coast of Norway. Alchemist Products' new £399 Kraken integrated amplifier resembles a mythical beast with its striking projecting side heatsinks and grey-green hammered finish.

Although named after a legendary sea monster, its sinister appearance would probably appeal more to pasty-faced, Sisters Of Mercy-loving 'Goths'. Even though it isn't decked out in fumereal black, they will find its lines perfect for customising with cobweb

spray. All they need to complete hi-fi 'Gothdom' is a CD player with a stake through its drawer and a pair of floorstanding loudspeakers formed like a coffin.

Because the power supply is separated from the amplifier, the Kraken is quite small, being slightly wider than a Naim Nait 2, but not as high and deep. This power supply is also easily upgradeable, as Alchemist offer a more powerful PSU for the amplifier, with two 120vA transformers instead of only one, for an extra £45.

Even the phono stage - also £45 -

is on a modular, plug-in circuit board, to allow the Kraken to be operated as a line-level only amplifier. At the moment, this phono board is for moving-magnet cartridges only, but plans are afoot for a moving-coil stage. All these circuit boards are masterpieces of CAD/CAM circuit design, with minimal amounts of off-board wiring.

On the front panel there are a minimum of controls. To the far left sits an Alps volume control. In the centre, beneath the yellow on/off LED, is the input selector and next to that is the tape selector. There is not



THE KRAKEN AWAKES

Sircom finds Alchemist Products' new and unusually-styled amplifier a beneficial shock to his system.



a wide selection of inputs: phono, CD, tuner, line-level auxiliary, tape and a facility to switch out the monitor circuit altogether. All sources are connected via gold phono plugs, with a pair of simple 4mm binding posts at either side of the rear panel.

The on/off switch is housed in a separate transformer supply box. It's best left switched on as it takes at least half an hour to warm-up.

The Kraken runs warm, although those bat-wing heatsink fins help to dissipate a great deal of heat. It operates in Class A/B so heat is always going to be a problem, especially when quiescent.

There are distinct differences between this amplifier and the others in the Alchemist range. Apart from appearance (the rest are bulkier, with brass fronts and solid black grab handles), the Kraken is designed to be less demanding of source and nowhere near as cable fussy. Whereas the stereo and mono power amplifiers change their character with each change of cable, the integrated Kraken is not as sensitive and is happy with good solid cables like Linn, Naim or AudioQuest.

Its only major drawback is an inability to cope with loudspeaker loads below eight ohms. It does not have the capacity to deal with four ohm, or lower, loudspeaker loads. As most of the loudspeakers in the Kraken's price 'envelope' would be eight ohm designs, this should pose little problem to most buyers.

Alchemist are quite open and honest about this, suggesting that this is not the amplifier for owners of low impedance loudspeakers. It is possible to use the Kraken with a sub-eight ohm loudspeaker, but the power output will be substantially reduced. This is similar to the original John Sheame Phase One power amplifier, although current (no pun intended) devices are 'beefed up' to be more tolerant of lower impedance loudspeakers.

Perhaps it is because the Kraken



‘All they need to complete hi-fi ‘Gothdom’ is a CD player with a stake through its drawer and a pair of floorstanding loudspeakers formed like a coffin

runs so hot (don't touch those fins, they bite!), it believes that it is a valve amplifier. It has an overall sound quality that at least one other reviewer would describe as "S-o-o-o Sm-o-o-o-o-th."

This smoothness could swamp the music at times; for example Nico's voice was sucked into the guitar playing on 'Femme Fatale'. But for 99% of the time, the Kraken removed the harshness and glare that valve enthusiasts invariably label as transistor-blight.

In some respects, it would be worthwhile treating the Kraken as though it were a valve amplifier. As a solid-state amplifier, fifty watts of output is considered rather low-powered, although this figure is about average for an integrated amplifier.

If we partner the Kraken with high efficiency loudspeakers associated with valve amplification, it should be more successful. It would work with loudspeakers like the Epos ES1s well, but I used a pair of massive 90dB+ efficient Audio Note E's, a partnership that was highly successful.

The Kraken created full-blooded sounds that were highly listenable, and with these loudspeakers, was more than capable of shaking the room. The bass response was not as dynamic and as forceful as I would like, but it is every bit as good as the other amplifiers in its class. On a very good amplifier, it is possible to determine the differences between bass drums and the biggest of floor toms; on the Kraken, there was just one single bass drum sound. However, there was no blurring of the deepest sounds and bass guitar lines



The upgraded power supply contains two toroidal transformers.



were remarkably easy to follow, without any 'one note' character. When the bigger power supply was added, all these aspects were improved.

Throughout the frequency range, the Kraken displayed a detailed performance that did not overstate one aspect in favour of another. It was extremely musical and rhythmic; Thomas Dolby's usually difficult polyrhythmic musical structures on 'The Flat Earth' were all present and correct. Unlike many high quality transistor integrated amplifiers, the Kraken offered great detail, but in an unflagging manner. So often, an amplifier has the ability to initially impress, but that impressive nature is its very downfall, as it soon becomes bright and aggressive. The Kraken is impressive without recourse to brightness, a rare quality.

It's also one of the few integrated amplifiers at the price that do not fall back on a hi-fi sound where everything takes on a slightly unreal nature. With a good source and a pair of efficient loudspeakers, the Kraken always has a 'brown rice' sound: wholesome, natural and organic. The health food analogy can be taken further, as it also has a slight wholemeal coloration. By this, I mean that there is a slight coarseness and graininess to the bass and mid-range, but it is something that would be seen as positive by many people, who would find amplifiers without such a 'wholemeal' coloration bland.

Falling back on more conventional

hi-fi terms, the Kraken has great imagery. The soundstage is slightly wider than the loudspeakers, but not so wide that instruments at the far left and right sound too dislocated. There is a slight lack of depth to the soundstage but generally it is as good as can be expected for this class.

Its abilities are roughly equal through both phono and line stages. Although it has been suggested that the phono stage is slightly noisy, in use I found that there were no undue difficulties here even though the bulk of my listening is still on phono. Line inputs do sound quieter, obviously, but there is no fundamental shift in either quality or tonal balance.

Adding the more powerful power supply must be the best £45 spent in the hi-fi industry, as the changes it makes are usually attributed to a £200-£400 scale of improvement. Dynamics, scale, detail, tonal separation and articulation are all improved. Although the Kraken was already in the top league in these respects, it moved to a higher level of performance.

Every now and then a product comes along that causes a stir in the hi-fi industry. The last one was the Pioneer A400 amplifier, which made the English amplifier companies sit up and take notice. I feel that the Kraken, well-built, with a very distinctive appearance and with a superb sound quality, has the same potential. But make sure that you do not invite any superstitious Norwegians around without warning them first! ●

The Kraken has a neat internal layout and uses high quality components.

Measured Performance

The Alchemist amplifier comes with an external power supply and we got both options. On finding power delivery into a low load of four ohms severely restricted by the onset of distortion, I hoped the standard power supply I was using might be the cause. It was not to be. The heavier of the two supplies had no effect upon power output into low loads when I hooked it up, nor did it change output impedance, so the results related here hold with either.

As you can guess, I found the Alchemist had a problem delivering current into a low four ohm load. Amplifiers should, ideally, double their power output (i.e. +100%) when the load value is halved. Few but the most expensive manage this, but most deliver around 70% more power - a healthy increase. The Alchemist delivered 50watts into a normal eight ohm load, but just 36watts into a four ohm load. Distortion rose considerably and the harmonics were extended, meaning they will be audible; I would expect some coarseness in the sound to be evident.

This was disappointing in comparison to a vast majority of other amplifiers. However, it does relate only to low impedance loudspeakers. An increasing number seem to be appearing these days, mostly imported though. Providing the Alchemist is paired with typical British 'eight ohm' loudspeakers, it should be OK. Most hit eight ohms minimum and with them the amplifier behaves normally. It has reasonably low dis-

tortion under all operating conditions, except when delivering full treble output. Then, distortion rises to around 0.5% - a high value.

So for best results the Alchemist should be used with high impedance loudspeakers. Its fifty watts will give healthy volume levels, but such an output precludes playing really loud.

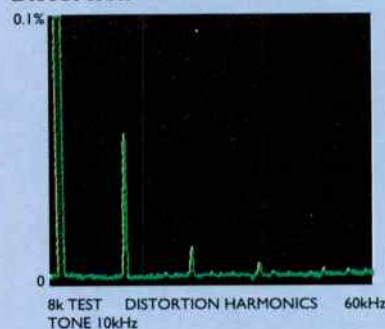
The CD and tuner inputs were sensitive enough for even low output sources, budget cassette decks and tuners giving just 300mV these days. The Alchemist needs just 240mV to hit full output. Frequency response was arguably a bit too extended above 20kHz, since CD puts out only rubbish signals above this frequency - ones that don't need amplifying. It reaches down to 18Hz, which is just satisfactory. Channel separation was adequate for full perceived stage width, if not exceptional by current measured standards.

The disc stage was well engineered in every respect, except that it was noisy. The equivalent input noise was higher than that of most rivals, and so was the signal-to-noise ratio. Slight hiss will be just audible with low output moving magnet cartridges.

Under most conditions the Alchemist works well enough. It doesn't like low impedance loudspeakers though, which reduce its output to just 36watts and raise distortion too. I would expect it to sound slightly coarse or grainy with them. Keep it away from them however, and it performs respectably well in all areas except for a bit of hiss with moving magnet cartridges. **NK**

Power	50watts
CD/tuner/aux.	
Frequency response	18Hz-87kHz
Separation	66dB
Noise	-99dB
Distortion	0.03%
Sensitivity	240mV
dc offset	-18mV
Disc	
Frequency response	22Hz-63kHz
Separation	44dB
Noise	-66dB
Distortion	0.04%
Sensitivity	3mV
Overload	95mV

Distortion



Some second harmonic distortion.

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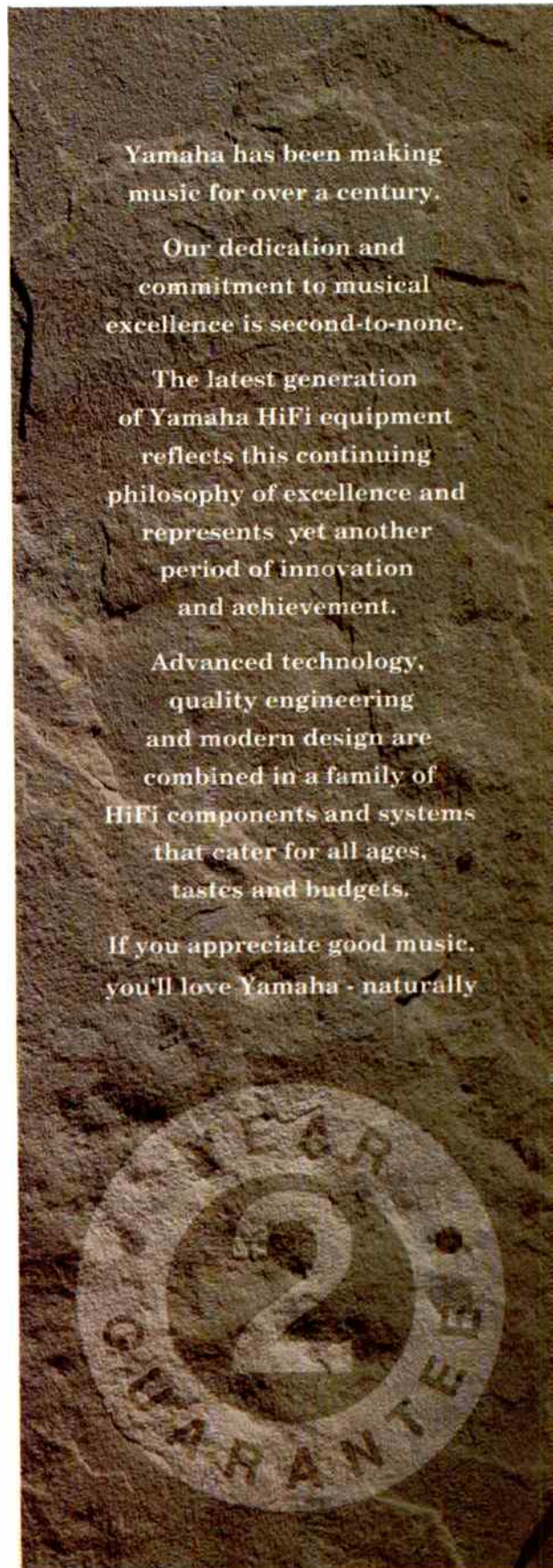


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BOOK MARKS

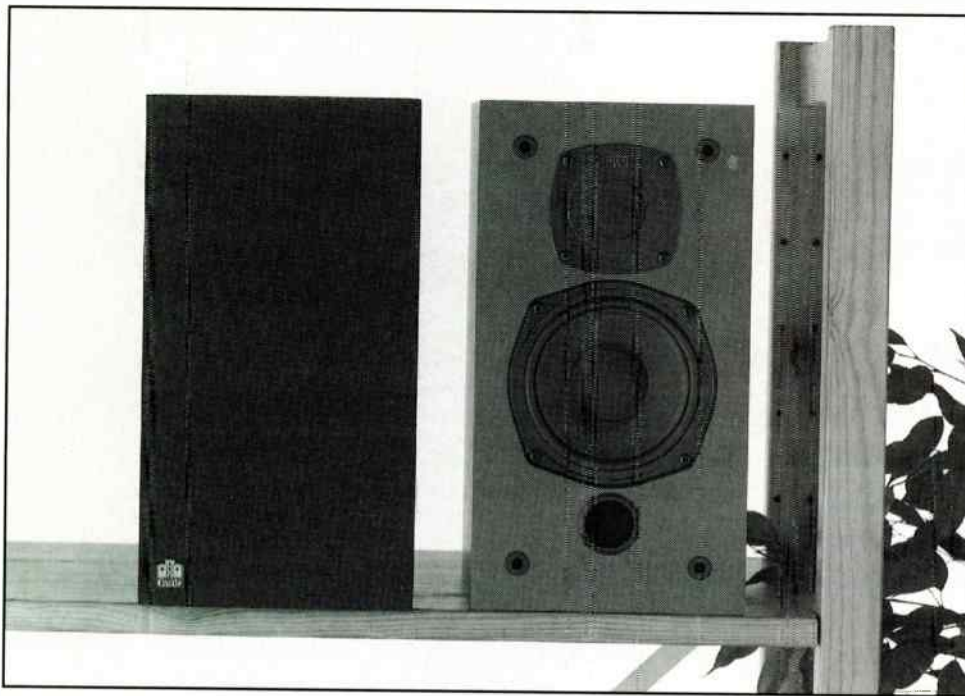
**Report by Eric Braithwaite
and Alan Sircom.
Measurement (in dB and cm)
by Noel Keyword.**

This month's selection of six loudspeakers are all 'bookshelf' designs, being little larger - or heavier - than a couple of medium size dictionaries. They will perform well close to a wall, essential for hi-fi set-ups short of space, though the manufacturers featured here advise stand mounting if possible for optimum performance.

Loudspeaker technology has advanced apace since the Seventies. Many of these budget-sized boxes at budget-sized prices now attain a sound quality until recently unimaginable at £200 let alone the round ton our samples cost (give or take the odd tenner). They leave plenty of space on the shelves for LPs and CDs.

The true precursor of small affordable designs was probably the KEF Celeste of the early Seventies, the first speaker to be widely advertised as being small enough to fit on a bookshelf, albeit a fairly solid bookshelf. Squeezing a quart of sound out of a pint-size box has become one of British loudspeaker manufacturers' specialities. We found some impressive budget miniatures within this group.





Castle Trent

£129

Castle have foregone their famed woodworking skills with the Trents, at least outwardly. This Skipton-based company has achieved quite a reputation for loudspeakers beautifully finished in real wood veneer, long after others succumbed to price constraints and accountants, lapsing into vinyl. Castle haven't turned to fake woodgrain, but supply the cheaper version of the Trents in 'Storm Grey', a neutral grey paint finish. It helps to keep the price down to manageable budget proportions. For customers who prefer the feel of real tree, wood veneers are available

but will cost an extra thirty pounds.

One of the breed of small speakers the Brits go in for, the Trents are a two-way reflex-ported design not dissimilar at first sight to the older Clydes or even older Richmonds from the same company. Time flies: Castle have been in business nearly twenty years now. The grey shade helps them to look unobtrusive despite being among the larger boxes in this group at 33.5cm high, 18cm wide and 19cm deep.

The tweeter is Castle's now quite long-lived ferrofluid cooled dome coupled with their paper-coned main driver. The reflex

port exits on the front baffle below the drive unit. Connectors are sizeable plastic binding posts of reasonable construction, but there is no provision for bi-wiring.

As befits a company that has built up an enthusiastic clientele over the years, Castle offer a five-year guarantee and put a short but elegantly printed booklet in the box which offers basic and uncontentious advice on siting, use of good quality cables, spiked stands - even Blue-Tack. As are other models in their range, the Castle Trents are protected against the ham-fisted - or those who are determined to turn the volume control up to eleven regardless of their speakers' power handling capabilities. Protection circuitry will operate to avoid driver destruction and will reset after a minute or two.

In some ways there is little new or earth-shaking in the Trent's design, but nor are there any quirky visual elements simply to grab the eye. All that denotes their origin is a stylised logo of a castle (although Skipton Castle does look like that!) with a circular line on the tweeter's face plate and a similar badge on the cloth grilles. These, by the way, are on a hardboard frame which pegs on to the baffle, an improvement, visually, on the Velcro fixings which Castle once went in for.

SOUND QUALITY

At first the Trents produced a strong impression of a broad, engagingly detailed sound which allowed a listener to sit with eyes closed and forget the two boxes in the room. Slapping Prince and James albums into the CD drawer revealed plenty of taut rhythm and beat and a tightly controlled performance, but also revealed a slim bass: maybe appropriate for a man reputed only to eat on alternate days, but which could have been usefully fuller.

Placing the Trents nearer a rear wall added useful muscle, but little more in the way of deep notes; bass drum on the James album still had more in common with a handclap. However, the Trents could dance, with spiky vocals and bright, though sometimes brittle, electric guitar and vocals.

The Castles came into their own more with recordings suited to their own smaller scale. They were particularly pleasant with acoustic instruments, string bass twanging away, for example, and flute floating pleasantly into the room, if somewhat bright.

On large-scale Classical music, a somewhat vaguer soundstage than ideal tended to wash instrumental sections into each other, fine tonal shading lacking somewhat. Violins and violas tended to merge in tonal quality, and recorded ambience was somewhat diminished. With believable electric guitars and acoustic instruments, it's only an occasional thinness in the upper registers and a small-box bass which betrays the Castles.

CONCLUSION

At the opposite extreme of the brash, 'hit you between the eyeballs' philosophy, the Trents represent an attractive musical compromise, mostly unfazed by a variety of programme and capable of retaining musical interest. Past experience suggests a pair of heavy stands might be beneficial, while buyers should ensure they hear a well-run-in pair in case their occasional spikiness diminishes with use.

MEASURED PERFORMANCE

An interesting feature of the Trent is its sensitivity: it needs less power than other loudspeakers to go loud. Or, put another way, at any given volume setting, this loudspeaker will be louder than a large majority of its competitors. It allows the Trent to give more volume from a budget amplifier of limited output, making it well designed to be a good match in this respect. The actual measured figure was 87dB SPL (Sound Pressure Level) for 1 nominal watt of input (2.84V). The norm. is around 85-86dB these days.

Castle achieve this through drive unit efficiency, rather than the more common practice of lowering the loudspeaker's overall impedance to make it draw more power. The Trent has a 9 ohm nominal impedance, sufficiently high not to stress budget amps. So as a load, the Trent is a well balanced budget design with all the right properties.

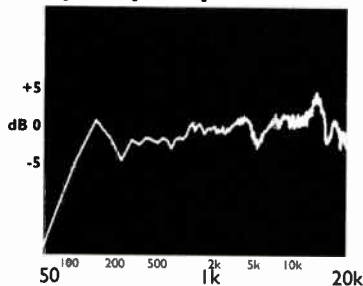
The frequency response analysis shows a marked upward trend toward high frequencies, one sufficiently large to be audible as distinct brightness in the sound. Worse, the upward trend culminates in a peak at 10kHz, which is likely to add a spit or sting to the treble. I always have severe reservations when I see this sort of response, since it can make bright CDs sound pretty fierce.

There is a bass hump at 160Hz and a fast bass roll-off below 100Hz that needs to be counteracted by wall placement. So the Trent is not a

speaker to be used away from a rear wall if low bass is to be obtained.

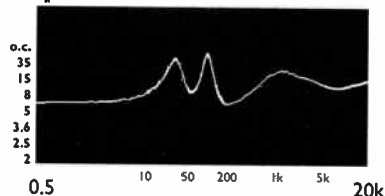
The Trent is basically well engineered, but I have reservations about its rising treble, a feature likely to impinge strongly on the sound. **NK**

Frequency Response



Rising treble and a bright sound

Impedance



High overall impedance

Goodmans' latest miniature, the successor to the original Maxim, which has been around as a name off and on for about twenty years, rapidly caught Noel's attention when they first arrived. (He reviewed them in the May 1992 issue.) Certainly, there is just enough in the way of flourishes in the design to have them standing a little prouder visually - especially without their grilles - than their conventionally-shaped competitors.

One flourish is the gold glint of the metal dome tweeter peeking out behind a protective and functional phase plate. In design terms, this is echoed in the gold print of the nameplate under the main drive unit.

One curious aspect of the design which also sets the Maxim apart from its peers is the use of a leatherette-type cloth finish to the baffle. It's certainly different to fake vinyl wood, but personal preferences come into play here in deciding whether it's different or tacky. The black, wood-grain, vinyl wrap which covers the rest of the substantial-feeling cabinet, however, does show a join or two at the corners. The standard of the finishing is not quite as good as the other loudspeakers in this group.

What is not tacky by any means is the engineering care and attention which has gone into upgrading a popular and best-selling basic design. The phase plate over the tweeter, for example, in fact acts as horn-loading, said to offer a smoother frequency response in the treble and take away the once-notorious sting or peakiness of metal domes.

A two-way reflex design, the port exits at the rear through the slightly inset back panel. Connection is unsurprisingly by standard-quality binding posts again and in common with the majority of these budget speakers there is no provision for bi-wiring.

Designed to be placed near a rear wall, so



Goodmans Maxim 3

£109.99

the bass is brought up a degree or two, a spell of regular usage suggests that good-quality stands are also beneficial. While this goes for practically any loudspeaker, regardless of price, it's not an aspect which should be ignored simply because the boxes that go on them are not particularly costly in themselves.

SOUND QUALITY

The sound of the Goodmans Maxim 3s is immediately striking. Vocalists and instrumentalists are projected well to the fore, with the whole soundstage starting in front of the

plane of the speakers and working well back.

On the Gary Moore album, this gave the tracks the impetus of a live performance rather than a studio recording. While this sort of presentation can be tiring, the Maxims stop just short of forcing the music up a listener's nose and proved consistently relaxing to listen to.

One or two aspects are slightly over-relaxed in fact. On The Gombo's jazz CD, acoustic guitar was extremely fluid, the flute fluent and marked by extreme subtlety. All the same, bass could be a little blurred and shapeless. This was more noticeable on the Prince recording, where the studio mix also tended to blur over the multi-tracking.

Above all the Maxims were musically engaging, with a clear impression of living, breathing musicians behind the instruments. The drawback - if it is one - is that the musical instruments are a convincing representation in sound, but not in scale. Close-miked string bass, for example, well forward, and well rounded, was mildly disturbing in being apparently larger than a partnering piano.

For all that, these miniatures had the ability to produce a lot of music, with tricky orchestral recordings reproduced with broad and convincing tonal variety and colour and no problems telling violins from violas or trumpets from trombones. Or, for that matter, two qualitatively different guitars on the James album.

CONCLUSION

Wholly admirable in credible tonal quality and with a special ability to keep up the tempo of music well beyond its class, the Maxim 3 is startling. Its fluent mid-range is capable of smoothing over one or two cracks - there are places in the treble where signs of strain show - with a display of instrumental nuances and dynamics that belie their small size. A veritable bargain.

MEASURED PERFORMANCE

The most notable feature of this little speaker is its flat frequency response. I noted how smooth it was in an earlier review and found that in use this translates audibly into a well balanced miniature speaker, free from the emphasised and sometimes sharp treble of earlier Maxims. A small change in measurement procedure since that review (less position averaging) gives a more explicit forward response picture of the Maxim 3 than before, revealing just a slight upward trend that terminates at 10kHz and adds just a slight 'edge' at times.

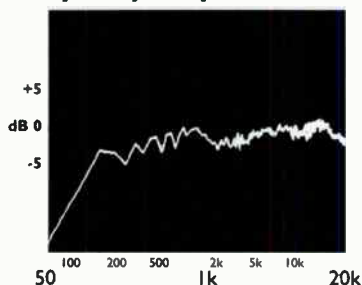
The third octave frequency response, not published here, was remarkably flat, merely confirming the picture provided by the detailed impulse response. The Maxim 3 is a remarkably well engineered unit in this important area. It will not suffer the vices of many of its competitors as a direct result. It is, however, a wall-stander. Low bass must be reinforced by use against - or close to - a rear wall. Otherwise, it falls away rapidly below 125Hz.

Overall impedance measured high at 12 ohms, a factor that makes the Maxim an easy load for budget amps, but one that also lessens sensitivity. All the same, the 85dB sound pressure level figure produced for 1 watt of input is still very respectable. The Castle Trent and Heybrook Prima will go a bit louder from the same power input, making them better for budget amplifiers in terms of turning watts output into sheer volume, but the Maxims

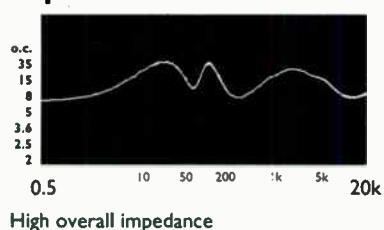
otherwise match or exceed their competitors here.

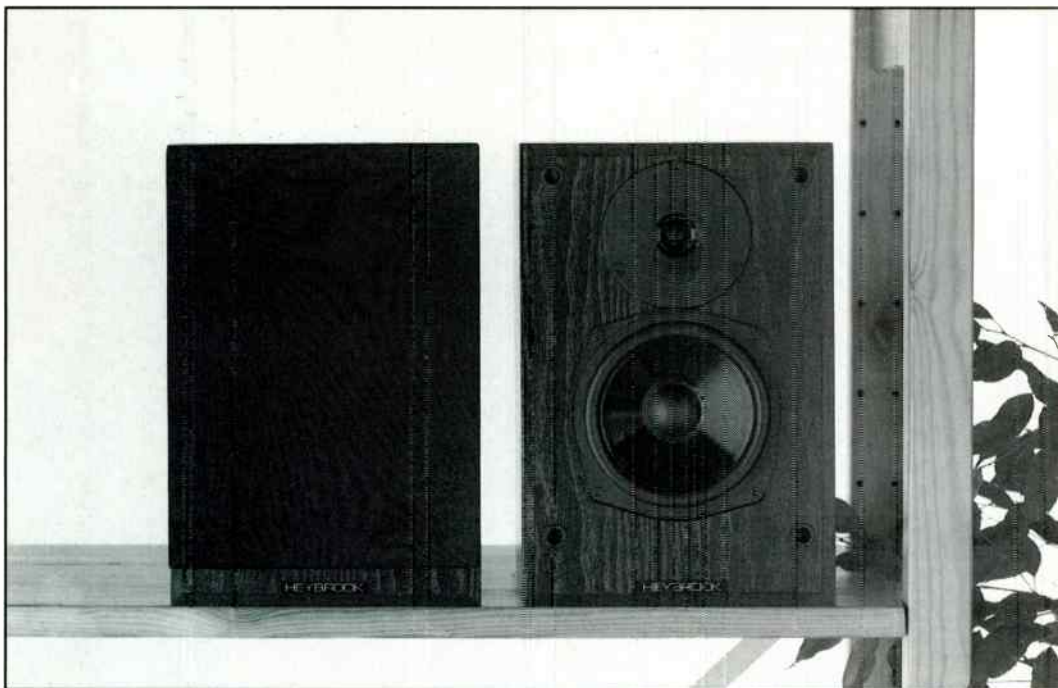
This is a very well engineered budget loudspeaker, one that embarrasses many more expensive designs. NK

Frequency Response



Impedance





resistors and polyester capacitors. Unlike the Castle Trents, no protection circuitry is fitted to protect the drivers from over-enthusiastic tuning of the volume control. Heybrook's admirably detailed manual explains this can degrade the sound - and tells the owner to turn the volume down instantly if distorted music issues forth.

At the budget level, a well-written and informative manual is essential: a first-time buyer is not necessarily going to know all there is to be known. Heybrook's is a general one, applicable to the whole range, so it's a pity that the pages on bi-wiring, redundant as far as the Primas go, might leave a new owner puzzled. Nonetheless, the basic advice is sound enough. Stand mounting with their backs against a wall is recommended; furniture and shelves best avoided. How come the publicity photograph shows them placed on

bookshelves? The Primas come with a two-year guarantee.

Heybrook Prima

£119.99

Another small loudspeaker, the Heybrook Prima comes with added value. Not just a 'bookshelf' design - an erroneous description, since few perform at their best surrounded by novels - the Primas employ shielded drive units so they can be used for stereo TV sound. Place them in proximity to the telly and the picture won't turn wavy or take on peculiar hues.

As usual, the 'bookshelf' terminology relates more to size. Heybrook's Primas would hardly strain the proverbial seven-stone weakling. They stand 29cm high, are 19.5cm wide and 18cm deep, and weigh in at a mere 3kg.

Finished in the ubiquitous black wood-

grained vinyl characteristic of budget speakers, the high-density particle-board cabinet houses two drive units, a hard-dome tweeter and a 13cm bass/mid driver. Somewhat unusually at this price level the drive units are mounted on the baffle using substantial socket-head, double helix screws. A reflex design, two small ports are placed at the lower rear of the cabinet with the recessed circular plate containing a single pair of standard binding posts up towards the top.

Heybrook have become fans of solid-core wiring since its inception, and the Primas incorporate solid-core wiring along with, the manufacturer's claim, audiophile grade

SOUND QUALITY

Sticking a recording of a jazz quartet with a particularly forceful string bass in the CD drawer produced a lush, round sound with a strong impression of going deep. The flute was also round and on the gentle side. Subtleties of instrumental timbre or intonation, however, are not the Prima's forte: they tend to take a raincheck of some of the complicated bits.

Prince was dynamic - it would need a pretty damp blanket to stop Diamonds and Pearls in its tracks - with shove down at the bottom end, but something of a lack of totality in the mix, which tended to smooth over some of the individual instrumental sounds.

Turning briefly to Classical there was a reasonably well-defined soundstage, with a brave attempt at depth from speakers this size; there was, however, slight muddling of brass tonalities, with some lack of the full variety of orchestral colour in the mid-range. Lower strings, though, had a splendidly warm rounded sound to compensate.

Back to Rock music and James. There are some fairly snappy tracks on the last album, with a good deal of clashing and brushing of cymbals. The Primas tended to soften the more piercing sharp end of the tracks - though some guitar notes were comparatively harsh, even rattly on occasion. Gary Moore's cuts produced a hint of a guttural quality to the mid-range, discernible under a quick-stepping rhythm.

CONCLUSION

By and large, Heybrook's Primas produced a slightly uneven performance within - it should be emphasised - the context of this group. They possess some noticeable, albeit slight, colourations which tend to suggest a strength out of all proportion to their size. Best partnered with sources and amplifiers appropriate to their price, the Primas perform competently, suited more to ears preferring the laid-back approach rather than the brash.

MEASURED PERFORMANCE

The Prima has some unusual characteristics. A glance at the frequency response analysis shows a smooth 'mid-range' hump. Since this is centred at 1.5kHz I would expect it to add to projection of speech and vocals and, possibly, lighten the sound of the speaker generally. Being so broad and dominant a trait, this will stamp its mark upon the speaker's overall character.

The other feature I note with the Prima is the presence of a large treble peak above 10kHz. This may make its treble sound either wispy at times or, possibly, piercingly sharp. Treble peaks can be merely annoying, or they can be quite unpleasant; only listening tests can differentiate between the acceptable and unacceptable. When they are at such a high frequency, audibility isn't guaranteed, simply because if there's no energy on the disc, then the peak won't have any effect.

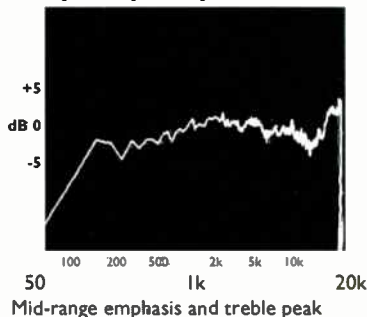
Bass output reaches down to 125Hz before falling away rapidly, so mounting against or close to a rear wall is necessary. A peak at 160Hz helps to combat wall cancellation effects, but may also add some bass boom.

The Prima proved to be sensitive, turning out 86dB sound pressure level (SPL) for 1 watt of input. This means it'll go louder than most rivals at any given volume control position, including those here, except for the Castle Trent. Overall impedance measured a normal 8

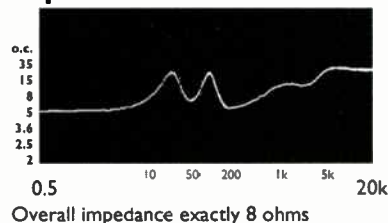
ohms, so as far as an amplifier is concerned this speaker 'looks' normal enough.

The Prima's response characteristic is sufficiently non-flat to give it a distinct character. It is otherwise normal and vice-free. **NK**

Frequency Response



Impedance



Could it be that JPW, with their Minims, have an eye to the Habitat market?

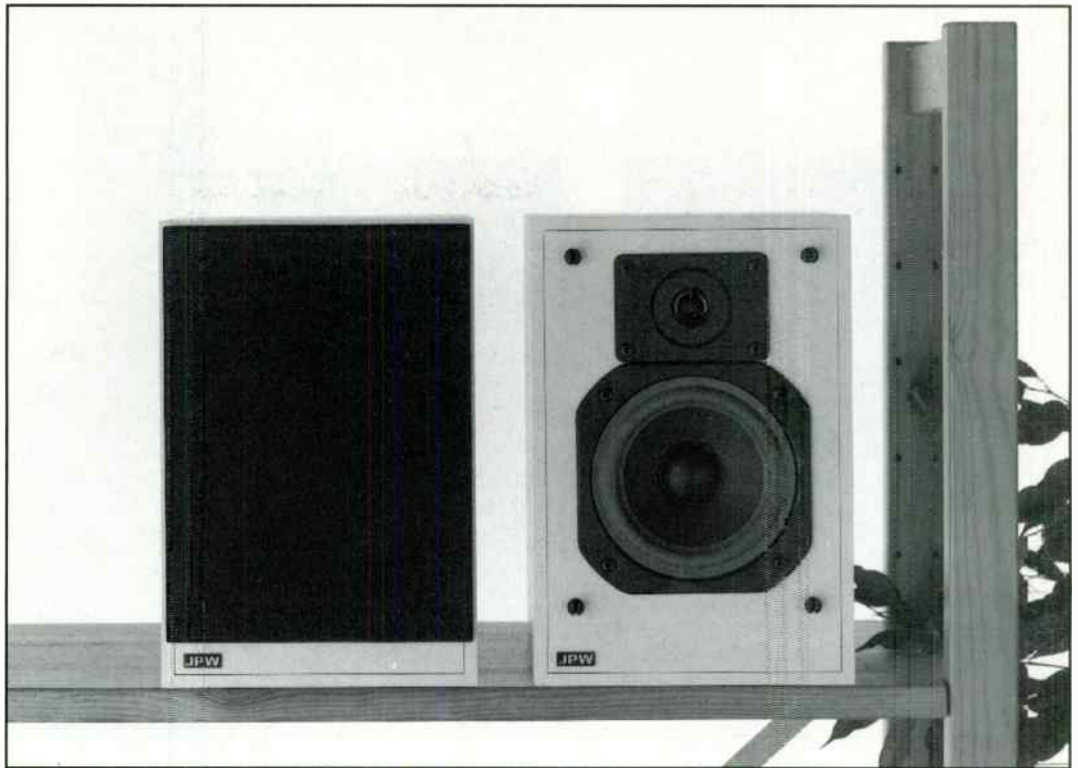
People who go in for their kind of shelving and furniture will very likely immediately take to these small speakers simply because they are finished in white. It's certainly a welcome change, though for those of the Henry Ford persuasion, or chimney-sweeps, they are also mundanely available in black.

Among the smallest of this month's bunch, the Minims are a sealed box design, weighing a low 2.8kg. Dimensions are 27.5cm high, 18.5cm wide and 20cm deep. Power handling is a little above the norm for low-priced loudspeakers, with a capability for amplifiers up to 70 watts.

The two drive units are a comparatively standard ferro-fluid damped dome tweeter and a 13.5cm paper cone bass/mid driver. While paper-cone drivers tend to be criticised sometimes they tend to run-in rather more quickly than the polypropylene variety and can give good results when implemented along with a decent quality crossover. They are also less fiddly and can be cheaper to produce, which explains why they are still to be found in budget sector products.

Fashion, at least as far as wiring can be said to be fashion, has not afflicted JPW either. The Minims - like most of their compatriots - are provided with only a single set of binding posts round the back.

As do the other companies, JPW provide a 'starter' guide to their speakers, which is printed on A3-sized card. Time was when no manufacturer of budget 'bookshelf' speakers really paid much attention to ancillaries; JPW



JPW Minims

£79

suggests rigid stands between 45cm and 60cm high, spiked to the floor. It's good to see concise and sensible advice; positioning against a rear wall is suggested, with the proviso that, since no two rooms are alike, the Minims may perform better in some locations out in the open. JPW provide a two-year guarantee.

SOUND QUALITY

JPW's Minims, for all their musical name, turned out to be a bit crotchety, less equal

to a broad spectrum of music than the others in this test, and sometimes displaying the fact. Prince's *Diamonds and Pearls* at first sounded more exciting and vivid than through other loudspeakers in this group, with a real partying bop to it. It was, however thrilling and free of the boxes, rather small-scale, with individual instrumental qualities not readily discernible. I struck us later, though we were foot-tapping too busily to notice it missing, that the low thunder in the background almost entirely disappeared.

On both the James and the Classical recordings, while the Minims made a very brave attempt at putting out the music, the individual parts were rather muddled together. Neither the soprano's words at the beginning of the de Falla nor James' whisperings proved intelligible. The vocals on James were too palatal for concentration to be engaged.

Little real dynamic extension to either treble or bass, a somewhat two-dimensional soundstage and vague fuzzy stereo imaging didn't stop the Minims making a good attempt at reproducing music, oddly enough. Provided a listener didn't expect sharp focus or discrete tonal qualities, or subtle shading of colour, there were still enjoyable aspects. Strings could sound sweet and moving - acoustic instruments and drumkits both could maintain an easy rhythm. The more complex the mix, alas, the more the Minims struggled, but the emotional content of the music always came through.

CONCLUSION

Despite the criticisms, the Minims are in a price bracket that has all but disappeared and are the cheapest of all six reviewed here. For eighty pounds, they make a reasonable stab at real music for the thinnest hi-fi wallet, with an overall competence that is way beyond what might be expected at the price.

MEASURED PERFORMANCE

The JPW is quite a few bob cheaper than its rivals in this report, something I bore in mind when writing this piece. Its frequency response looks pretty raggedy, just the sort of thing I would expect from a budget unit with paper coned drive units. However, the peaks that exist are not much different from some of those seen on the other models, it's just that there are more of them. In my experience, this sort of thing is heard as a lack of smoothness and refinement in the sound, but then that might be the least one could expect from a £80 loudspeaker.

A third-octave analysis of frequency response, not shown here, reveals a slight downward trend above 2kHz of high frequency output, which may well smooth out the treble a bit, although a peak at 6kHz is likely to put a 'spit' into the sound. The Minim will sound smooth or just a trifle warm rather than bright.

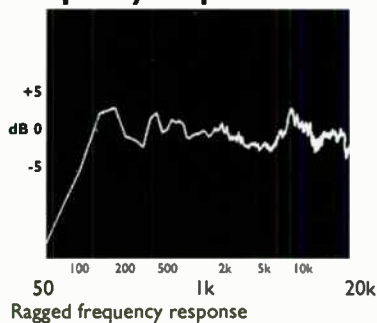
Bass output reaches down to 125Hz before dropping away, with a hump at 180Hz adding a bit of boom. Wall standing is necessary to reinforce lower bass.

The Minim presents a nominal load of 8 ohms to an amplifier. As the impedance curve shows it swings both above and below this value across the audio band, reaching a minimum of 4 ohms in places. As expected from the impedance, which will draw

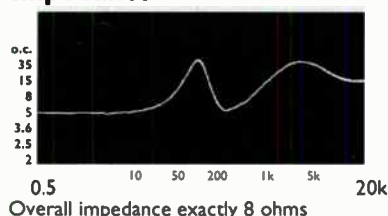
current, sensitivity was good at 85dB sound pressure level output for 1 nominal watt (2.84V) of input power. This makes the Minim respectably sensitive.

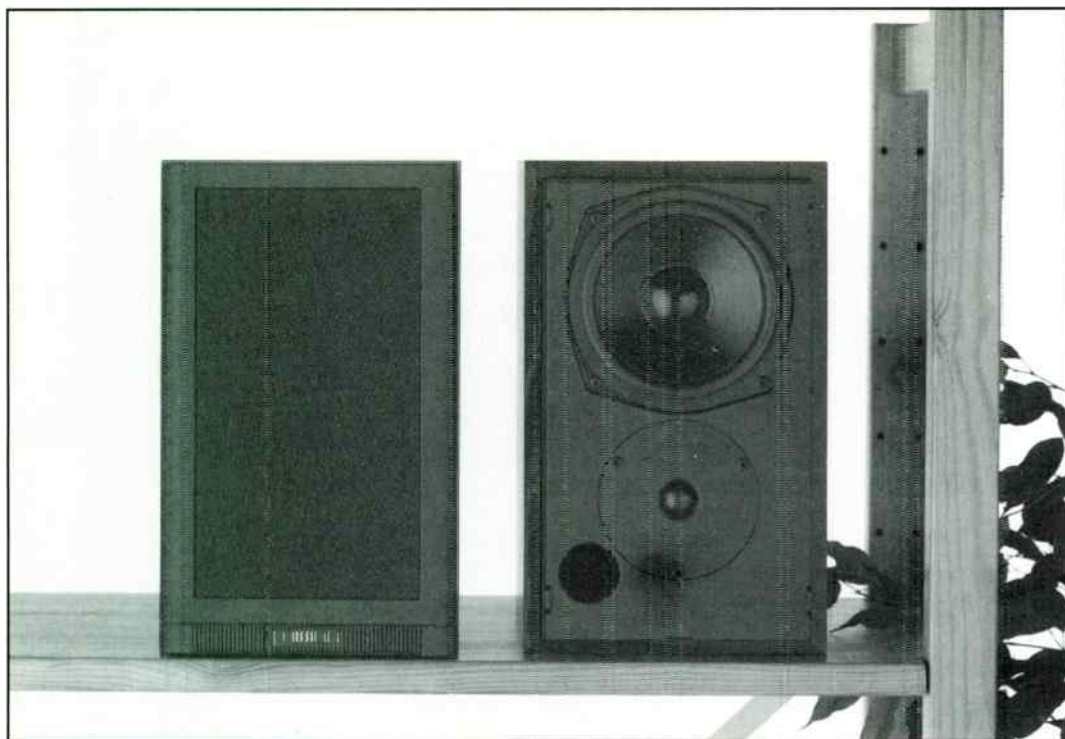
Considering its price, the Minim is well engineered. I've seen less balanced designs that cost a lot, lot more. NK

Frequency Response



Impedance





Mission 760i

£119.90

Mission's 760i miniatures are again a relatively unassuming black box, but among this group, they possessed two distinctly unusual features. First, the grilles are intended to be left on. Whereas most other manufacturers make removal easy, the design of the Missions' plastic frames in fact makes displacing them simple, but also runs the risk of damaging the moulded fixing points on the frame.

With the grilles off, a second unusual feature comes out into the open. Uncovering the front baffle reveals that these loudspeakers appear to have been designed upside

down. It's odd how accustomed we have become to expecting the tweeter to be at the top of the baffle. In common with other Mission designs, in the 760s the usual arrangement is reversed, with the main drive unit at the top and tweeter underneath, along with an offset reflex port. It's not essential, as it turned out, to put the Missions on higher than normal stands to place the tweeters at ear height, but it is something that is worth bearing in mind, especially in a demonstration.

Drive units are, respectively, a 19mm polyamide ferro-fluid cooled tweeter and a

130mm 'plasisflex' main driver. Finish is black-ash, but for this price from a PVC factory rather than a forest. Fairly diminutive, but not the smallest of the group, they are 29.5cm high, 18cm wide and 20cm deep. Connection is via fairly chunky binding posts at the back. As is usual at this price - Tannoys being an exception - the 760s are designed for single-wiring only and are not bi-wirable.

Mission have produced an excellent manual. Someone in the company, by the way, believes in Europe and 1992, or is very linguistically skilful, because it's written in five other languages besides English. Two diagrams give visual advice on positioning; you don't have to read a word of any language to know that the 760s are intended to be placed about 20cm from a rear wall on either a shelf or stands, but not on the floor! Elsewhere, there is solid advice on connecting and using them, including the suggestion that they should be 'run-in' for ten hours.

SOUND QUALITY

By way of a change, a Classical piece went into the CD player first. Something special soon became obvious; we listened through one piece in its entirety and were so drawn into the music that we forgot to stop the CD for a discussion of first impressions - we simply carried on.

The Missions provided the best stereo spread and the most complete orchestra out of the group - a more coherent and detailed picture than a large number of loudspeakers at twice this price could manage.

Turning to Prince and James, both albums sounded the way they should be heard, with discrete sounds, accurate tonalities and unmistakable vocals. For the first time the James tracks had weight to the instruments, perfect proportions and speed and clarity withal. Superb in terms of rhythm, it was possible to follow - and more importantly, sing along with - any of the vocals or melodic lines, all quite unobscured.

Remarkably uncoloured, especially at budget price, we had very few reservations about the Missions' performance. Violins struggled a little for full tonal colour, drumkits in rock music lacked a little of their full force, and Prince's thunder mumbled a bit. But there was separation, depth, ambience and detail in plenty. All that prevented us assuming these boxes were much more expensive was a shallower depth and a little less image precision obtainable at the higher price. Gary Moore - not entirely unexpectedly - turned into a vivacious live performance. That CD was fighting, feeling Blues, full of energy from both singer and band.

CONCLUSION

A room full of music, worth a good fifty pounds more of anybody's money, was our immediate conclusion. Possessed of lifelike scale, plenty of discrimination and tonal quality well out of their class, the Missions make supremely and consistently attractive music.

MEASURED PERFORMANCE

Knowing Mission recently and proudly bought a mass of advanced loudspeaker analysis equipment, and knowing that they sensibly try to combine a good measured performance with good sound quality, avoiding artificial enhancements, I expected the new 760i to turn in a good set of measured figures.

The frequency response analysis met my expectations. It has a flat overall trend, with some slight lift around 6kHz, due to a peak. A bass hump at 160Hz may well make itself known in practice as well. Overall, however, the 760i looks flatter and smoother in its frequency response than most rivals and I would expect it to benefit from this, even after taking into account the blemishes I have talked about.

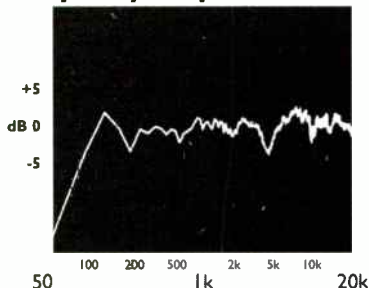
Bass output falls away below 100Hz, so the baby Mission must be mounted close to a rear wall to bring up lower frequencies, like the other speakers in this report.

The impedance stays above 8 ohms above 1kHz, but falls below - down to 4 ohms or so - at lower frequencies, like many of the speakers in this report. Overall, the load measured out at 7.5 ohms, so Mission have got the nominal value absolutely right. The value of doing so lies in maintaining sensitivity. Many British loudspeakers hover around 10 ohms, meaning they draw little power and don't go loud. The Missions produced 86dB sound pressure level for 1 nominal watt

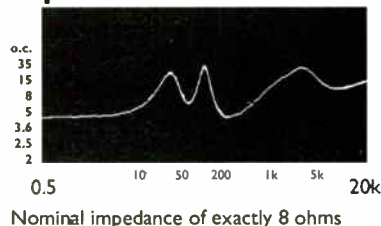
(2.84V) of electrical input, more than many rivals. So they need a little less power to go loud.

The 760i loudspeakers are well engineered all round. I would expect this to show itself in their sound quality. **NK**

Frequency Response



Impedance



One of Tannoy's seven-strong range of 'Sixes', the 603 is the smallest and cheapest. It shares its shape with the others in the catalogue, in all its six-sided polygonal glory. (In fact, if you count the top and the bottom, the Sixes have eight sides, if you're with us.) Thought, rather than simply an eccentric desire to be different, did go into the shape. An irregular-sided cabinet has long been thought to reduce cabinet colourations, and, as it happens, can also be quickly manufactured from a single piece of material. Top and base are injection moulded from a mineral filled polyolefine.

Apart from the cabinet shape, there are a couple of other oddities which set the Tannoys apart visually. The curious inlay marbled-effect top might be the major stumbling block as far as some people's notions of interior design goes; the other is hidden round the back. For some reason, the positive loudspeaker terminals are a designer-yucky lilac. Never mind, they are substantial, and these are the only speakers of this group which are designed to be bi-wired.

Other than in the shape, the 603s are relatively conventional, rather taller than their rivals. Bass unit is a 5" injection-moulded cone unit screwed into the baffle and topped off with a 25mm aluminium dome tweeter, protected by a metal mesh grille. Experience with other Sixes suggests that this tweeter is a particularly successful design; Tannoy claim a response up to 30kHz. In common with many small-box designs, a reflex port positioned high at the back aids the bass output.

The plastic skirt at the bottom of the cabinet tends to make mounting a Six on conventional stands a little ungainly and diminishes the firmness of the coupling obtainable. Tannoy, however, do make shaped stands for the Sixes which can be filled with sand or lead shot or whatever other heavy



Tannoy 603

£124.99

loading takes an owner's fancy. The purpose of the brass bushes in the base then becomes clear: the speakers can be firmly bolted to the stands which can be spiked into the floor. Positioning near a rear wall is helpful, and Tannoy, in company with Castle, offer a five-year guarantee.

SOUND QUALITY

Tannoy's smallest Sixes surprised with a vivacity and joie de vivre that was unexpected from such a small box. Prince's latest was presented with all the elements of the mix

between the speakers, with remarkably stable imagery. Admittedly the thunder mumbled and grumbled a bit rather than sounding really stormy, and there was a little confusion between two guitar sounds, but there was tonal differentiation enough not to doubt there were two.

Gary Moore's album swung bluesily and was tautly rhythmical, though the vocals had a tinge of wiriness. Here, the bass that had softened the bottom-end impact of Prince had the drumming lagging a little behind the beat of the music, dulling the impact of the whole. This can be an extremely lively recording, but an overall lack of focus had our attention wandering.

So far, single-wired, there was a recognisable family Sixes sound, albeit a touch recessed. All the same, the 603s were expressing the musical intent of recordings, something which became obvious with the de Falla recording which had been a stumbling-block to others during the listening sessions. The Tannoys coped well in the context of this group with ambience, displaying an orchestra with some depth, though the soprano sounded more recessed than distant.

Single-wired, the only real trouble with the Tannoys was that on some programme, despite an inherent ability to keep time, some of the detail which keeps the ears occupied occasionally submerged in the mix. Bi-wiring removed a number of these reservations. It tightened up the bass, though it also lightened it a little while there was still some sense of recession, vocals came more acceptably forward.

CONCLUSION

Tannoy didn't put the extra pair of terminals round the back just for fun. Bi-wired, the 603s had more differentiation of tonal colour, an increased degree of depth and more focus. They did stay, however, more of a 'background listening' speaker than some might favour, requiring a more up-front and punchy approach.

comparison review

MEASURED PERFORMANCE

The 603s, being the product of a large loudspeaker manufacturer with extensive test facilities and a pool of design ability, surprised me. Technically, they didn't meet the criteria carefully considered and pursued by many other - often smaller manufacturers.

The 603s were insensitive for a loudspeaker that will in real life usually partner a budget amplifier, producing just 83dB sound pressure level for 1 nominal watt (2.84V) of input. That's 4dB quieter than the Castle Trents, which is quite an appreciable difference in volume. It is also low by general standards. Normally this is due to high overall impedance, but in this instance the 603 measured 7 ohms, which is not high at all. The speaker is simply inefficient it would seem; it needs a powerful amplifier (around 60watts) to go loud.

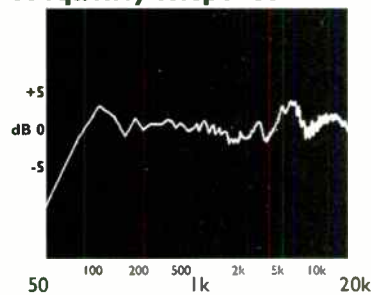
Frequency response was smoother from higher up than from an on-axis position. Tannoy do say with other models that the ear should be just above tweeter height, such that the tops of the cabinets can just be seen. This applies to the 603s as well; their response was less smooth from in front than from above. The response published here is position averaged to give a typical result from just above. There is a slight peak at 5kHz from the tweeter, one that might add a small spit to the treble.

A third-octave frequency response, not published here, shows the presence of a substantial bass peak at 160Hz, which may add some boominess. Below 100Hz output falls away rapidly, so the 603 should be placed

against or close to a rear wall to get low bass from it.

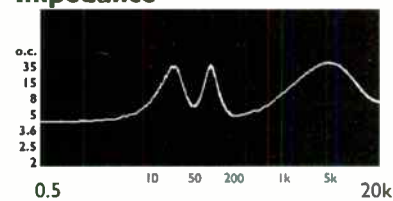
The 603 seems a little unorthodox for a Tannoy. But it may have strengths - notably in the high quality bass/mid-range unit - that could more than balance out its oddities. **NK**

Frequency Response



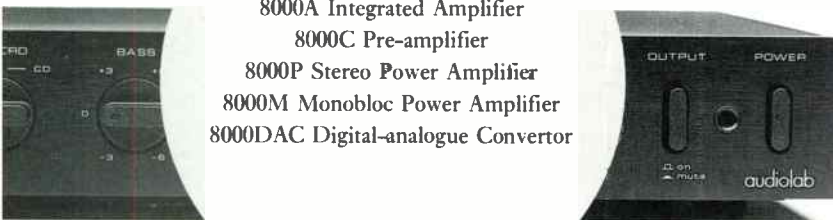
Balanced response listening from above

Impedance

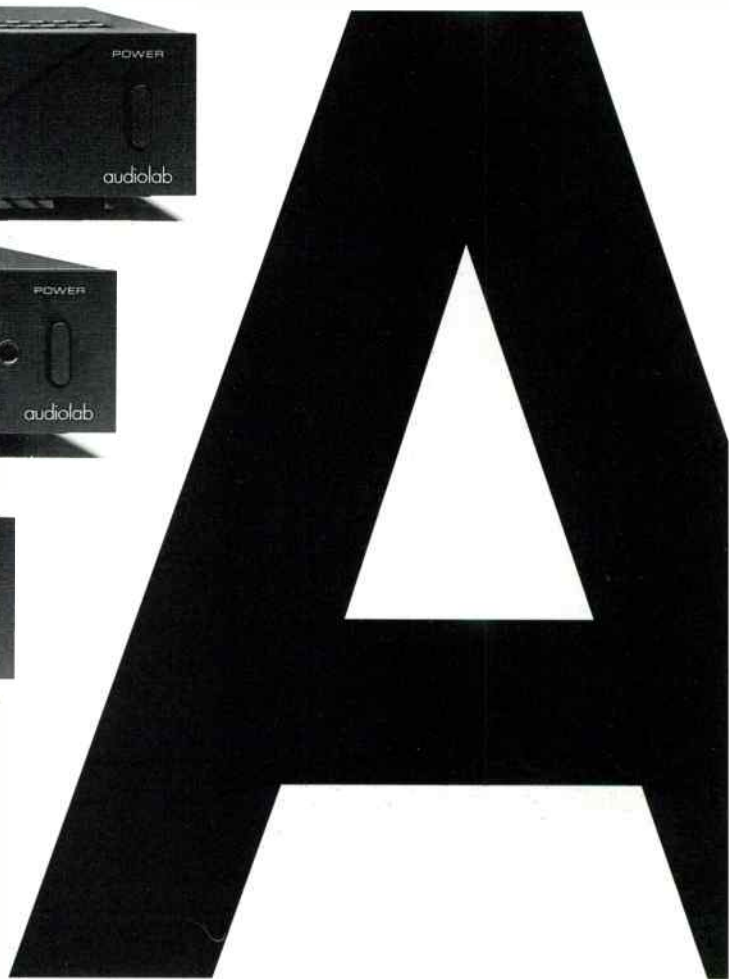


Not a high overall impedance

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Conclusion

Trying to manufacture a loudspeaker that is pint-size and attractive to the impecunious has never been easy. When you add together the cost of the box, the price of the drive units, the packaging and the transport it's a surprise in these days to discover it can still be done with a retail price around a hundred pounds.

With the inevitably tight margins involved, the best that might be expected would be a fairly simple design and a couple of cheap and ordinary drivers screwed onto the front baffle. Not so at all; the best illustration is the Tannoy Six series, which use specially developed drivers even in the cheapest 603.

What was remarkable about this group of six was the quality of sound from all of them. Nearly all could match - and in some cases better - larger loudspeakers at twice their price. It's a salutary reminder of how British speaker design has progressed over the last few years.

There was no doubt about the two top dogs out of this group, Mission's 760i and Goodmans' Maxim 3s, the former just a trifle under £120 and the latter more of a bargain than ever now down to £110. The essence of both was that they replayed - simply - more music more accurately for their size and price than any others of the bunch.

Which of the two might be more preferable is very much down to personal taste, because while they share the same strengths of tonal clarity and detail, in presentation they are at opposite poles of the hi-fi spectrum. For those who prefer an up-front sound projected well out into the room - especially on Rock or Jazz recordings - the Maxims must be the preferred choice. In this kind of perspective they excel, to a degree which very few much more expensive designs hardly better. Allied with a well-integrated mid and treble and believable bass, it's easy to forgive moments of tonal thinness or graininess and enjoy the music.

Mission's 706i loudspeakers have very many of the same strengths: good dynamics, attractive tonal colour and a pretty decent - though sometimes a little vague - stereo spread. The overall perspective was quite different to the Maxims, back in the plane of the boxes, with less forward projection. The Missions are more for the listener who prefers a more laid-back approach.

Both Tannoys and Castles fell somewhat behind these admittedly exceptional designs. While the Tannoy 603s, single-wired, presented some tonal aberrations that tended to confuse some Rock mixes and fail to keep the attention as engaged as either the Missions or the Goodmans, bi-wiring proved essential.

Bi-wired, the whole tonal quality was cleaned up with a tighter bass and more

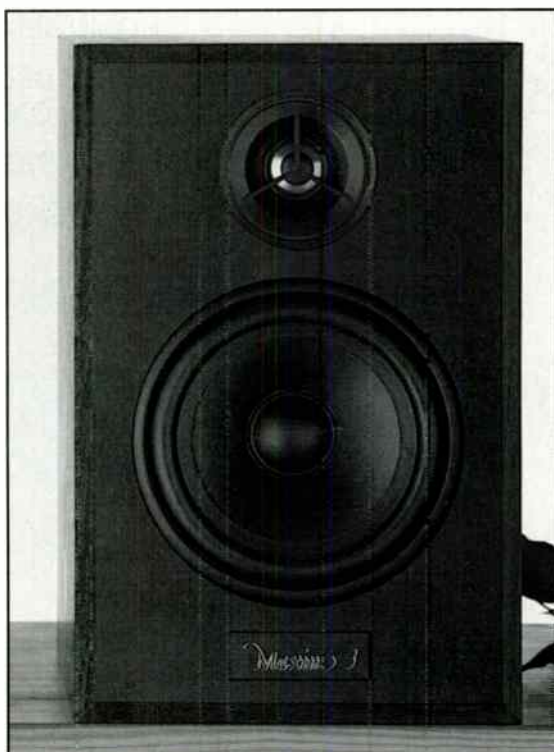
separation between instruments. For all their vigour, they proved not quite so even as either the Missions or the Maxims. All the same, their long-term listenability must be rated highly, with virtues sensibly balanced against occasional vices, neither overpowering the other.

Castles' Trents possessed a light balance, which although it kept the rhythm and the beat tight, lacked weight in the bass. On the plus side, at least they were not indulging in fakery, but the traces of brightness and sparkiness in the upper mid and treble unbalanced tonalities. Nonetheless, they performed well, but unlike the Missions, Maxims or Tannoys showed signs of being particularly equipment-conscious. Both sources and amplification would have to be carefully matched with regard to their intrinsic sound and kept within their price league.

Both the Heybrook Primas and the JPW Minims were outclassed in this company, the Primas unable to match the dynamics and range of their rivals. Until the Maxims came along, their ability to reproduce a solid round mid-range would have been recommendable; but their knack of staying with the music at the cost of finer detail now shows up more obviously.

Last - and least in price - come the JPW Minims. Now sounding a bit old-fashioned, they were outclassed in terms of imagery, which could collapse into a kind of dual-mono, and struggled more than all their rivals when it came to reproducing the real dynamic range of either an orchestra or well-produced Pop. Their price - in this day and age frankly as little as could possibly be paid for a speaker with pretensions to partnering anything hi-fi - should be borne in mind. For £80, they were more than presentable, in fact doing a very commendable job on vivid danceable mixes like Prince. Not especially subtle, but brave, without being over-brash or ineffectively dull, if you don't have the extra thirty pounds in your pocket, they do fulfil the minimum standard for hi-fi.

In systems appropriate to their price, or with selected separate components, any of these six speakers might well suit. Mission and Goodmans, however, run away with the laurels on this occasion. Both designs manage to keep up with sources and amplification way beyond their price bracket. They have limitations, but the very fact that both will keep a listener listening through several stages on the upgrade path make them recommended starter speakers for a system. It takes a much thicker wallet before either can be bettered ●



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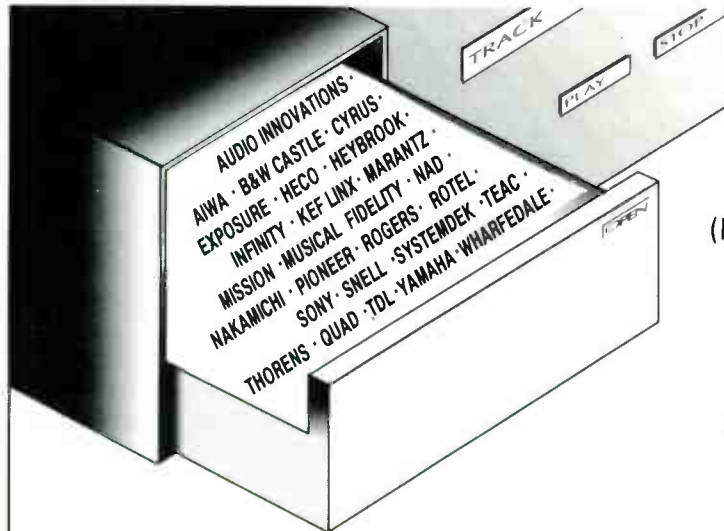
Of course, all of these benefit from an upgrade to Groove Tubes - the ultimate valve.

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Japanese Victor

Noel Keywood takes a ringside seat as the JVC TD-V1010 battles for the heavyweight £400 cassette championship.

The JVC TD-V1010 is a wonderful example of how the Japanese in particular have developed and refined a simple 1960s technology. And even though the cassette's successor - Digital Compact Cassette - is here, there's still a role for decks like the JVC, in spite of its £400 price tag. The cassette will live on usefully in most peoples' lives for some years yet and decks of this quality are wonderful for making high quality recordings that can be transferred to car players and personal stereos in particular.

But let's start with the peculiarities. The latest fad in cassette is the powered cassette door: the JVC hasn't got one. It's a push-it-closed-yourself job I'm afraid to say, so gadget freaks may find this recorder a bit of a disappointment. After all, Sony have just brought out a motorised door on a player costing less than £200 (and tested next month). I'd guess that JVC feel dedicated users don't demand such a convenience - and it does mean you can get the cassette out any time, not just when the power is on.

Perhaps more disconcerting is the absence of any form of automatic tape tuning system. This will dampen the enthusiasm of dedicated tape users

quite considerably I imagine - and why not? Even though adjustment systems vary in their ability to get things right, according to the tape being tuned, I can understand how owners like the reassurance they give. Tests show that adjustment by ear is as accurate through direct A/B comparison using the Tape/Source monitor switch, but this can be a slow and tedious process. When in a hurry, I'm happy to use my own Nakamichi ZX-9's tuning system, being prepared to put up with just a touch of tonal imbalance should it occur. So I am a bit surprised and disappointed that the TD-V1010 should lack such a system, since it has both variable bias and record gain (sensitivity).

Coincidence would have it that we have a prototype of a tape bias tuning gizmo. It's been floating around the office for some time. The appearance of the JVC, together with a cautious then enthusiastic response from Eric to the gadget, has prompted us to put it into this issue, since it is tailor made for such a situation.

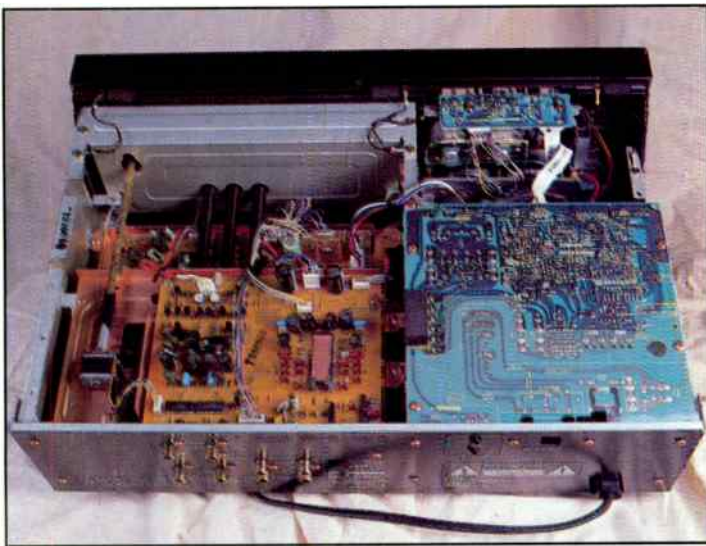
So much for what the JVC very obviously hasn't got. What it has got, apart from sheer performance, is possibly less than you'd imagine at £400, but I'm not complaining. Gadgets don't in the end count for much; performance

does. Top cassette decks need a lot of thought and attention in their design, plus very specialised set up at the end of the factory production line. That's what I am looking for with a deck like this.

Quality recorders must have a dual-capstan transport mechanism for smooth, stable running of the tape. The TD-V1010 has such a transport, equipped with a direct-drive capstan for really tight speed control, a system that is effective in reducing low rate (drift) speed variations.

Separate record and replay heads are fitted, siamesed together into one block as is common. This gives the highest level of performance, together with the great convenience of off-tape monitoring. The quality of a recording can be checked whilst it is being made, since the replay head lies after the record head in the tape path. A recording put down can be immediately read back off the tape with this arrangement.

There are direct inputs that bypass some internal circuits, including the balance control, and a normal line input. No microphone input is provided, but there is a headphone output together with its own mini-volume control. Dolby B and C noise reduction systems are fitted, but not the new Dolby S system.



JVC use a variety of audiophile design practises in the TD-V1010 cassette deck. At left you can see the record level control potentiometer sitting at the rear of the chassis close to its associated circuitry. This idealised positioning needs a shaft, visible in the photograph, to run forward to the front panel control. Copper plating is applied to the metal work to avoid induced eddy currents.

To get this you'll have to pay a lot more than £400.

JVC have fitted an on/off switch for Dolby HX Pro, which isn't necessary. They don't make any sensible observations about this in the handbook, one that is of limited use I feel, for a complex product.

There's a track search system that relies on gap sensing, something that can be useful, particularly with prerecorded tapes. JVC fit a switchable MPX (multiplex) filter which should be used when recording from VHF stereo tuners to cut out pilot tone (19kHz). This avoids blocking of the Dolby system and the possibility of whistles.

A tape counter with a four-digit

with its discreet gunmetal grey finish. It's certainly an improvement upon black. The orange and red display panel also adds both colour and visual verve to the package. I liked the back-lit cassette compartment too; it helps to reveal at a glance how much tape there is left. The transport controls have a light action, but I didn't find the white lettering on them especially legible against the light grey background. A solid base adds weight to the machine. Otherwise, the TD-V1010 was pretty normal in the way it behaved, being reasonably quiet and civilised. Like all expensive decks it is speedy in fast forward or reverse, which makes track finding less time consuming.

In many - but not all - areas, the measured performance of this machine was exceptional. It is quieter

than any deck I have previously tested; the transport was remarkably speed stable and the head can get very high recording levels onto tape. I was disappointed to find that although the head had been factory set to be perfectly upright, high frequencies fell away.

Peak record level (0VU) on the record level indicators had been set very low too, which was misleading. Add these gripes to the lack of a calibration system and you can understand that in spite of its unrivalled strengths I have some small reservations about this machine.

A look inside showed circuit boards stacked over each other, obscuring various important adjustment potentiometers. This complicates recalibration, something that should be reasonably easy to carry out on an expensive deck like this one.

The small amount of upper treble loss, due not to head azimuth error but replay equalisation, made itself quite obvious with prerecorded tapes. Whilst most people won't buy a £400 cassette deck for this

purpose, it is nevertheless an important measure of general compatibility. The fact that the TD-V1010 made most prerecorded sound a little warm clearly showed how the equalisation error made itself known in practice.

A new Tina Turner tape, "Simply the Best" well illustrated both the strengths and weaknesses of the machine in replay. The reference Nakamichi ZX-9 clearly sounded crisper with Dolby B engaged; it also had cleaner bass. These were quite immediately obvious strengths of the ZX-9. However, with River Deep, Mountain High the JVC

clearly and smoothly analysed and revealed the individual components that go to make up the famous "wall of sound" orchestration that Phil Spector used.

Although warm in tonal balance, it was expansive in its presentation of the total performance, with backing singers, horns - and even Tina Turner struggling to stay heard! - more clearly presented on a big sound stage. I suspect it is the special LC-OFC wiring of the JVC in particular that gives it this subtle but valuable extra clarity. I still wanted to hear the crispness of the ZX-9 in addition to this, however, and would have preferred it if the JVC had Play Trim (like NAD or Yamaha), or a replay response like the better TD-V541.

I was aware of well controlled tempo with the JVC, ably demonstrated by playing a Decca tape of Chopin Nocturnes. Even though prerecorded tapes have speed instability recorded in, a good transport can still give audibly better results by not adding to the problem.

Metal Matching

As measurement had indicated, TDK MA-XG metal tape didn't really match this machine, no matter how much I twiddled bias and experimented. This is a matter of record equalisation being inappropriate. Maxell Vertex metal at -2 bias was fine however, giving a tonally exact replica of the original when recording. Vertex runs so well it sounds very clear and stable. Whilst I heard just a slight lessening of transient impact on closely miked drums, recordings were superbly smooth and clear across the mid-range and treble regions.

As I am commonly finding these days however, while current heads can, with high bias and premium grade metal tape, now get astonishingly high recording levels onto tape in the mid-band and at high frequencies, they overload and 'wallow' in the bass. The rather prominent bass on Stevie Winwood's Roll With It sounded distinctly plump and out of time; it was rolling around doing its own thing on a recording I made, something I noticed quickly and found a little disconcerting. Yet with Dolby B only engaged, tape hiss was all but inaudible even at high volume level, the JVC was so quiet. So the final result when recording onto good metal tape was impressive in most respects, but not perfect, even though I kept recording level down just a wee bit (peaking at +8) to give the deck its best chance.

Chrome tape (Maxell XL-IIIS) proved even quieter; just the slightest hiss was audible with Dolby B, when recording to +4 or so and then replaying at a high volume level. This was impressive; Dolby C was hardly necessary. Recording quality was very good, but chromes and ferrics do round off transients and with close miked drums, for example, there was some slight loss of transient speed and impact. It is only with certain demanding tracks that this happens, the synthesised percussion on Grace Jones' 'Slave to the Rhythm' being one that lost

What fascinated me about the JVC was that it clearly and smoothly analysed the famous "wall of sound" orchestration that Phil Spector used

readout and 'time remaining' sits on the main display panel, together with a bright orange and red fluorescent record level indicator, a digital readout of peak music level and legends to show what type of tape has been inserted into the machine: ferric, chrome or metal.

To this fairly unremarkable collection of facilities has to be added a remote control unit with the transport functions on it, counter reset and display functions, music search and source/monitor button. There's no control of output level and, therefore, volume.

The TD-V1010 looks nice enough,

some of its hard impact. This sort of material apart, the JVC sounded smooth, balanced and open. If there's one great benefit of low noise, it's the ability to stay with Dolby B, so avoiding the quality degradation introduced by C.

I was impressed by the cleaner bass of TDK AR ferric tape. Ferrics need the lowest bias of all and can take the most stick at low frequencies. TDK AR was obviously relaxed and smooth sounding across the critical bass and lower mid-range region, if a bit grainy as usual at higher frequencies. Maxell XL-IS had less

grain, but it would not accept the same sort of recording levels AR will take with alacrity (up to +6 on this deck).

It was this machine's inability to play prerecorded tapes properly that I found most disconcerting. I keep a large and growing collection at home for Walkman use, and many contain music I value. The TD-V1010 was poorer at playing them than JVC's less expensive TD-V541 that I tested and liked so much some months ago. Adjustment had no effect; the problem lay in replay equalisation - something that cannot be

modified. But in return you get very low noise - that's the trade off.

Most cassette users don't have many prerecorded it seems from our Reader's Survey. This confirms the view that expensive cassette decks are largely used for making quality recordings both for replay at home and for use in the car and personal stereo. That being the case, then most people will find the JVC a fine deck, one that is superbly quiet. It has great insight and, carefully tuned in with the right tape, will deliver excellent results ●

Measured Performance

I was impressed by JVC's TD-V541, tested in our December 1991 issue. It was a superb all-rounder, reasonably priced. The extra digit in this model's number said it should do better, yet experience shows Japanese manufacturers commonly make a dog's dinner of their top models these days; heaven knows why. JVC retained their grip - just - with the TD-V1010; in some areas it is unrivalled.

A big surprise were the hiss figures. Cassette decks always hit -56dB (bias noise, a result of recording, then replaying). That's without Dolby and using the quietest tapes available, TDK SA-X or BASF Chrome Super II. Switching in Dolby B gives -10dB improvement and Dolby C -20dB, resulting in -66dB and -76dB hiss levels. These are the figures a Nakamichi turns out: they are never bettered. Some decks fail to reach this standard, usually because of noise in their replay amplifiers.

Because of the consistency of this result I usually say little about noise in cassette recorders: it is always the same. Also, the question of whether it is tape hiss or amplifier hiss remains unresolved. The surprise of the TD-V1010 is that it significantly improves on all noise figures, breaking what I had assumed to be an unbreakable barrier (a bit like Absolute Zero).

That the machine was unusually quiet became obvious when measuring the replay amps for noise; at -64dB they were 3dB quieter than usual. Surprisingly, this fed through to the record/replay figures, giving -59dB, -69dB and -79dB hiss levels with, respectively, Dolby out, B and C, with BASF Chrome Super II or TDK SA-X. What this means, purely and simply, is that the TD-V1010 is audibly quieter than any other cassette recorder including, dare I say it, all Nakamichis. In fact, I suspect that JVC are using Nakamichi as a standard to improve upon, since I see some curious similarities in the TD-V range.

I suspect JVC have achieved this by using a stable and quiet bias oscillator, super-sonic filtering above 20kHz and, most importantly, a highly efficient, low-noise head feeding quiet replay amplifiers.

The key question that follows from this achievement is whether the recorder achieves the same dynamic range as a Nakamichi by being able to get equally high recording levels onto tape. This is a test of head ability. Tests showed that it does; JVC have sacrificed nothing to get low noise, least of all other aspects of head performance. With TDK MA-XG metal tape tuned flat by adjusting the bias, the head could record up to +9dB in the mid-band and +0.5dB at high frequencies (relative to IEC 0dB flux). They are figures comparable to those from a Nakamichi. With the quiet

TDK and BASF chromes I have been talking about, the figures were also very good (around 4dB lower).

Summarising, the TD-V1010 can record as high as the best, but it is significantly quieter by -3dB. This gives it an equivalently greater dynamic range, managing a massive 87dB in the mid-band with TDK SA-X. This is greater than that of DAT (around 80dB), using the same 3% distortion limit, which shows how cassette has managed to advance on the quietness front.

One of the curious but, I would imagine, incidental similarities to that of a Nakamichi is frequency response when recording blank tapes. The '1010 was less flat than many decks nowadays, and in the same way as a Nakamichi. The response analysis with TDK MA metal tape clearly shows a trough above 2kHz. The machine tuned flatter with Maxell tapes - especially Vertex, their premium grade (and expensive) metal. All the same, with fine manual tuning (there's no automatic tuning system) the response can be got flat to within 1dB or so with good ferrics, chromes and metals, a tight enough limit as cassette goes. This will allow the JVC to reproduce an original with good verisimilitude in tonal terms.

The other response anomaly this machine shares with some Nakamichis is a sub-sonic peak. JVC's lies at 17Hz and is +2.5dB - enough to add a bit of extra bass weight.

The response trough lies in the replay amplifier I found, another sign that JVC have followed Nakamichi, who arrange things slightly differently from all the other manufacturers. But the high frequency extension was limited; it just made it up to 20kHz. Prerecorded tapes sounded a shade dull as a result, although I suspect this won't concern many potential buyers. The replay side of things should be spot on all the same with expensive cassette decks, so that they make absolutely standardised and therefore perfectly compatible recordings for transfer to a personal stereo or car.

Finally, in the on-going and now worsening confusion over where to put 0VU, this deck places it unusually low - no less than -4dB below Dolby flux - which is around 4dB lower than other decks, even budget models. This makes little sense. High performance decks commonly put it about 5dB higher. As a result music peaks can be taken right up to the upper limit of the display (+12) with metals.

I admit to being baffled by the Japanese when they start playing with top end product. This particular recorder has no auto-tune system, a manual cassette tray, a 0VU peak record level set too low and a smidgin of azimuth error, which although minuscule still prevented the review model from scaling Nakamichi heights. Yet it has obviously received very special attention: it's impos-

sible to come up with such an extraordinary performance as 0.015% wow and flutter (almost as good as CD!) and 87dB of dynamic range (more than DAT!) without somebody who knows a thing or three about cassette lurking in some back room somewhere. How they can produce such an advanced deck with minor but obvious peculiarities I can't understand. Still, the TD-V1010 is rather special all the same; the funny bits don't in the end detract much from the fact that it offers astounding performance from cassette - better than that of any other deck I have tested to date - which is just about every one, I believe! NK

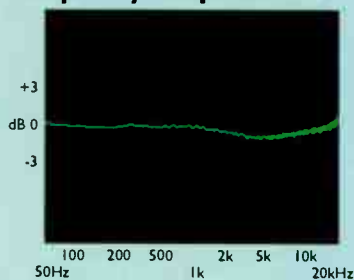
REPLAY (prerecorded tapes)

Frequency response (-2dB)	60Hz-20kHz
Speed accuracy	+0.6%
Hiss (70uS, Dolby out)	-64dB

RECORDING (blank tapes)

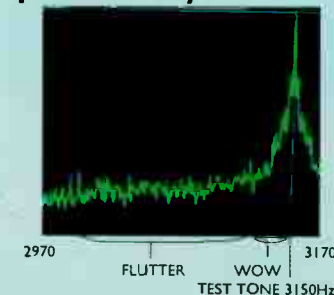
Frequency response (IEC Primary Refs.)	
ferric (IECI)	20Hz-19kHz
chrome (IECII)	20Hz-19kHz
metal (IECIV)	20Hz-20kHz
Separation (1kHz)	-50dB
Distortion (315Hz)	0.7%
Hiss (70uS, Dolby out)	-59dB
Speed variations (DIN total)	0.015%
Flutter energy (3-3.13kHz)	-38dB
MOL/SAT (IEC Refs)	315/10k
IEC I (ferric)	+4dB/-6dB
IECII (chrome)	+3dB/-5dB
IECIV (metal)	+5.5dB/0dB

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Getting the Digits Taped

Noel Keywood grapples with an early production prototype DCC900 Digital Compact Cassette recorder, shipped in direct from Philips in Holland. The gremlins had a great time; Philips' 'phone bill will affect next years operating profits.

“NO TOC” it said. The complexities of a TOC is the sort of thing that could keep an army of journalists, engineers and handbook writers in work for a long period. It’s also the sort of thing that will make Granny return to her crochet with renewed vigour. Philips’ first full-feature Digital Compact Cassette recorder, the DCC900 priced at £499, is complex. Arcane messages like the No Table of Contents disclaimer I had flashed at me during my experiments are part of a new language that will face users. It also formed a greater part of the language on the ‘phone lines between London and Eindhoven. But TOCs apart, I found DCC also possesses great flexibility and, better still, extremely good sound quality.

Philips have made the DCC900 a very comprehensive package. It has been conceived to be something of a showcase I suspect, so there’s a lot to it. The size of a large cassette deck, it is

built like the lighter ones. That’s to say it’s adequately strong and well finished, but it doesn’t have the solidity of more expensive hi-fi components. Our sample had a clanky tape-loading drawer, but hopefully this will move more smoothly and feel firmer in units reaching the shops.

Designed to mimic a CD player, the drawer sits centrally over a large, blue fluorescent display panel. This conveys more information to users than that of any digital source to date. It has a ten-character, dot-matrix type readout that can write up the album title, track title, artist and such like. If the information is too long to fit, it will scroll through on command.

Alternatively, the display will switch to show track number, time, tape counter, side A or B of the cassette, the operational mode and, finally, record level. The time display will show absolute time from start, elapsed track time, total time remaining, or it will ▶

WHAT IS DCC?

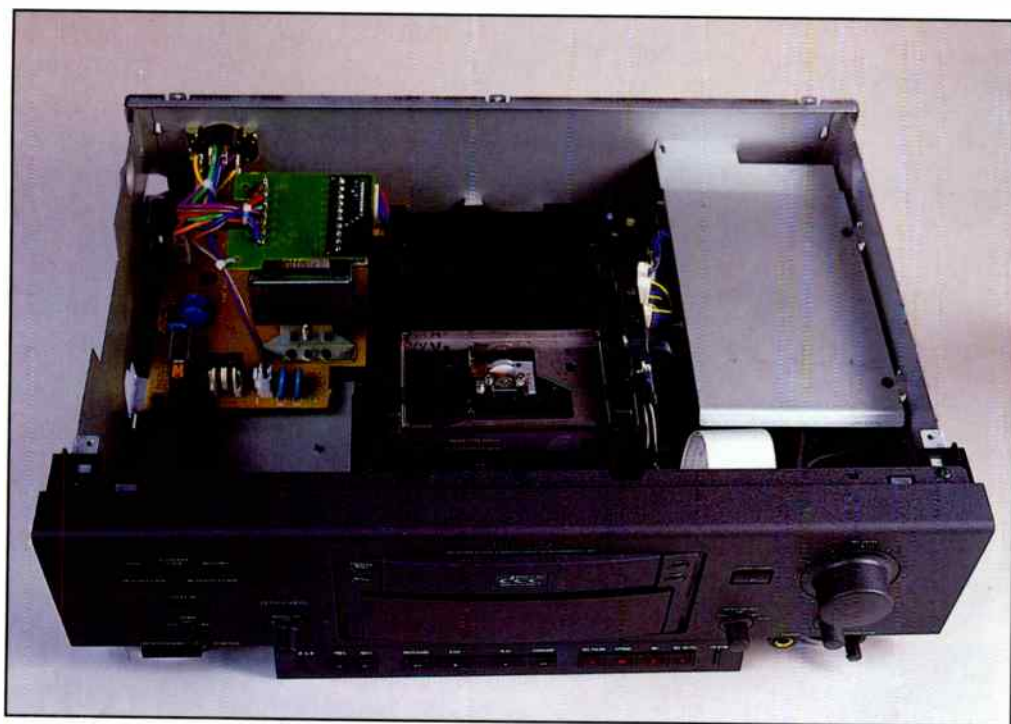
Short for Digital Compact Cassette, DCC is the successor to the conventional cassette. It cleverly puts a specially-processed digital signal onto inexpensive video tape, so both blank and prerecorded tapes will not be overly expensive. Expect a price of around £5 for a blank tape and around £10.99 for a prerecorded. Philips say prerecorded tapes will be available in the shops by the end of 1992.

The machines themselves will initially be priced at around £500 maximum for a domestic hi-fi recorder. Portables and car players are likely to be less expensive. Technics and Panasonic in Japan are gearing up to produce DCC, so some of the world’s largest electronics companies are behind it.

A DCC recorder will make digital recordings rivaling the quality of Compact Disc, Philips say. The prerecorded tapes should sound as good as Compact Discs too. Even more information will be put of them than currently goes onto CD. Track numbers, playing times, titles, the artists and such like will be provided.

The tapes are the same size as a normal cassette, but a bit slimmer. They have sliding metal guards to keep out dirt and fluff, and hub locks to prevent the tape unwinding whilst the cassette is being carried. This makes them very durable - more so than a CD. They are immune to vibration too, which makes use on the move possible - in a car or jogging.

Finally, DCC recorders will play normal analogue tapes as well - but they will not record onto them. So tape collections will not become obsolete.



All DCC recorders auto-reverse. This shot shows the rotating head assembly beneath the cassette tray, which is part of the auto-reverse arrangements.

function as a normal tape counter. With symbols appearing as well, the matrix display of the DCC900 is pretty comprehensive, more so than CD or DAT in this area.

So DCC offers users more information than CD or DAT. Some of it is software information, but recording in particular also brings up mode messages that are unique to DCC. For example: Append, Lead-in, No TOC, Start Marker, and such like. Being part of a new and obtuse language, we've devoted a separate section to this, since descriptions are long winded and perhaps a little difficult to follow.

To possess the convenience of CD, in track finding, skipping and what have you, digital tape systems are a lot more demanding of their users than the conventional cassette. Users need to compile their tapes in the same way that recording engineers put together special master tapes for Compact Discs, which have a Table of Contents, PQ codes and suchlike, just so the search mechanisms can work properly.

Philips are aware that the operating logic of DAT can be difficult for consumers to cope with and they claim to be intent on making DCC easier to use. However, the easier any tape system like this becomes, the fewer tricks it can perform. Knock up a quick tape and you'll lose conveniences like a time readout and track number search. Spend some time carefully compiling a tape and these conveniences should, in production samples, be available. This is the dilemma faced by those wanting to domesticate digital tape systems: should they be as complex as professional media, but slow and awkward to use, or should they be simple but quick, like cassette?

My answer is - both. The advanced functions can be separated from the simple ones, but on our DCC900 the delineation still wasn't clear enough. However, Philips were frank in telling

me that this aspect of DCC was still being debated and dealt with by the development engineers.

I was warned that the operating software of our prototype was not complete and that a few 'peculiarities' in the way early samples behaved in response to commands existed. After a long conversation with the senior project engineer, Gerry Wirtz, in Eindhoven, Holland (the home of Philips) it turned out that there are many unresolved difficulties. Half jokingly, he said they rather hoped that Britain's more critical reviewers would discover every wrinkle and bug in time for them to be expunged from final production!



Gerry Wirtz

In comparison with our resident Denon DAT recorder, the DCC900 was slow in its search modes. Fast reeling was conducted at a leisurely pace too, which made Re-number especially long winded. We all expected the slick speed of our Nakamichis to be met - or at least approached - let alone the manic whine of the Denon as its shuttles at an enormous rate, so there

was disappointment with the DCC900 here. Otherwise, the machine was acceptably quiet in operation. Its controls are on the small size, but the remote control unit will probably see more use in practice.

So much for the peculiarities of using a digital tape system like DCC. The general idea is that owners should be able to compile tapes that the machine can manipulate with all the dexterity of a CD player, if not its speed. It takes time and patience, but the result is pretty sophisticated. Transfer one of these home-recorded tapes to a car or portable and you'll be able to use all of DCC's facilities.

We were also supplied with prerecorded tapes. Being professionally compiled, these have track times, track numbers and artist and album information on them that is read by the machine and put up onto the matrix display panel. Unlike analogue tapes, blank portions are not played, because 'next' or 'reverse' markers tell the machine to ignore them. So a DCC prerecorded tape is handled tidily by the player. To find a track, its number is simply selected on the keypad. Up goes a confirmation message on the matrix display: 'To 3', or whatever number has been selected. The machine pauses, its solenoids clank in acknowledgment and it sets off in fast search mode to the track selected. If it is on the other side of the tape, the machine's logic still knows in which direction to travel.

Since the prerecorded tape market has grown to huge proportions worldwide, Philips have taken this role seriously. Gone are the days of muffled sounding tapes with shaky pitch; the drunken sounding cassette will be a thing of the past with DCC.

The DCC900 has both optical and electrical (coaxial) digital inputs and outputs, as well as normal analogue inputs and outputs. Philips fit a selector switch on the front panel. A convenient arrangement, we found, was to connect up the analogue inputs and outputs to the hi-fi system as usual, but also to run a digital line straight in from the digital output of the CD player. This way, the recorder could be switched on its front panel to record from any analogue source connected to the system, just like an ordinary cassette recorder, or to record digitally direct from any CD player with a digital output.

By the way, Copyright protection is included, which means that you can record from CD or DAT onto tape digitally, but you cannot then record off that tape onto another digitally. (There's no limit to the number of analogue copies that can be made though.) I confirmed this with both CD and DAT: the DCC900 would record New Order's Technique from our resident Denon DTR-2000, but the Denon wouldn't then re-record this tape back from the DCC900 onto a blank. From an Arcam transport, the DCC900 and the DTR-2000 would both record digitally, but the Denon DAT would not re-record from the DCC900. In fact, the

Record function wouldn't even engage if the DAT was started after the DCC.

Otherwise, there was no incompatibility between these recorders; the DCC900 even recorded at 48kHz from a prerecorded DAT. The only thing it wouldn't do is accept information like track numbers from DAT, something it will do when recording (digitally) from CD. DAT would not accept code from DCC either, otherwise the two tape systems work together perfectly.

The remote control transmitter has a numerical keypad for direct track finding, plus a whole host of facilities. Philips brief for this recorder seems to have been "include everything!" It has Drawer Open, remote control of volume, text reveal and even some of the marker functions needed when recording. The machine will playback or record by remote control.

Balancing the somewhat unpredictable behaviour of our review sample was a degree of fidelity higher than my expectations had allowed for, plus enough flexibility to interface with an ever growing array of external digital convertors. And to cap it all, the DCC900 plays conventional analogue prerecorded tapes.

The DCC900 handled conventional (analogue) prerecorded cassettes well. Like all future DCC recorders, it is an auto-reverse machine, a button selecting side A or B play. The repeat function offers continual play and track search brings in a gap-sensor to detect the start of tracks on prerecorded tapes. Remote control still functions, so the package is a good one even for analogue tapes. Dolby B is provided for commercially prerecorded tapes and Dolby C for home recordings.

SOUND QUALITY

Although our recorder was an early sample with incomplete operating logic and occasionally erratic behaviour, Philips assured us that the audio side was fine. The sample had, they said, been provided to allow measured and subjective performance to be assessed.

As I mentioned earlier, we got some prerecorded tapes with the DCC900. Take it as read that, being a carefully conceived new medium, these DCC tapes were 'correct' in basic sound quality. By this I mean that they obviously had plenty of treble, reasonably clean bass and no hint of pitch instability. Superficially at least, they compared well with CDs. However, I found all three sufficiently coarse-sounding to prefer listening to ordinary analogue prerecorded cassettes.

Conventional cassettes sounded surprisingly good, I had expected this side of the DCC900 to be mediocre, an afterthought almost. The biggest surprise was an obviously bright but unusually clear and well defined sound, with strong mid-band detail and projection. Vocalists were very well handled, their

enunciation in particular was intelligible; much of the dullness and fluffiness of cassette had been eradicated. Good, strong bass underpinned Rock music very well. The DCC900 actually sounded 'peculiar' in that cassette decks - even Nakamichis - don't behave like this subjectively; I knew immediately I heard the DCC900 play an ordinary tape that its analogue replay frequency response was unusual. Listening to Ashkenazy playing Chopin showed that the transport was basically speed stable, but occasionally 'jerked', something measurement later confirmed. Piano lovers would greet the effect with mixed reactions I suspect, but production models may well be more consistent in behaviour.

If recordings made on the machine had sounded like the digital prerecorded tapes supplied to us, then I would have strong reservations about DCC - but fortunately they didn't. We have to assume that the prerecorded were poor early transcriptions; it sounded to me as if they had been processed through many mediocre digital convertors, each one adding digital distortion.

My own response to DCC warmed considerably when I started recording with it. The recordings sounded close to the originals and there was no sign of the obvious coarseness that afflicted our prerecorded. Swapping around digital convertors showed that their own character was quite clearly discernible and was affecting my judgement of sound quality, suggesting the PASC-encoded digital signal on tape was a subjectively close replication of the original.

Recording digitally from a Teac transport, DCC seemed a trifle more mellow than the original. However, it struck me that there was likely to be quite a difference in sound quality between the Philips DAC in the recorder and the phase locked (Deltran) Bigger Bit DAC of the CD player which uses a TDA-1547 chip, known to be bright and forceful. The solution would appear to be running the DCC recording back through the Deltec DAC. This I did and found that the sound of DCC did brighten up a bit, but the extra lucidity of the Deltec also revealed just a trace of roughness, some mild loss of cleanliness and sparkle in the recording. Was this due to DCC? Yes and no. The FFT had showed that phase jitter is present in the DCC recorder and Paul Miller, the reviewer, said he had detected this too. So the slight change in sound character may well be due to jitter from the DCC transport or clocking system, rather than any effect due to PASC.

In the end, I felt satisfied that differences between the sound of DCC and that of digital sources may well exist, but they are very small and likely to be attributable to factors other than the one most potentially controversial part of this new tape format - PASC. I am not saying that DCC does not have some slight signature, but it is very small and the more tests I performed the less

certain I became about its exact nature. If anything, I would say it slightly takes the sheen off treble and it also introduces a little coarseness, both effects being very minor. As a digital system it seems pretty benign in its errors.

On balance I ended up more impressed with the sound of DCC than I had dared hope. I'm reminded of a remark made by Tony Griffiths at Decca's recording studios in Kilburn, London. He said that if and when DCC went eighteen-bit, he thought it likely that its sound would discernibly surpass that of CD. It was a remark that intrigued me. It does seem that the system is inherently good enough to achieve this.

I listened to the behaviour of DCC with Rock music; the demands of Classical are different; Eric Braithwaite analyses its sound quality mainly on Classical material.

Eric Braithwaite (Music Editor) says-

I've previously been a little critical of Philips' PASC digital compression system. The good news now is that PASC, as built-in to the Philips DCC900 recorder, does work well. While I heard audible differences between source and tape, in some respects I would be happier with DCC on the evidence of the DCC900 than with at least one similarly-priced DAT recorder of my acquaintance. It would certainly be difficult to find an analogue deck to beat it at anywhere near a similar price.

Philips reckoned that the sonic signature of the 7350 DAC would probably be more recognisable than that of PASC compression, and I agree. (Sister company Marantz will be using DAC7.) Using the machine's own convertors (A/D and D/A), there was a noticeable difference between source and copy. Copy was marginally softer, with some evidence of dynamic restraint at the lower end, and a degree of throatiness on vocals. There was also a diffused air across the soundstage.

Recording and playing back using an external DAC, a Deltec Bigger Bit, brought out the DCC traits more clearly. Primarily of course, like DAT, DCC is absolutely silent, with no tape hiss at all; it is well ahead of analogue even with Dolby S. Instrumental tone was very good using my tricky source material. There was more ambience, a less flat perspective and more specificity of image placement than with the internal conversion.

Across the frequency spectrum, I must say recordings on DCC sounded tonally more evenly balanced than those of DAT or analogue at comparable prices. Philips' DCC900 was, however, more compressed in front-to-back depth than the original and had slightly diminished bass weight

A spell of close analytical listening brought out evidence of what I suspect

THE LOGIC OF LOGIC

When Gerry Wirtz of Philips visited us with this DCC recorder he was at pains to point out that the Append facility is best used to start the recording process. This leads to a fair old song and dance whilst the recorder searches around to see what exists on a tape, before deciding upon where the new recording should begin. It's appears intelligent, but it is time consuming. Sometimes I found the recorder lining itself up on a small blank portion of tape it had found, ready to record over a following recording.

I'm afraid to say that Eric, Alan and myself on the magazine, being Nakamichi owners and users, found the time delay frustrating and, if you want to start recording quickly, it would be unacceptable. This is one drawback of an 'intelligent' digital tape system like DCC.

More or less instant recording is possible, providing you skip over the start of the cassette to avoid the lead-in writing process, which is also time consuming and of little value, as far as I can see. The recording will have a start flag inserted, but tracks will have to be numbered later, using the Renumber facility.

The reason for using either Append or Rec. Pause to start recording is that they enable a tape to be compiled with continuous time code and sequential track numbering. The process is a precise one requiring some commitment I found; this is the main difference between DCC and the old analogue cassette. Tracks are flagged at start and finish by dedicated markers that are inaudible. These are sensed by the forward and reverse track skip buttons (Prev./Next).

A skip flag can be inserted, allowing a track or section to be ignored without being erased. There are Mute, Next and Reverse markers as well. All can be inserted manually and some automatically. They allow the machine to behave 'intelligently' when replaying, identifying track numbers, changing direction and what have you upon receiving the hidden commands. If you don't like a command, it can be erased. Software information like track title could not be entered on our DCC900 and track numbers are inserted by the machine; users cannot arbitrarily enter numbers from the remote control keypad.

This has its benefits and drawbacks. With commitment and care, professional tapes can be compiled. However, there are a host of obscure little traps awaiting anyone who hopes to bang away at the buttons willy-nilly. The handbook needs to contain a simply written overview on markers and compilation to help users avoid them in the first place, or correctly analyse problems so they can be rectified.

I discovered many problems with the operating logic of our machine, but when told of them Philips said they would cure the ones they hadn't yet detected (?) and that they were still discussing others, like the inability to find numbered tracks on a home recorded tape. Consequently, judgement on the operating logic of the DCC900 has to be suspended until final production versions overcome available ●



Digital tape systems like DCC possess buried software code. Flags on the tape tell the recorder what's next, or what to do next. The Start flag identifies the beginning of a track for the search system. The End flag is used by Append to know where the music ends and, therefore, where a new recording could begin. Skip can be used to skip over boring bits, whilst Next means find the next Start flag. Reverse tells the machine to automatically reverse to the other side of the tape immediately, so it doesn't play a blank section. Not shown is Mute, which can be used to cut out commentary.

Users can insert or delete these commands to order, making the system seem 'intelligent', but it requires some extra effort. Not shown is Table of Contents (TOC). Philips are still discussing how and whether they should include this with DCC.

may be the symptoms of PASC operating. Individual instruments were mildly smoothed in dynamics, the attack softened marginally. Again, there was a degree of diffuseness over the soundstage; a very thin veil, admittedly, but a veil nonetheless.

In a copy of a recording on which each player was separately miked, concentrating on the places where the band was playing together gave a just-perceptible impression of a whole sound picture made up of a jigsaw of individual pieces, the edges, as it were, not quite fitting together in time. When bassist, pianist and guitarist were playing ensemble, it was as though the DCC recording gave a slight degree of prominence to some notes on one instrument, then focussed for a few notes on another, while the first subsided for the space of a bar. A recording has to be known very well for this to be evident, but it's a curious effect and quite unlike any other medium I know.

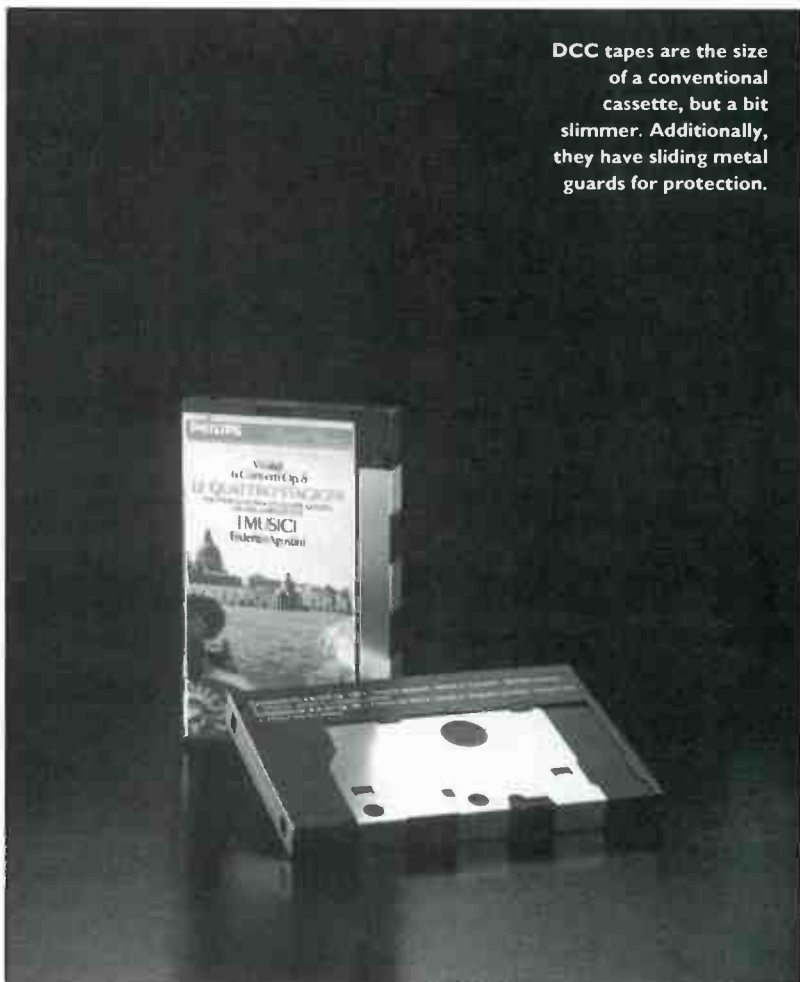
I've heard one or two people criticise PASC - and other digital media for that matter - for reducing the degree of recorded ambience. Recording de Falla, from Decca, this was marked. Recorded reverberation was certainly evident, as was the fact that the soloist is way back at the left. However, the reverberation time appeared to be cut short, reducing instrumental inflection. The brass passages appeared to be faster, as dying notes were cut short. Superficially, this contributes to an impression of tightly rhythmical speed, but the leading and

trailing edges of notes acquired a slight staccato effect. There was a great deal of vivid detail and tonal colour to counter this: in terms of an overall sound picture it takes a good grand's worth of analogue to approach this standard.

To put all this into context, while I have reservations, the cumulative effect of what really are only barely discernible anomalies is far less than that of any analogue recorder, even with perfectly-tuned metal tape costing up to twice as much. In fact, without painstaking comparison, it's difficult to believe that any but the most perrickety would be perturbed any more than by a top-rank cassette recording fractionally under- or over-biased.

Pre-recorded DCC and analogue cassette playback was another matter however. I can't say I was entirely happy with either. The prerecorded DCCs we had all had a family sound: rather dulled dynamics, a degree of slowness and a graininess to them which was unexpected by comparison with recordings made on the same machine. They were of a lower order altogether.

Analogue cassettes, by comparison were more attractive, with a brighter sound, although tape hiss was a little over-emphasised even with Dolby B. Here, there are analogue machines which have a warmer, rounder, and more detailed sound; piano on the DCC900, for example, had a very much lightened, sharper timbre and less solid weight than playback on a Nakamichi, for example, would suggest was correct ●



DCC tapes are the size of a conventional cassette, but a bit slimmer. Additionally, they have sliding metal guards for protection.

Measured Performance

DCC possesses a clever digital processing system called PASC. Based on two psycho-acoustic phenomena, it discards signals we supposedly cannot hear: those 'masked' (drowned out) by a nearby loud sound and signals too weak to be heard. This reduces the amount of digital information so much, it can be squeezed onto ordinary chrome (video) tape.

This new form of processing by PASC poses measurement problems. By selectively allocating bits only to wanted signals, it will cope with simple conventional test tones very well. Music is more demanding to PASC, so meaningful tests likely to show up problems have to use signals more like music. Luckily, modern spectrum analysers work well with 'wideband' test signals that are music-like, but at present they take the form of pulses or 'white' noise, neither of which can be said to mimic music really closely.

A problem I ran into immediately with the DCC900 was that its digital section behaves peculiarly when tested for frequency response with either pulses or white noise, suggesting it may do so with music. The high frequency limit dropped from 21kHz to 14kHz or so at low recording levels. The question then became: would this result be repeated with music or was it due to the fact that the test signals were not sufficiently music like, putting in too much high frequency energy and overloading PASC?

The answer could only come from Philips themselves and Gerry Wirtz, senior DCC engineer. He frankly admitted that PASC will start to chop out high frequency information when stressed with a full bandwidth signal. My task was then to ensure that the test signal should be very music-like, so that the outcome of tests would truly represent real life behaviour and indicate how sound quality might be affected.

After experiment I settled on a special tailored noise signal that is meant to approximate music, known as IEC 268-1 Weighted Noise. It turned out that this gave the same results as other noise signals (i.e. pink and white). They all show that DCC band limits to 14kHz or so when fed a wide range of music energy, from low bass right up to high treble. The effect is minor at high recording levels (-2dB down at 20kHz) but gets progressively larger at lower recording levels (-30dB or lower), where DCC reduces its upper frequency limit down to that of a VHF/FM tuner. The IEC noise test clearly shows that this is a

small limitation in the PASC encoding system; it was to Philips' credit that they readily acknowledged this fact.

Over the rest of the audio band, frequency response remains ruler flat to within fractions of a dB, as the high resolution frequency response analysis shows. In this it is like most digital systems. Measured bandwidth (-1dB limits) is 2Hz-21kHz.

There's nothing too drastic about the upper treble loss. Listening tests on tuners show that their MPX filters, which cut out all treble above 15kHz, can just be heard to take the sonority away from metallic percussion instruments. Since PASC isn't as drastic in its action as an MPX filter, I would expect it to be even less obvious subjectively. The very slightest loss of sheen, tinkle or sonority is arguably just detectable at times, when the original is available for comparison.

Distortion levels from the DCC900 were low, much of what I measured being noise. Although the levels are similar in magnitude to those of modern Bitstream CD players, the harmonic structure is more benign, higher harmonics being absent. DCC recordings will not sound like early CD - gritty and harsh. I heard little sign of digital distortion in recordings I made, which seems to back this up.

Channel separation was adequate at 72dB. That's plenty enough to give good channel separation and full stage width on stereo.

You don't hear tape hiss from DCC, unless you are playing analogue tapes of course. The DCC900 does have Dolby, but it is for replaying analogue prerecorded tapes only. Digital DCC tapes do not need noise reduction systems; that's one benefit of going digital. Hiss was very low at -93dB (IEC A weighted, true RMS).

So DCC measures well on its digital side, even though PASC will, with wideband signals, cause it to reduce bandwidth a bit at low levels. This takes advantage of the fact that the ear also loses its sensitivity at high frequencies on soft, low level signals, making the phenomenon very difficult to detect. I listened very carefully and could barely detect any change in treble character. The DCC900 does come over as slightly 'softer' in character than many CD players, but other factors, such as inherent DAC sound quality and jitter in the DCC transport, come into play when trying to make judgements about PASC alone, confusing the issue. The bottom line for me is that in spite of this small measured blemish, DCC does produce recordings of excellent quality. In this it will not disappoint future purchasers, even if on paper digital data reduction

systems like PASC (Philips) and ATRAC (Sony) do seem destructive in the amount of music information they discard.

The analogue replay section was unusual and interesting. Nakamichi lift upper treble in their frequency response to ensure Dolby B tracks properly so tapes don't sound dull and muffled when Dolby B is engaged. Philips lift the upper mid-band by a few dB right up to 8kHz, but high treble falls away, possibly due to azimuth error. The overall effect is to greatly brighten and sharpen the sound from conventional cassette, something I found generally to be a worthwhile enhancement. The DCC900 sounded much 'glassier' than our reference Nakamichi ZX-9, just a bit too much so to be accurate, but it was far preferable to most cassette decks in its presentation; clean and precise I would say, rather than warm and woolly. That was the subjective benefit of the raised replay frequency response, which also improves Dolby B tracking of course, so two effects are operative.

Speed stability was good, total wow and flutter measuring 0.07%, but there were occasional speed 'jerks' up to 0.15%. The transport was a good one by normal cassette standards.

Replay noise proved unusually low at -65dB (Dolby out). There was little hum also. The replay amplifiers were quieter than most, meaning the deck will not contribute to tape hiss in any way.

Philips have paid quite a lot of attention to the replay abilities of the DCC900 with prerecorded tapes. It measured well and sounded good too.

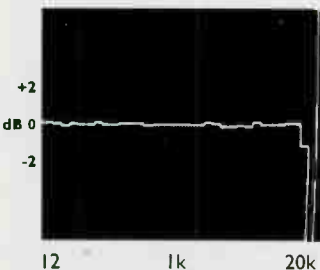
DIGITAL

Frequency response	2Hz-21kHz	
Distortion		
-6dB	0.006	0.006
-30dB	0.03	0.03
-60dB	0.9	1
-90	7	8
Separation	left	right
1kHz	74	70
Noise (IEC A)	-93dB	

ANALOGUE

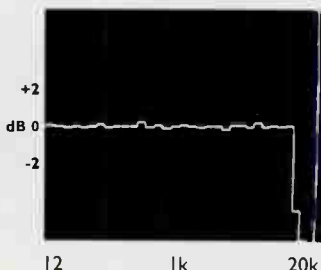
Frequency response	30Hz-14kHz
Noise (CCIR wtd.)	-65dB
Speed accuracy	+0.7% fast
Speed stability (W&F, wtd.)	0.07%

Frequency Response



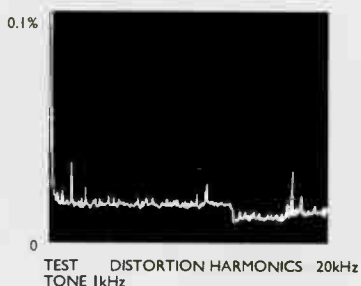
Frequency response at high recording levels (0dB down to -10dB or so) with wideband music is flat within fractions of a dB from 2Hz up to 16kHz. Level at 20kHz is -1dB down.

Frequency Response



Frequency response at low-ish recording levels (-30dB or lower) with wideband music reaches 14kHz before ending suddenly. PASC relies on the fact that the ear is not sensitive to high frequencies at low levels.

Distortion



DCC produces very little distortion; there are virtually no harmonics to be seen at -30dB, shown here. It matches the best Bitstream CDs in this respect.

■ One of London's stranger museums is dedicated to radio. It's not an annexe of the Science Museum, nor is it 'sponsored by industry', nor can you get in easily! In fact, this museum is a well kept secret, yet it has functioning radio and television transmitters, working exhibits and even the ability to remake early valves. In it we discovered the origins of hi-fi in Great Britain; we also met its sole owner, the effervescent and enthusiastic Gerald Wells.

for Public Address systems (Quad and Tannoy initially made PA equipment) and the transmission of entertainment programme via public broadcasting. We saw clearly how the various components needed for playing records, for listening to radio and for reproduction of sound in the home were developed separately, but came together to form hi-fi.

By the 1920s simple radios were available to the public. People commonly built and maintained their own, often from kits or plans published in magazines like *Wireless World*. Headphones were used for listening, or a small and crude horn amplified the sound from what was little more than a headphone earpiece. The BVWS

electrodynamic drive unit exists independently from the amplifier and reigns almost unchallenged. Since in its early form it had to be driven by an amplifier, I realised we were looking at the world's first active loudspeaker!

Other firsts in hi-fi soon appeared. The R. I. Varley articulated pick-up arm and Varley moving iron cartridge from the late 1920s caught our attention. By 1934 His Masters Voice (HMV) were making radiograms which incorporated the Rice Kellogg type loudspeaker, as made by Rola (now known as Celestion), plus a proper record deck, triode valve audio amplifier and valve superhet tuner. This is a hi-fi system in a cabinet - in 1934! So it didn't take long

British Vintage Wireless Society RADIO MUSEUM

Report by Noel Keywood.

Picture captions narrated by Gerald Wells, keeper of the museum.

Strange? Well, as museums go, the British Vintage Wireless Society Radio Museum is all of that, but it is also fascinating and delightful. Gerald has turned over his entire house and life to preserving the past; quite obviously it is a monumental task, yet one he copes with ably every day, ferrying around a constant flow of visitors. Helped by members of the Society (from now on referred to as BVWS), Gerald has restored many of the exhibits to working condition, which adds life to the whole enterprise.

The latest outlook in museums is to offer the public displays that are in context and/or working or interactive, like the Museum of the Moving Image on London's South Bank, or Bradford's Photography, Film and Television museum. Gerald has neither the space nor the resources to match them, but he does a wonderful job in tirelessly demonstrating his main exhibits in good working order.

We slowly got drawn in as we were shown around. Perhaps lines of brown wooden-cabineted radios from the turn of the century on would, alone, not be enough to sustain people's interest. The BVWS museum has progressed well past that stage, even though radios line the walls of every room in the house, including the halls and two large outbuildings. It has early televisions, tape recorders, a large collection of valves in glass-covered display cabinets and advertising display signs and part of a shop interior from the 1930s.

High Fidelity sprung from the radio industry. It was derived from the need



"This early radio has a tuner section, an HF 'reactance' amplifier and then a low frequency amplifier fed from a triode detector. The final stage was an output triode that fed headphones. This model is a kit supplied by Peto Scot from about 1919 onwards; you made it up on your kitchen table."

for domestic audio to spring from radio. Restored to working order, and using its original valves, Gerald played a record on this unit and it was quite enjoyable. Although even in its day the measured performance of this radiogram would have been seen as less than ideal, in practice we found it gave a smooth, easy sound that was fully intelligible and, for its time, better than we would have expected.

Another surprise was a German Minifon miniature wire recorder. This was beautifully made and finished, with small reels of fine wire on which signals were recorded. It was a battery driven portable, no less, and looked very advanced in design and finish compared to the wood and brass of the other exhibits. Yet this recorder was made just two years or so after the end of World War 2 when Germany's industrial fabric must have been in a sorry state. Recording was pioneered in Germany, especially the use of ferric oxide pigment coated onto paper tape. This superb little recorder, with its fine standard of design and finish, showed just how fluent the Germans were in recording technology at that time. And it also represents the start of audio recording as we know it of course. We'd spied a huge steel equipment

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We'd spied a huge steel equipment



"A Gecophone made in Sept 1922 in time for broadcasting by the BBC from November 1922. Every set had to have a BBC stamp on it to show that it was approved by the Postmaster General. It would drive a pair of earphones, but it also stood on a simple amplifier that drove a small horn loudspeaker. It was disguised in a smokers' cabinet because everybody smoked in those days."



American multi-millionaire, John Paul Getty Senior. It fascinated us for many reasons. The BVWS have restored it to perfect working order, showing how good TV performance had become just five years after the first public television broadcasts were made in 1932 from Alexander Palace, North London.

Also we learnt that his son, John Paul Getty Junior, who lives in Britain, and who donated the radiogram to the museum, also provides essential financial support. We knew of his love of cricket and his philanthropy - we didn't know that he had an interest in the history of broadcasting and was supporting this fascinating museum in South London.

This final twist to the tale seemed wonderfully appropriate. The British Vintage Wireless Society Radio museum may be unusual, even strange, in the way it is organised and run, yet it is also delightful and fascinating, a true labour of love on behalf of its keeper, Gerald Wells, the BVWS members who combine their talents and time to restore the exhibits and John Paul Getty Junior who supports the enterprise. To us, it was one of most interesting and informative collections of vintage radio and hi-fi we have ever seen ●

"A 1934 radiogram from His Master's Voice. It was top-of-the-range in its time and had variable selectivity on long and medium wave. An automatic record changer would take 10 or 12 in records. There were about ten valves, and a push-pull amplifier delivering about 4watts output. It had a 10in special HMV moving coil electrodynamic loudspeaker that looks like a development of the Rice Kellog loudspeaker. The cabinet was made from solid or good laminated woods, which made it really heavy. The lid was damped so it didn't close with a thud. Nearly sixty years later it still has its original valves and they work perfectly. Mind you we did have to change every condenser in the set because they didn't make those so well".



"This is an early articulated tonearm from R I Varley. It gives lovely lightweight, spring-loaded, parallel tracking; it only puts one-quarter pound (113 gms) on a record! With a sharp-ish needle they gave a cheerful sound."

cabinet standing in Gerald's bedroom and I'd noticed it had a small monitor TV in it. The role of this enormous device became clear later, as we reached the early televisions. To be seen working, they needed 405 line TV signals, so when the BBC ceased transmitting 405 from Crystal Palace (just up the road) the BVWS museum gratefully took in their standards convertor unit. It derived the old 405 line standard from modern 625 line transmissions, in order to provide a service for those people using old sets in Britain.

The BVWS had to carry out some difficult repair work on this one-ton monster - and Gerald had to check that his bedroom floor would take the weight before it was shipped in! Now it feeds modern transmissions to the old sets; we saw a fine black and white picture of Wimbledon on a 1937 radiogram with a television in it. This impressive item was owned by the

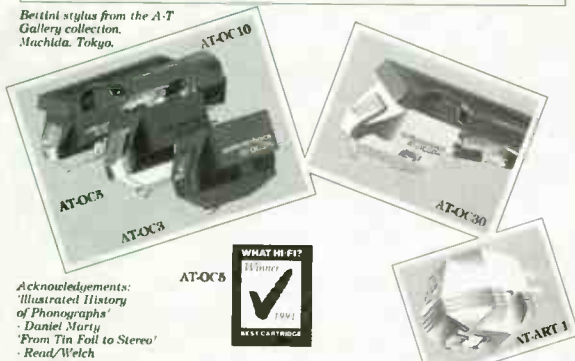


"This German Minifon wire tape recorder had three valves, an HT battery an LT battery and another battery in there for the motors. It gave about 10-15 minutes recording and you had a small microphone you could plug in. It was built about 1947-8 in Germany."

A Refining Of The PRINCIPLE



Bettini stylus from the A-T Gallery collection. Machida, Tokyo.



Acknowledgements:
 'Illustrated History of Phonographs'
 - Daniel Murty
 'From Tin Foil to Stereo'
 - Read/Welch



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-producer' phonograph was first in a line of successful models and today A-T salutes him as a true pioneer of high fidelity.

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

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12dB Passive Crossover 150 or 300Hz • 6dB/600Hz • 6dB/3000Hz				£47.00 pr
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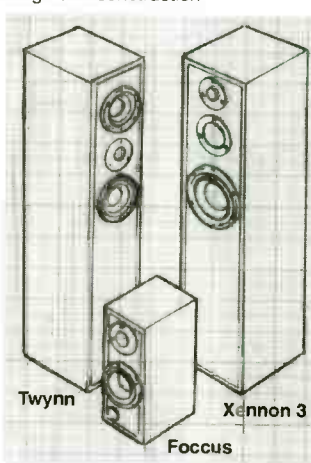
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▼ "Early television tubes were very long, so they stood them upright in the cabinet and fitted a lid with a mirror in it. This one was made by the Radiogram Development Co. It came out of Sutton Place, the home of J. Paul Getty Senior. He got it when he bought the house from Lord Northcliffe, who owned many newspapers. His son, who supports this museum, gave it to us. By the way, if it were not for his support we probably couldn't keep this museum going. A team of engineers took it to pieces, changed every bit of wiring and all the condensers, de-dusted it and got it going again, but all the valves are original. It had about 30 valves in it. There's a radio, television, push-pull amplifier, twin speakers and auto-changer. It cost about £160 in its day. The average man was earning £2/week so that was an awful lot of money. You could buy a cottage and a small car for the same amount."



▼ "Here's a Pye Black Box. The cases were made by Challin pianos, because they were one of the few companies that could make the raised chinoiserie patterning you see on the cabinet. It cost no less than £60 in its day, but for £30 you could get one with a plain brown cabinet. It has a four valve amplifier with ECL83s in push-pull driving Rola (Celestion) loudspeakers on either side. It had a BSR Monarch deck with 33, 45 and 78 rpm. It came out around 1960."



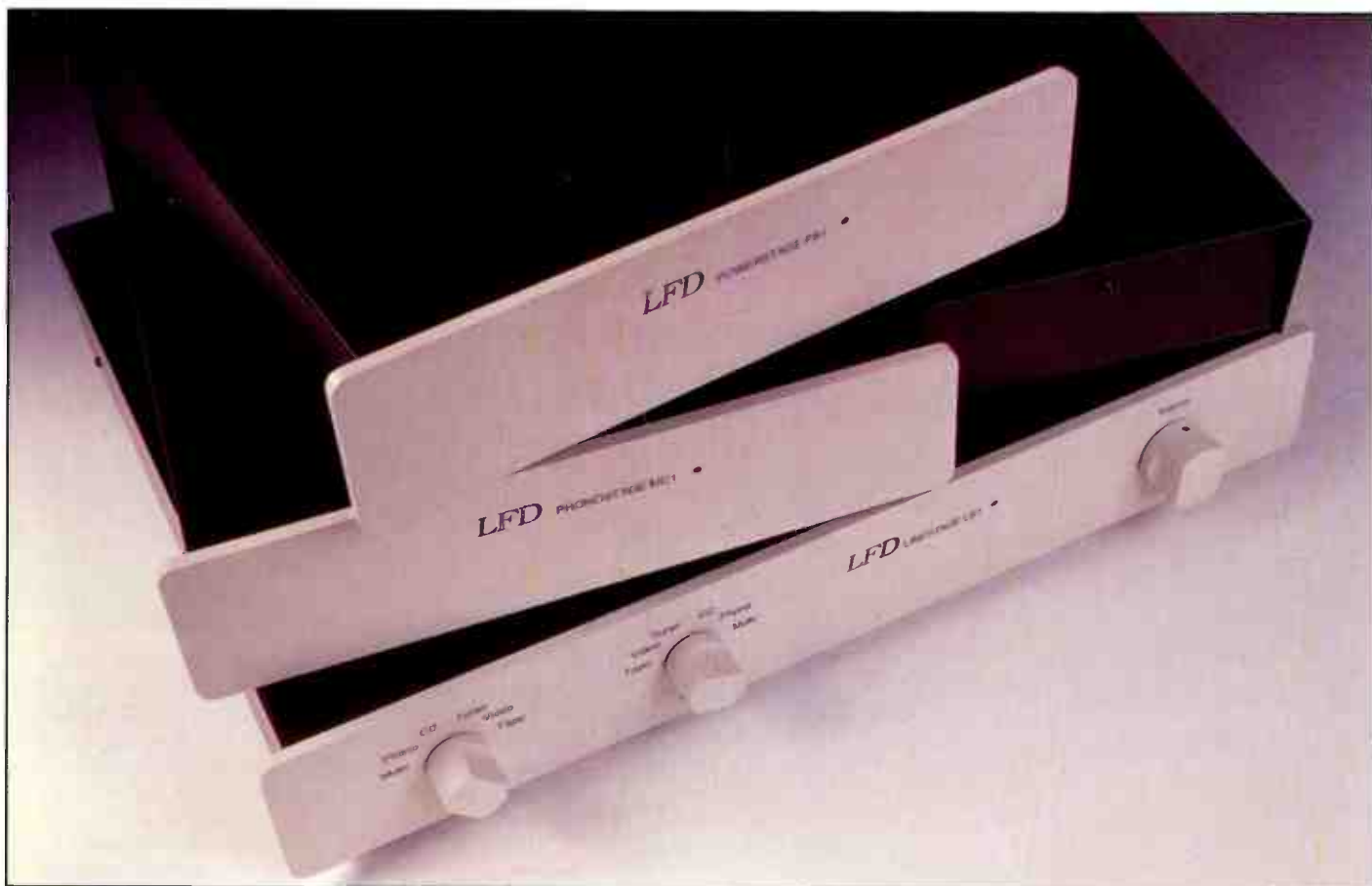
▲ "Here's the Rice Kellogg loudspeaker made by the British Thompson Houston Corporation in 1928. It has two triodes in parallel driving it (they were forerunners of the PX-4) driving the loudspeaker which was energised from the mains, because they couldn't get a permanent magnet that was strong enough. You could put the output of your radio into it and get a very pleasant sound - probably about 1.5 watts of power."

"It has an 8in unit in it with a reinforced paper cone diaphragm. There was an enormous mains transformer and pair of diode half-wave rectifiers delivering 900volts to the anodes of the output valves. It was a killer; it has safety traps on the back so that if you pull the back off whilst it is switched on it will shut down. It would have to have been a rich man who had one of those in his house."



▲ Gerald Wells beside his 405 line TV Standards convertor. "The Standards Convertor was given to us by the BBC. They sent it down from Crystal Palace in 1985, the day after they closed down 405 line transmissions. It needed to be rebuilt and the job was carried out by Lucien, who was 14 at the time. He was designing valve amplifiers when he was nine and has an IQ of 170. He's at Manchester University now studying electrical engineering and he still helps us out an enormous amount. He's the only one who has enough knowledge to be able to fix the more complex things; he has an enormous knowledge of vintage equipment and loves it. He was also small enough at the time to be able to get into the case to replace the diodes in the carousel. It's very complex, yet in a few days he had got it all stitched together and working."

For further information about the British Vintage Wireless Museum telephone 081-670 3667.



LFD & LSD

A diamond clear disc stage, pre-amplifier and power amplifier from LFD, costing fewer pounds than Eric Braithwaite could credit from the sound.

The size of the LFD pre-amplifier results in a neat but sparse looking layout. It uses a low hum toroidal transformer seen at left.



The LFD range is made up of two Moving-Coil disc stages, the Phonostage MC1 and MC2, two line-level pre-amplifiers, the Linestage LS1 and LS2, two stereo power amplifiers, the Powerstage PA1 and PA2, and an integrated amplifier. If the outward design is understated to the point of elegant simplicity, with pure white fascias, discreet blue labelling and chunky white knobs so are the names: there is

also an integrated amplifier fancifully titled the Integrated I.

We are looking at median high-end prices: we had the Phonostage MC1 at £749, the Linestage LS1 at £799, the Linestage LS2 at £1230 and the powerstage PA1 at £799, coming in at nearly two and a half grand for the entry level set; for the really well-heeled, there are two disc pre-amplifiers, one costing a pound less than four grand and the other £4750. LFD provided their own cable: Spirolink II, at £74.95 for 1.25m, Trilink at £184.95 for the same length and Spiroflex II speaker cable at around £149.95 for three metres.

Operation and connection is straightforward; the Phonostage has a separate DC power supply and all signal connections are by standard phono sockets. Given the increasing proliferation of sources users are likely to acquire in these digital days, the number of inputs on the Linestage does look a trifle sparse. There is one pair of inputs for Tape, and room for four other sources labelled Video, Tuner, CD and Phono. Very usefully, signals are routed so that a recording can be made while listening to another source via identical 'Listen' and 'Record' controls on the

Measured Performance

The LFD PA-1 Powerstage, as it is called, produces a modest output of 60 watts into normal eight ohm loudspeakers. It's enough to make reasonably sensitive loudspeakers (86dB SPL or more) go loud in most rooms, but it isn't enough to raise the roof. This is an amplifier for 'sensible' use, and it joins many others in being so. Modern amplifiers get no more powerful, mainly because quality is usually the prime concern. Output rises to 90 watts into four ohms - not an especially large increase but at least the LFD doesn't flinch at low loads - unlike the UK-designed Aura VA-100 and Alchemist amplifiers I have tested recently.

The CD input has a wide bandwidth but like so many modern amplifiers the LFD reaches up further than is either necessary or wise with CD. Anything above 21kHz is strictly unwanted and should not be amplified. The LFD's gain starts to roll off much higher than this frequency, at 64kHz in fact. It doesn't damn the amplifier by any means, but there has been speculation that this sort of thing could affect sound quality.

The low frequency limit via CD did match that of the medium itself: 4Hz. In this the LFD is better tailored to complement the medium than most of its rivals.

front panel. Two pairs of phono sockets provide output so bi-amping is allowed for. On/Off switches are placed at the rear, mains input is through IEC sockets.

After admiring the substantial and tidy build of the LFD components, the instruction manual came as a disappointment. It's clear, and informative, but... It jars to read "The prime aim of the company is pride of ownership" on the first page of a series of A4 pages with only basic line drawings for illustration. This kind of thing - and I see it too often - simply doesn't gel with the price. Nor does the polystyrene packaging, which proved extremely friable.

Crystalline

Beginning with the sharp end, the MC1 disc stage into both LS1 and LS2 through the Powerstage PA1, was an extremely lucid, crystalline performer. Both instruments and vocals were diamond-edged, discs coming through with transparent clarity, every facet firmly in place. Recordings were extremely lifelike, perfectly proportionally scaled and holographic. Ambience and depth were reproduced near-perfectly, with pinpoint imagery and extremely stable positioning.

Reverting briefly to feeding my Gyrodec/SMEIV/Morch da Capo into an Iso, there was a perceptible difference. Whereas the Iso expands the air and space around and between performers, and minutely displays tiny timbral nuances - especially in string instruments - with immense clarity and subtlety, the MC1 produces a sharp clean holistic picture. Bass, though, is noticeably on the lean, dry side. Despite - or because of? - a higher impedance than I would normally use, it fitted the da Capo like a glove. Gain is very high, however, which is liable to have a user leaping across the

room to turn the volume down after using a line-level source.

Turning to a digital source, an Arcam Delta 170.3 with Sugden SDA-1 DAC, nearly comparable in price, elicited the same diamond-faceted sound through the Linestage LS1 and the Powerstage. Each element of a recording is held in its own space, sparkling clear, reaching high into the treble. My 20-bit jazz recording came through bright and fast, with the placement of each microphone vividly obvious. This was startling, more like the way I heard the band being recorded in the studio through enormous Genelec power amps and monitors than I would have believed my ESL 63's could ever be capable of.

Absolutely no complaints about the tonal fidelity of the pre-power combination, here, except for a slightly sour edge to the upper notes of first violins on a Classical recording. There was a bite here, unlike the relative smoothness of the disc stage, which couldn't quite be tamed and suggests some caution is required with digital partnerships.

Switching briefly to a Michell Argo with Hera power supply, not too distant in price, suggested that the LS1 was more dominant in the mid-band and treble. I had observed more apparent surface noise from LP through the disc stage, and checking through a number of CDs, it became noticeable that the LS1/PA1 produced a very sharply focussed soundstage with brilliant attack at the cost of a tiny degree of subtlety in timbre. The Powerstage proved remarkably transparent, allowing the slight degree of additional air and space of the Argo through without hindrance and, it turned out, an impression of deeper, warmer bass.

The more expensive Linestage LS2 is outwardly exactly the same but for a

green LED indicating power-on and a volume control that lacked the 'click-stop' action of the LS1, it brought an overall improvement commensurate with its higher price. While some upper violin notes still had a slight sharpness on CD, overall response was otherwise silkily smooth and brilliantly clear. The degree of depth was also more marked and fingering on instruments attained that extra degree of subtlety. Both, however, tended to narrow the available width of the soundstage slightly, the LS2 less so than the LS1. This was most noticeable on Miles Davis' Dingo, where although every single player and instrument was clearly delineated, at one point the mix appeared to be less expansive and a little smaller in scale than I believe it really is.

Clear Sightedness

I'm not usually a fan of cables for the sake of it, but LFD's own - though far from cheap - were certainly very successful in maintaining the combination's remarkable clear-sightedness, though I discovered that Kimber cable also worked well as interconnect.

LFD have engineered a pre-power combination of great lucidity and clarity, one that turns a domestic system into the nearest approximation to an ideal recording studio control room I've ever heard. Nothing on a recording escapes it - every musical element is ruthlessly pinned down in time and space. It provides an unerringly truthful - and consequently occasionally painful - picture of both recording quality and the music. Incidentally, it also offers an equally analytical eye to its partnering equipment, requiring the very best of sources. It's a diamond necklace in a world of plastic - but without a Tiffany price tag ●

Generally, I find that good low frequency extension adds a subtle but tangible sense of openness and fluidity to the bass.

Low noise and high sensitivity were both useful features of the CD input, but channel separation was disappointingly poor at high frequencies, measuring 35dB at 10kHz. I've noted a few times recently, when faced with this problem, that luckily for manufacturers, any value better than around 25dB appears good enough to convince listeners they are hearing full stage width. It should be possible to achieve 50-60dB right across the audio band, especially when there's no balance control to adversely affect performance, as on the LFD.

Distortion was pretty low, I found. Even at high frequencies, and at high levels, an area where most amplifiers start to reveal weaknesses, the LFD hangs together pretty well, generating just 0.07% distortion. Second harmonic predominated, as the distortion analysis shows, until full output was approached, then higher components appeared. Used safely within its limits though, this amplifier produces mostly second harmonic distortion. I would expect it to have a fairly smooth sonic signature as a result.

The optional MC1 disc stage for moving coil cartridges has an input impedance of 150ohms; an MC2 stage is available with a input impedance of 47ohms. I tested the

former; the instructions say the MC2 is identical except for the input impedance value, so my results apply to both.

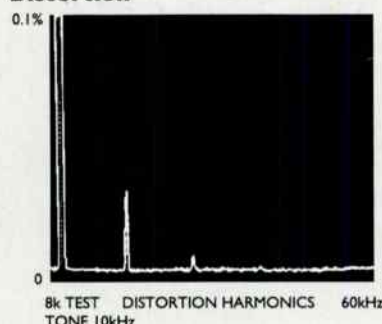
Like the CD input, the disc stage has an extended low frequency response. Trouble is, it starts to roll off slowly in the lower mid-band and in practice such a long, slow roll-off can invariably be heard as bass leanness I find. That LFD should extend low frequency output so far, yet let it sag, is curiously contradictory. High frequency extension was to 48kHz, a sensible figure.

At 40dB, channel separation was adequate for disc. The signal-to-noise ratio looks poor at -60dB, but this industry stand-

ard measurement doesn't take gain into account. The LFD phono stage has enormous gain, giving it an extremely high input sensitivity of 0.07mV (70µV). The only useful measure of noise that does take gain into account is something known as 'equivalent input noise'. The LFD was up with the best here, so in fact its MC input is very quiet. It has been designed to accept high quality, low output moving coil cartridges. It is best used with them, since high gain brings a commensurately lower overload ceiling - in this case just 2mV against a common value of 10mV.

NK

Distortion



A little second harmonic distortion

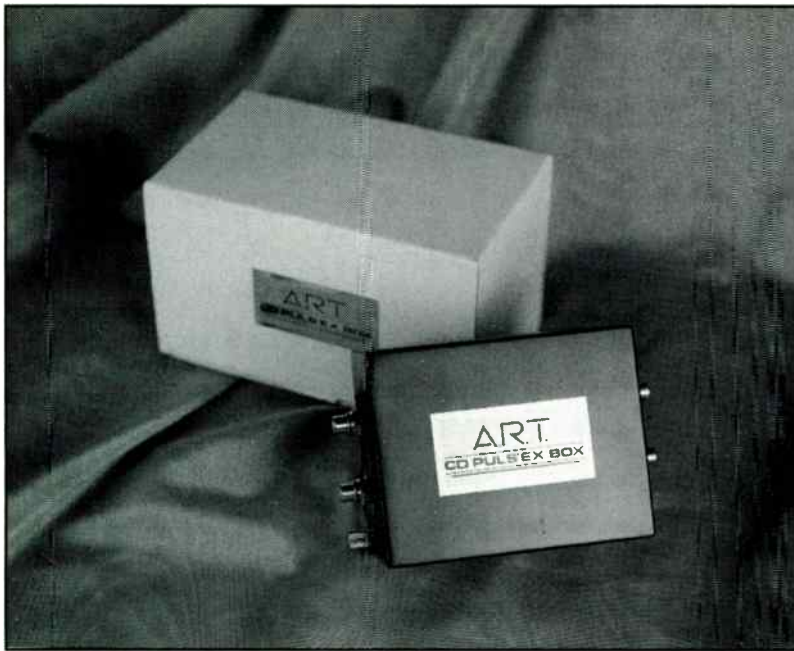
Power 60watts

CD/tuner/aux.

Frequency response 4Hz-64kHz
 Separation 68dB
 Noise -97dB
 Distortion 0.007%
 Sensitivity 170mV
 dc offset -45mV

Disc (MC1)

Frequency response 53Hz-48kHz
 Separation 40dB
 Noise -60dB
 Distortion 0.018%
 Sensitivity 0.07mV
 Overload 2mV



A.R.T. PULS'EX BOX

One of the greatest joys of tweaking is when you play about with things that are totally inexplicable. The nuttiest aspects of tweakery are so off-whack that they should be published in 'Fortean Times' or 'Old Moors Almanac' rather than in a hi-fi magazine. Attempts to rationalise such endeavours almost always end up at the point where physics meets parapsychology and look as if the author would be more comfortable writing an article on Astral Projection, or Knitting Your Own Aura.

One of the latest adventures in off-the-wall strangeness comes from A.R.T. Not to be confused with the UK manufacturer of valve amplifiers, Audio Reference Technology hails from Italy, where they produce a range of extremely high-end equipment and accessories. The man behind A.R.T. is none other than Bè Yamamura, he of the battery-powered, valve power amplifier that involved a floor full of car batteries. Bè used to reside in this country, but we British could not sustain such a high-end superman, so he moved to the land of Ferrari and Armani.

The Italians evidently take their hi-fi very seriously and Bè's extreme ideas were accepted with both open arms and open cheques. Unlike many of the tweak gurus, whose claims are impossible to validate and rely on simple belief, Bè's development system is said to be one of painstaking research, lateral thinking and educated guesswork based on an advanced knowledge of hi-fi. His theories sound surprisingly simple and correct, until someone other than Bè tries to paraphrase them.

One of his principal areas of research involved the use of graphite

in almost every part of the audio chain. A.R.T.'s graphite turntable and arm, which cost Maserati money, have to be seen to be believed; it takes the 'less is more, but excess is best' attitude of the American and Far East high-end communities to its extreme. This over-the-top attitude in the range of amplification leaves Mark Levinson looking like NAD and Krell like Amstrad.

Sadly, it is unlikely that we shall ever see such products in this country, as our entire GNP could barely pay for his preamplifier. Instead, we have to make do with the A.R.T. range of accessories. Over the next few months, I shall be looking at a variety of bits and pieces, starting with the magical Puls'Ex Box at £185, for connection between a Compact Disc player, or DAC, and amplifier.

A Small Device

The Puls'Ex Box is a small device that sits on four feet. It has two pairs of gold phono sockets fore and aft for connection between the CD and amplifier, with an earth binding post on the 'Out' side should any extra earthing be needed. As it is completely passive there is no battery box or mains lead.

Essentially, the Puls'Ex Box is a notch filter, using a handful of very carefully specified components designed to cut out a large amount of grunge at and around the notch frequency. Normally, a notch filter in a hi-fi system would, at best, be treated with scorn, except that this filter operates up in radio frequencies, somewhere between the top of the Short Wave band and the bottom of the Frequency Modulation dial (30MHz-80MHz). The precise frequency is where A.R.T. get secre-

tive. CD should not produce anything above 21kHz and most people have no hearing abilities at this level, so therefore this box is essentially doing nothing to the sound, right?

If the Puls'Ex Box does nothing to the sound, then it does it in the most positive manner I've ever encountered. In the past, companies such as Deltec have used RF filters at the mains to help reduce some of the problems inherent in high-quality DACs. To my knowledge, this is the first time such a filter has been used in the signal path. When I first tested this little box, I felt that my judgements had to be clouded. It was only when I played a Pioneer PD-9700 to a number of people involved in the hi-fi industry that I accepted that I was not deceiving myself.

The person who summed up the changes the Puls'Ex Box made best was Zia of Tube Technology, who commented that it made the CD player sound more 'Analogue-y'. The changes were difficult to describe in conventional hi-fi terms, although I did notice a slight smoothing of the overall sound. It didn't appear to alter the balance of the Pioneer's sound at all.

It never glossed over the detail that the player produced; if anything the detailing was almost imperceptibly heightened. What it did was remove the tiring nature of digital sound. I have been called a bit of a digiphobe, yet, in defence, I find that it is difficult to listen to more than one track on an average CD player; with the Puls'Ex Box, my CD threshold expanded to about three or four tracks. I found the process of digital listening far more rewarding than before, although trying to equate these improvements to tangible ideas is near impossible; it was simply better.

The improvements made are so subtle, yet also so positive that it is a clear recommendation. £185 may seem a huge sum of money for a 'magic' box, but it represents a far greater improvement to CD sound than £185 normally brings. At the lower echelons, if you have the choice between buying a four hundred pound CD player, or a two hundred pound player with a Puls'Ex Box, I would plump for the more expensive player, for no amount of tweaking is going to rescue a signal lost in the bowels of a comparatively budget player.

At the next level, however, the choice between a six hundred pound player and a four hundred pounder plus the Puls'Ex Box becomes less clear. Indeed, I would plump for the latter, in most cases. The Puls'Ex Box presents a difficult case as I don't know why it works, but I simply have to accept that it does and works very well indeed. For the nearest A.R.T. dealer contact (081) 876 6976.

THE CAN OPENER

Far more explicable than any of the A.R.T. goodies, at £76.99, The Can Opener is a device that should be on the shopping list of every owner of a purist amplifier without a headphone socket.

Normally, an internal headphone amplifier is a difficult stumbling block for a designer to produce without it interfering with the overall sound. Most designers of integrated amplifiers with audiophile pretensions produce some kind of direct output loudspeaker terminals that by-pass the headphone socket altogether. In more purist (or should that be 'Puritan?') amplifiers, the headphone socket is removed altogether, leaving the cleanest path for the signal to travel.

A Little Night Music

This is very acceptable for those who have no intention of using a pair of headphones; but for those who have no choice it creates a serious problem. The headphone option does prove very useful at times; with a pair of closed 'cans', it is possible to listen to music, while another watches television, without extreme amounts of leakage. Also city-dwellers who have neighbours can listen to their favourite music at any time, without fear of offending. When, after a long period of work, I decided to listen to some music, I blessed the little Can Opener as it was about 1.30am and I felt that the neighbourhood would not like a rousing chorus of Hüsker Dü at full blast.

If you can wire together a pair of loudspeakers, you can operate The Can Opener. At its rear, it has left and right 4mm sockets like a power amplifier, and a stereo jack plug at the front for the headphones. As such, The Can Opener fits in the system in the place of loudspeakers. Switch the amplifier off, waiting for it to discharge if necessary, remove the loudspeaker cables and replace with cables attached to The Can Opener. You do have to provide your own lengths of cable 'twixt amplifier and Can Opener, but this is not a major problem. I used a single piece of Linn's excellent K400, as it has four connectors in one cable. It is about ten inches long, but is a little inflexible.

This is where we encounter the biggest difficulty with The Can Opener. If your equipment is neatly stacked away, then using the headphone adaptor is a major hassle. In my system, where there is comparatively good rear access, fitting The Can Opener takes seconds, but in a system where access is severely limited, it could prove more trouble than it is worth. One could use the loudspeaker cables, by plugging The Can Opener in at the loudspeaker end, though if using bi- or tri-wired loud-

speakers this could prove fatal to the amplifier if the loose 4mm plugs made a short circuit. In addition, having to trail the loudspeaker cables across the room is rather ungainly.

That aside, the main advantage of The Can Opener is its ability to make the headphones take on the sound of your beloved amplification. If you are a Naim fan, then your headphones display all the pace and musicality of a good Naim system; if an Audio Innovations lover, then the warmth, clarity and transparency shine through and so on. The sound quality is so much better than the normal headphone socket fitted on amplifiers, or within cassette recorders and some CD players, as to make its use well worth any inconvenience caused. It also, obviously, upgrades with your system; if you move from a Nait to a Naim 52/250, or from a Series 500 to an Ongaku, so the headphones upgrade with the system.

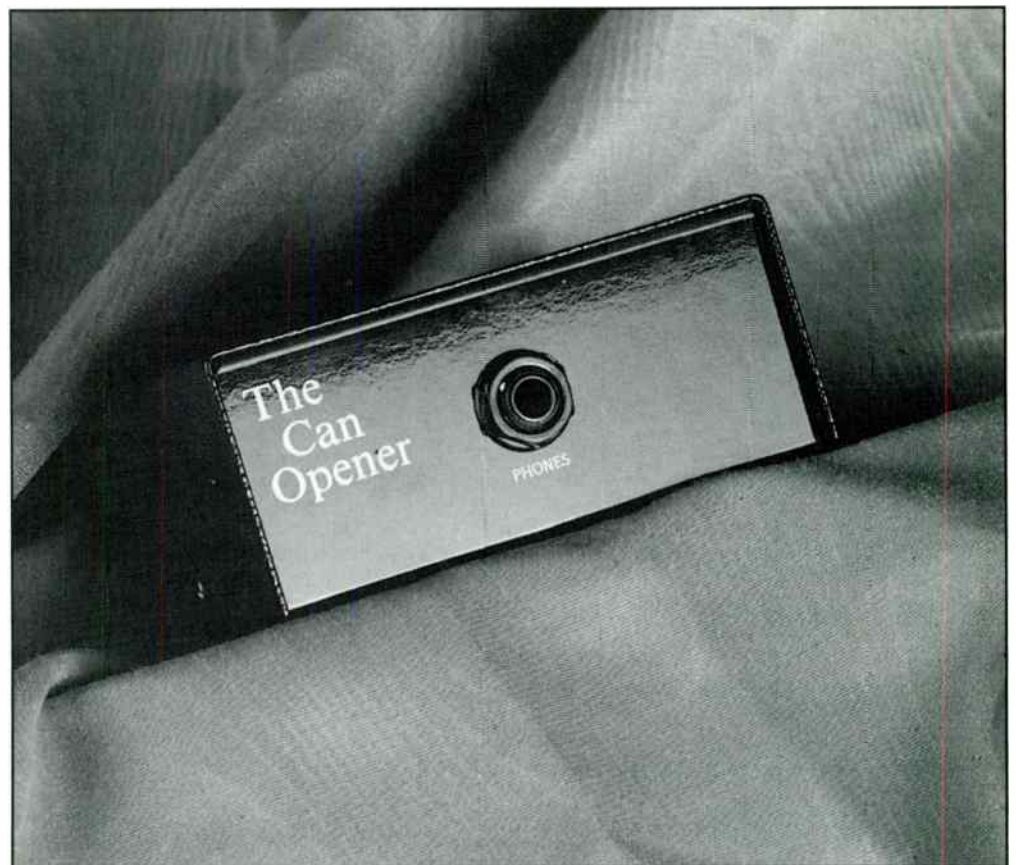
Normally, the tweaks pages consist of little goodies that allow a system to be slightly improved. The Can Opener is different. It adds nothing to the system except flexibility, yet this flexibility allows one to listen to music at times that were previously impossible. For that reason alone it is well worth the money. The fact that it sounds better than most built-in headphone systems is icing on the cake, but it's a very good icing.

Contact The Den on (0535) 606086.



tweaky corner

This month, Alan Sircom journeys into the unexplained with a magic CD box from Italy, together with the far more explicable Can Opener headphone adaptor for purist amplifiers.



KEF's old C-series range of loudspeakers has been replaced both by the KEF 'Q' range and the 'K' series, of which the £219 K140 tested here lives in the middle. The Q range has already achieved some considerable acclaim, not least from this magazine, where we found the top of the range Q90 to be an excellent floorstanding design.

such the K140s are an easy load and will not trouble, or be troubled by, any amplifier in the 10-100 watt range. In addition, their claimed maximum sound pressure level of 109dB means that they are capable of going loud when it comes to playing the latest Extreme Noise Terror disc.

In a land where loudspeakers are becoming smaller and smaller, the 8.7kg K140s are a healthy size, standing

blind-effect front baffle distinguishes the KEF design from the others.

The K series manual supplied with the loudspeakers is simple, clear and bilingual, which is useful if you want to test your conversational French on a passing Gallic audiophile. There are a couple of minor mistakes, perhaps partly due to it serving the entire K series; it mentions magnetic catches to hold the grilles in place, while in fact conventional

KEF*efficiency*

KEF's new K140 loudspeakers are a high efficiency design.

Alan Sircom checks the sound levels.

Unlike the Uni-Q range, with their distinctive dual drivers, the 'K' series uses a more conventional approach. Instead of placing all the drive units in the same housing like the Uni-Q, the K140 is a standard two-way loudspeaker with bass and treble units on a different axis.

Intended to be wall or shelf-mounted, the sealed-box K140 sports typical KEF plastics technologies for both bass driver and domed treble unit. This gives the K140 a moderately high claimed efficiency of 89dB (1w/1m) and a nominal impedance of eight ohms. As

490mm high, 260mm wide and 246mm deep, with an internal volume of just under 19 litres. Most of the quality competitors at this price are considerably smaller; only the Linn Index, Heybrook HB-1 and B&W 600 series spring to mind as being a similar size. In appearance they bear a striking similarity to the Linn Index/Nexus/Helix and B&W 600 range of loudspeakers, except that they lack the letter-box front port of the Linn designs. This similarity is due to both companies' use of plastic front baffles in these models. The Venetian-

studs are fitted. I know that these magnets have an almost legendary reputation for falling out, but not to supply them in the first place?

Unlike many KEF designs, the K140s need to be positioned close to a rear wall. They appear to work best on stands around the Heybrook HBS1 height, with no particular preference for solid or open frame stands; this could depend on the room itself. Also unlike most KEFs, the 140s have no facility for bi-wiring. It may be that KEF feel that bi-wiring has not reached the lower end of

Measured Performance

An interesting feature of this loudspeaker is its unusually high sensitivity. I've been musing recently on the need for a sensitive, high quality loudspeaker suitable for the increasing number of low powered amplifiers around, both valve and transistor. The K140 is just such a loudspeaker. When the Sound Pressure Level meter read 89dB of acoustical output from just 1 watt of electrical input (2.84V), I rechecked the measuring system. Speakers commonly range from 83dB up to 87dB, few reaching the latter figure, so the 89dB result seemed unlikely. Everything was normal, so I turned to the product brochure and that quickly confirmed the result. KEF quote an identical figure, gathered from an identical test. What this means is that the K140 will give significantly more volume from amplifiers of limited output.

KEF have achieved this without lowering load impedance, so the K140 hasn't become especially demanding of amplifiers as a result. Unfortunately, some UK specialist amplifier manufacturers (Aura, Alchemist) are now sacrificing low-load performance, so although high sensitivity is desirable in a speaker, so is a normal-to-high nominal impedance. The K140 has a value of 8 ohms nominal impedance, which all amplifiers - including valve amplifiers - should handle satisfactorily. There should be no matching problems as a result.

The unusual rise up to infinity below 20Hz in the impedance trace is caused by a series capacitor on the crossover input.

KEF (and Wharfedale) use this to block DC offset from amplifiers and to get lower bass. Although superficially this might appear to compromise DC damping of the bass cone, in practice the series low pass inductor used in most crossovers negates this effect. I have found that redesigning a KEF crossover to remove this capacitor doesn't improve bass damping. The K140 is a sealed-box enclosure too, which is acoustically damped below bass unit resonance, unlike the now-more-common reflex enclosure with its port, so it doesn't need heavy electrical damping.

KEF usually aim to get a reasonably flat frequency response from their loudspeakers and the K140 is no exception. The trace in the analysis is free of peaks across the mid-range and treble regions, which is a good sign. The tweeter in particular, which works from 2.5kHz upward looks especially smooth. Peaks, tilted or tailored responses can impart an interesting character to a speaker, sometimes one that is liked by many listeners. But a flat response is a prerequisite for accuracy, although it doesn't guarantee it - there are too many other factors to take into account.

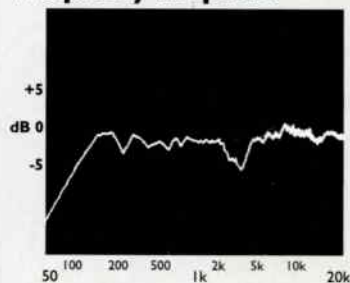
I'm a bit surprised to see a small notch in the response, caused by a mismatch between the drive units. This will remove just a bit of upper midband information, but subjectively I would not expect the impact to be very obvious. If anything it would slightly soften the sound.

Not shown in this impulse response is a +3dB bass lift from 125Hz up to 180Hz

and a rapid fall off in lower frequencies. It is the preferred characteristic for a wall mounting loudspeaker. The K140 has been designed for use more than about 6in away from a rear wall; KEF say it should be "operated on a shelf or stand mounted close to a rear wall."

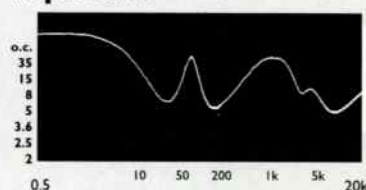
Well engineered all round, the K140 is especially notable for its high sensitivity. This is a suitable speaker for low output amplifiers and, in particular, valve amplifiers. **NK**

Frequency Response



Flat response with a suckout at 2kHz

Impedance



Capacitor coupling gives infinite Z at D.C.

the market, or else that the crossover does not benefit from the biwire facility; I favour the former.

Like most speakers with plastic drivers, the KEF K140s needed a healthy run-in period. The ones supplied for review, however, had a unique characteristic that I had not encountered before. At first, I felt despondent about them; they sounded dull and lifeless. Throughout the running-in period, there was little change. Suddenly, in the time it took for me to make a cup of tea, the loudspeakers warmed up fully.

‘they had a typically KEF sound, one which was clean, clear and dynamic, but also slightly antiseptic

Then they had a typically KEF sound, one which was clean, clear and dynamic, but also slightly antiseptic. What really impressed me was their imaging abilities, especially when the price and their positioning are taken into account. While the soundstage lacks some front-to-back depth and does not ‘breathe’ in the way an Epos ES11 is capable of, the overall quality of the imagery is very good indeed.

Regardless of the rear wall flattening depth perspectives, the 140s still managed to delineate images in a soundstage with ease; to date, I have only found one loudspeaker in this class that can better their abilities in this respect, the Rogers LS/2a2.

For a comparatively low-cost loudspeaker, the K140s are superbly coherent; in some respects more so than their Uni-Q siblings. Although correctly aligned in the same axis, making for good imagery, the Uni-Q drivers can sacrifice the ability to define two similar sounding instruments when not partnered with the correct equipment. The 140s, with their more conventional drivers, are adept at expressing these differences.

These two aspects, coherence and imagery, make the 140s appear highly transparent for the price. Next in the list of priorities comes their ability to resolve fine detail, which again approaches the class of the Rogers LS/2a2; some spatial information, together with the finest of fine detail (fret noises, feet shuffling and so on) is lost, but these very fine details seldom appear through loudspeakers in this price bracket. A healthy dynamic range doesn't compromise dramatic Classical pieces like Mahler's more stonky symphonies. This all makes for a good all-round package.

There are flaws in the performance,



however. Bass lines, although deep, are not that easy to follow, notes that are usually clearly defined slurring together. The timing and rhythmical properties of the 140s are not in the class of those that excel in this respect, such as the Linn Index IIs, although I prefer the KEFs' overall sense of balance.

The 140s' biggest drawback, however, is that they rarely seem to get out of first gear; music played through them can seem superficially a little bland and unsatisfying, even though a lot of detail is conveyed. They can bring a refinement to music that may not be to everyone's taste. I experimented with a variety of sources and amplifiers, because of this unsatisfying aspect and came up with some conclusions. First, the 140s are superb with Compact Disc sources where they relax the 'digitalness' of the treble, but they can sound a little bland with a record deck.

Secondly, they need an amplifier that is slightly bright and exciting sounding, otherwise I feel that boredom would quickly set in.

My pet prediction for these loudspeakers is that we shall see them powered by Pioneer A400 amplifiers, as the two would appear natural partners. I am not normally inclined to make system recommendations in a review, but the K140s cry out so much for an A400, or amplifier with a similar sound, that it would seem churlish not to mention this fact.

I have some reservations about the K140s but it is easy to find reservations about any loudspeaker at their price. They would not be first on my list; I would rate the Rogers LS/2a2 and possibly the JPW AP2 as better all-round loudspeakers. In certain circumstances, however, the KEF K140s could be a perfect system match ●

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High Fidelity magazine, August 1991

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Wharfedale's latest 'Performance' loudspeakers, the 415 costing £149.90 and the 425 costing £199.90, have a distinctive family appearance. Finished in the current Wharfedale grey baffle/black vinyl wrap style, they are identically styled; only size sets them apart at first glance.

The smaller of the pair, the 415, is still larger than the average bookshelf speaker: it measures 351mm high, 240mm wide and 195mm deep. The 425 is scaled up a little to 400mm high, 265mm wide and 250mm deep. Both share the same Wharfedale-made 25mm metal dome tweeter and both have Wharfedale-built polypropylene mid/bass cones; 170mm diameter on the 415 and 200mm on the 425.

These speakers also understandably share the same basic construction. They

vastly superior sonically. Where the two are similar is in their ability to project treble detail forward, giving an exciting 'up-front' sound. With the 425s, this creates the appearance of a vocalist only a few feet from the listening position; on the 415s, however, the same vocalist has taken several steps forward and is now perched, rather uncomfortably, inches from your head.

I find this 'impressive' sound rather tiring after a while and, with the 415s, it proved to be too taxing too quickly. Also, the treble of the 415s was often discomfiting, especially on any recording that suffered from an overbright mix. While with the 425s sins of brightness could be overlooked, there is a ragged nature to the 415s that is unforgiving. Playing early Cure, such as 'Boys Don't Cry', the spittiness and brightness of the recordings became over-prominent,

Partnered with certain budget equipment, such as the Harman-Kardon 6150 amplifier with its smooth sound and deep bass, or the warm-sounding NAD amplifiers, their bright nature may provide a satisfactory balance to some. With a bright or forward sounding Compact Disc player and amplifier though, the 415s will tip the balance too far, becoming over-bright and harsh.

The more expensive 425s fared rather better. Although their treble was

Two of Wharfedale's latest Performance range, the 415 and 425, dance to Alan Sircom's tune.

performing *in pairs*

use 'infinite baffle' loading (technical name for a sealed box!) and are configured to work close to the rear wall. The cabinets themselves consist of 15mm particle board, with a 22mm MDF baffle. Wharfedale say their power rating is sufficient to cope with up to one hundred watt amplifiers.

The instruction manual skates over some details, but it covers most points competently and is careful to mention the important ones in bold block capitals to prevent, for example, the new Wharfedale owner connecting their Performance loudspeakers directly to the mains. The tale of the loudspeaker connected to the mains is an apocryphal one beloved by speaker manufacturers, by the way.

Bi-Wiring

Apart from the obvious size disparity, the only other external difference between these speakers is that the 415s are single wired while the 425s can be used bi-wired. I feel that this reflects the situation in which Wharfedale see the speakers being used. The 415 belongs in the 'budget' market, where tweaky ideas like bi-wiring are not thought to be appropriate. The 425, on the other hand, is more a product for the hi-fi enthusiast who might demand the ability to bi-wire, to get the best sound from the loudspeakers.

This difference in priorities is also reflected in the sound quality of the two designs. Both models share a family sound, but it is clear that the 425s are



drawing attention away from an impressively fast bass performance.

The bass of the 415s was clear and detailed. It was easy to follow bass lines, which ran as tight and fast as the sounds emanating from the tweeter. The midrange was also easy to follow, if not as transparent or open as I would like. Dynamic range is not a strong point of the 415s, yet it may not matter greatly with the budget equipment these speakers are likely to be partnered with.

I felt the 415s were too ragged in their sound for today's expectations.

still spitty and bright, this was not so noticeable that it dominated the performance of the loudspeaker. In fairness to the 415s, such balance was achieved using LFD's hybrid cable: solid-core to the treble, multi-strand to the bass. Using ART cable single-wired on both loudspeakers changed the overall balance of the 425s, bringing them more into line with measurement.

The 425s should - according to the measured performance - be the brighter speakers, and to an extent this was true. Between them, however, the 425s had a



A few good points to remember next time you choose a hi-fi unit.

Point 1. The AX-R742 (that's the amplifier in the foreground if you're not into serial numbers) has the kind of startling features to impress the most enthusiastic hi-fi enthusiast.

Six pre-programmed graphic equalisations plus six more you can create yourself. And for those even more in the know, it can handle both moving magnet and moving coil cartridges.

Point 2. The high-performance single cassette deck (TD-R452) has a new high-tech

direct drive motor for purer sound. Designed to decrease vibration, the deck also includes CD direct, Dolby B/C NR and Dolby HX-Pro.

Point 3. The CD player (XL-Z452) has the unique JVC 1-bit PEM DD which delivers highly accurate sound. It's less prone to mistracking

and read-out error and includes an optical digital output.

Point 4. The receiver (RX-506) has a built-in graphic equaliser and Dolby Pro Logic Surround for cinema sound experience at home.

Point 5. Each unit has a COMPULINK control system so one remote can control all JVC compatible components.

Point 6. You don't need to understand it all, you do need to listen to it all.

JVC

HI-FI + VIDEO + TV + TAPE

deeper bass performance, offering a better overall balance than the 415s. The size difference was reflected in the sound; the 415s produced a smaller sound than the 425s.

The broader dynamic range of the 425s allowed the scale of powerful music to be displayed, if not in full colour, at least in 'enhanced' monochrome. They still have some fire in the treble, with a sting that can be homelike with the wrong amplifier.

The 425s will best suit softer sounding partnering equipment. A loudspeaker like this could work with valve amplifiers, especially as its sensitivity is comparatively high. Unfortunately, current valve amplifiers

are priced far in excess of the Wharfedales, so such a combination would be unlikely.

Both these Wharfedales are diametrically opposed to designs like the KEF K140s - also tested in this issue. The KEFs, compared to the Wharfedales,

have a smoother treble nature, but soggy bass. The Wharfedales push the music too far forward in comparison to the KEFs, and do not have as even a treble balance. There is a difference of opinion here; I prefer the balance of the KEFs, and can live with the marshmallow bass, whereas Noel prefers the sound of the Wharfedales, and can accept their brightness in favour of their neutrality and good bass.

On saying this, however, both loudspeakers struck me as having a fair sense of balance. Their exciting sound qualities will serve them well in shop demonstrations. Ultimately, of the two, the 425 has more of the spirit of a hi-fi loudspeaker within it ●

‘the 425’s have a broader dynamic range, allowing the scale of powerful music to be displayed, if not in full colour, then at least in ‘enhanced’ monochrome

Measured Performance

The Wharfedale 425's measured performance looks pretty good; it made me sneak a quick listen before Alan took them away for a more thorough assessment. It was interesting to hear exactly what the measured performance suggested would confront me, at least in basic outline. I expected a neutral delivery, except for some possible brightness and possibly a spit in the treble.

If that doesn't sound very "neutral" to you, let me explain. Absence of broad dips, peaks or trends guarantees a certain basic honesty of presentation. So often, response peculiarities, or the effects that cause them, inject a character that, even if it is liked, compromises the basic reproduction accuracy of a loudspeaker. Whether this matters or not is best decided by the individual. Personally, accuracy is a prerequisite for me; if the speaker still sounds bad then it is due to other problems.

The measurements here reveal fundamental characteristics - and those of the 425 look good. A third-octave frequency response (not shown here) and the impulse frequency response are both commendably flat as loudspeakers go. The two drive units have been matched together well, avoiding an upper mid-range dip. In fact, the tendency for output to rise in this region, instead of fall or dip, suggests the speaker will sound almost brashly forward in comparison to many others. There's no doubt it will not sound bland, soft, warm or anything similar.

The lift upward above 5kHz in the tweeter's output, culminating in a sharp peak at about 16kHz suggests the 425 will display a sharp sound; I found its treble "acidic".

The low frequency response of the 425 peaks at 160Hz and tails away below this frequency, showing that the speaker is intended for use against, or close to a rear wall. The peak is to compensate for wall suckouts, the fall-away for reinforcement at lower frequencies. In its proper position, the resultant response will be flatter; for measurement the speaker has to be kept away from reflecting surfaces.

The 415 is a little less flat than the 425 and it has more energy across the lower mid-range. I would expect a slightly less bright presentation, but one that was fundamentally well balanced in tonal terms. On speech and vocals in particular it should sound a bit fuller and possibly a little more faithful than the 425, if less revealing. The tweeter peaks up like that of the 425, so the same treble sting will be apparent. An absence of deep suckouts means that no

information is lost, so the 415 - like the 425 - will accurately convey all the information fed to it. Both loudspeakers have very good vertical dispersion, so seating height will not influence these results.

Over most of the audio band, both loudspeakers present a load greater than 8 ohms to an amplifier. The 425 sinks lower only above 5kHz, which should not be a problem, since full output rarely occurs at high frequencies. Overall impedance of the 425 measured 10 ohms and that of the 415 12 ohms, so they are easy amplifier loads.

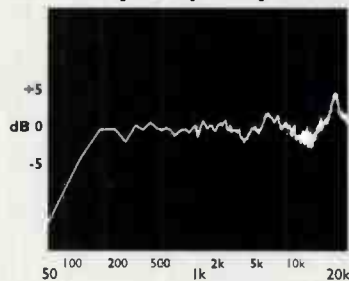
Wharfedale, like KEF, use input capacitors, making the load rise to infinity at D.C. This decouples the speaker from the amplifier, making them rely on acoustic rather than electrical damping. Since both are

sealed enclosures (infinite baffle), they do have good damping below bass unit resonance - unlike reflex enclosures. The input capacitors offer protection from amplifier D.C. offset, but KEF use theirs to give lower bass too. Bass damping is best judged by listening I find; it isn't wise to pass judgement solely upon operating principle, since a variety of factors, like drive unit magnetic damping, contribute to the final outcome.

Although both these Wharfedales have a high overall impedance, meaning they load amplifiers lightly, don't draw a lot of power and are suitable for even feeble budget types, they are nevertheless quite sensitive. The 415 gave 86dB sound pressure level for one watt of input (2.84V), and the 425 an even higher value of 87dB. Both go loud with low power amplifiers and compare well with most rivals in this respect, although neither match the unusually sensitive KEF K140s (89dB) also tested in this issue.

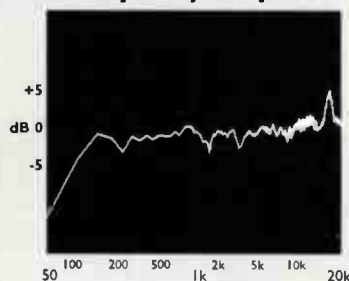
I was quite impressed by the measured performance of both speakers. They are well engineered, there's no doubt about that. Wharfedale should try and cure the treble spit of their tweeter, but this alone isn't enough to negate their many good qualities, ones in the 425 that were quite apparent in a short listening test I found. However, Alan gave them a more thorough appraisal and provides his own views on their sound. **NK**

415 Frequency Response



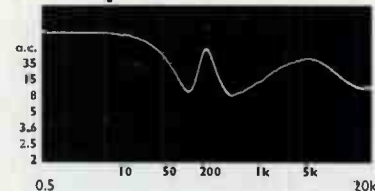
Peaks at 8k & 16k add brightness

425 Frequency Response



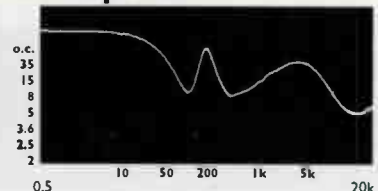
16k peak adds a 'spit'

415 Impedance



High impedance and capacitor coupling

425 Impedance



High impedance and capacitor coupling



sound & motion

Stereo sound from Motion Electronics' Nicam tuner adds a new dimension to Eric Braithwaite's television picture.

After a very slow run-up, stereo sound for television finally reached us - or at least a fair proportion of us! - at the end of last year. As usual, the Brits, having developed the carrier, ended up pretty far back in the race to broadcast in stereo. But then, it seems that television viewers in this country

are not exactly quick to buy new TV's either - it takes the impetus of a World Cup or the Olympics for us to chuck our steam-driven sets away and opt for something more modern. I'm no exception, I might say.

Motion Electronics, offering me their £211.50 Nicam Stereo TV Sound Decoder did, however, manage to spur

me into movement. After a few weeks living with stereo TV sound now, I wonder why I've been so tardy about it. After all, I don't listen to my hi-fi mono recordings for anything like the ridiculous proportion of time I've been listening to my mono telly. Mind you, I was a bit slow off the mark getting round to watching in colour as well.

Mixing It

Stereo sound certainly adds a great deal to the visuals, though for someone who listens mostly to hi-fi it can be a somewhat disconcerting experience at first. One of the saddest realisations is that even after a few months, the proportion of stereo broadcasts is still relatively small. Worse, it's hard to accept that so many game shows and late-night interview programmes need to be in stereo at all. It's obviously much cheaper to turn out a stereo mix in a studio from half-a-dozen lapel microphones than it is to record in stereo on location, but the balance is out of proportion.

For an analytical listener, one of the delights of the Motion tuner is that you hear the quality - or restricted response - of those throat mics with almost

"Motion's tuner is exemplary at conveying detail with great clarity, and with startling background silence"

irritating clarity. One of its problems - which is why stereo television listening can be disconcerting - is that the stereo balance is very different to what listeners to radio documentaries or drama are used to. Focus - particularly on speakers - is much narrower; dialogue is placed in a relatively small area centrally. This is particularly disconcerting with chat shows when you hear some bore pontificating Centre-Left, but you see him centrally in Close-Up; inevitably, this has to be done or the sound would be at odds with the image, which for those of us without TV projectors and twenty foot wide screens is a necessary compromise.

Depth and Detail

All the same, it takes a period of adjustment. Watching *Casualty* - or even *East Enders* - it is a little while before one comes to terms with sound effects flung wide and dialogue less spread. That said, Nicam stereo charms instantly with its portrayal of depth and detail which is associated more with film soundtracks than TV sound.

Motion's tuner is exemplary at conveying detail with great clarity, and with startling background silence. It is also high on the achievement scale - close to a really good FM tuner - in portraying depth, perspective and ambience. TV sound engineers are admirably skilful in balancing dialogue, music and effects, and the Motion tuner showed up their skill with crystal clarity. Musically speaking - that is, attempting to listen to programmes with a musical content untrammelled by visual distractions - the tuner would be characterised as having a very clean, somewhat bass-lean sound and a dry but extremely detailed mid-range. If it consistently appeared to lack some of the full dynamics of the best radio broadcasts, it became evident after a day or so that this was not the fault of the tuner: it is, if anything, too transparent to the original sound quality. Watching - or rather listening - to Fifties films took me straight back to the plush-haired dusty fug of small-town cinemas and hissy and sparking soundtracks.

Installation is simplicity itself; in fact it was its ease of use which commended the Motion Electronics tuner to the BBC Engineering Department for sound quality checks in their mobile Range Rover fleet. Through an aperture in a hinged front perspex panel is a neat array of small push buttons. To have Nicam sound through your hi-fi, all you need is a 75-Ohm aerial extension lead for the aerial input, a five-pin DIN-terminated lead (why aren't the outputs the more common RCA?) to provide output to the pre-amplifier and a ten penny piece to phone the BBC so you know what channel numbers the broadcasts are on

in your area. (Possibly, you might not need that - the instruction manual refers to a list of the channels the various transmitters around the country use, but there wasn't one in my box.)

Use the numerical keys the way you would to programme tracks on a Compact Disc player, enter the channel numbers into the memory, and thereafter you only need to press '1' for BBC1, or whichever programme number you've used. Simple, foolproof, and done in a couple of minutes.

Sensitivity

After that, there are just a couple of things that need to be looked after. One is a small switch which turns from Nicam stereo to ordinary VHF mono sound. As with VHF stereo radio, a stronger signal is needed from your aerial for stereo than mono; if you are in one of those areas like Humberside where you can (just!) pick up Tyne Tees and Anglia as well as Yorkshire, one may turn out to be a little too distant for best reception and a listener

small knobs mounted on the PCB for volume, balance and tone. Output to speakers is (again!) through the now uncommon two-pin DIN sockets instead of binding posts; it's unfortunate, this, as they are going to look unfamiliar to a lot of purchasers.

Surprisingly, the internal low-powered amplifier is better than basic, though somewhat limited in dynamic range and full-blown clarity. For most of my listening I used the 'Tape Out' to feed my preamp, which is intended to feed either a stereo hi-fi recorder or VCR. Used thus, sound quality was more dynamic, though obviously volume level cannot then be controlled via the Up/Down buttons on the fascia.

A useful remote-control is provided, which duplicates all the fascia control functions and adds a Mute switch. This operates over a narrower angle than most comparable remotes these days, so the tuner does need to be more in line-of-sight than with others that are liable to have fallen down the back of the sofa.

"No criticisms, then, of the performance of the Motion Electronics Mk 3 Nicam TV Sound Tuner, nor of its facilities, which are as comprehensive as is conceivable"

may need to revert to mono. In West London, not too far from the Crystal Palace transmitter, I was startled to find Motion's tuner sensitive enough to pick up a clean sound transmission simply from ten feet of co-ax cable - it was lying on the floor; I'd disconnected it during a vicious thunderstorm and forgotten to plug it in again!

Tuner-Amp

One of the - sadly - so far unused abilities of Nicam stereo broadcasts is to transmit in two languages; one channel is used for the original soundtrack, the second for the dub. Ideal in some circumstances - I hate subtitles - I couldn't test this for lack of transmissions. Should it become more common in the future, the Motion tuner won't be redundant on that account.

So far, the Motion has been treated as though it were equivalent to a hi-fi tuner. (After all, if you don't have a hi-fi system, why are you reading this magazine?) But it's more universal than that. You don't need a hi-fi, only a television and a pair of loudspeakers, because this tuner has an integral amplifier built-in. Under that hinged perspex flap on the right are three

No criticisms, then, of the performance of the Motion Electronics Mk 3 Nicam TV Sound Tuner, nor of its facilities, which are as comprehensive as is conceivable. There's even a video output to relay the vision signal to a video recorder, avoiding duplication of aerial leads, though it uses a phono socket and may puzzle owners whose recorders have a BNC or SCART socket. If there's a MkIV version due, could we have phono-type sockets for audio and SCART or BNC for video outputs? Or, perhaps, a little advice for non-technical owners on connecting leads? Especially as the instruction manual is extremely clear and easy to follow, as is the 'question and answer' Guide to Nicam which is packed along with it and which unassumingly explains how it all works.

At its price, I can't help but be pleased that Motion Electronics have emerged into the limelight at last. Pioneers in the Nicam tuner field from the beginning, this excellent-sounding - if rather inelegant looking - tuner deserves the reputation the BBC's own use of it suggests ●

Rather than hedging their bets with someone else's technology, Yamaha are now paddling feverishly up their very own tributary of the Bit Stream. And the CDX-860 is just one of a number of second-generation 1-bit ships, a sturdy if not entirely water-tight vessel built onto a substantial mineral-loaded 'ART-base'.

In fact, the overall appearance of this £300 unit, is distinctly bolder and more imposing than the £250 CDX-750 they supercede. So where else did you think the extra £50 was spent? After all, according to Yamaha's

informative balance that captures the rhythm of a piece without lingering over-long on the power or impact of individual bass notes.

Tracy Chapman's 'Matters of the Heart' demonstrates this quality to a 'T'. Instead of pivoting the music about Chapman's unashamedly full bass it makes greater play of her voice, the methodical strumming of lead guitar and steady patter of percussion. All these elements are presented in a fluid and articulate fashion, all very neat and tidy and with no malicious nasties lurking beneath the surface.

this earlier iteration lacked the subtlety, the poise and sheer expression possible from the '860. Possible, that is, given a following wind. Choose a gentler track, such as 'Cold', and the CDX-860 sounds anything but! Her voice slides from the speakers, borne on a tide of muted bass, harmonies and percussion - all furnished by an opportune synthesiser.

The haunting tones of Maire Brennan's 'Land of Youth' also fall squarely within the compass of Yamaha's CDX-860. The rich timbre of her voice, the rolling momentum of bodhran and electric bass all merge in this delightful track to produce an equally delightful and engaging performance. O.K., so there's not quite the emotive strength captured by competing players like Rotel's RCD-965BX or the Marantz CD-52SE but the smoothness, the delicacy and sheer sensitivity betrayed by the CDX-860 are powerful arguments in its favour.

Yamaha's rigorous standards of construction, novel aesthetics and generous range of facilities also load the scales in its defence. Did I say generous? Well yes, it's just that the vast majority of widgets are located on a revolving platform that sits snugly beneath its orange display. Features like direct track access, index skipping, 3-mode tape edit, a 25-track memory, 4-mode repeat and random play, are quickly concealed from view with a flick of the wrist!

Then there's the standard issue remote control complete with extras like display dim/off and mastery over the motorised volume control. All in all a thoroughly impressive package at a not unreasonable price.

But there are omissions. Yamaha's useful Program File memory (with space for around 1000 favourite selections) has been dropped on this model, for example. In its place Yamaha has specified a new and wholly symmetrical circuit layout complete with differential op-amps for each of the L/R DAC's and improved component selection in the filter stages that follow. Changes in quality rather than quantity that undoubtedly contribute to the uprated performance of the CDX-860.

So where do Yamaha go from here? Well, though the CDX-860 represents their best effort to date, it's certainly not perfect. Bass, for instance, could certainly do with more fire in its belly so long as 'fire' isn't achieved at the expense of transparency and subtle detailing.

Either way I certainly missed the explosive introduction to Arnold's 'Sussex Overture', traded on this occasion for an altogether more sober blast of percussion and horns. There was plenty of unmuddled detail but simply not the shattering of space, the

PLAIN SAILING

Paul Miller views Yamaha's sturdy CDX-860 Compact Disc player paddling up their own tributary of the bitstream.

literature, the underlying S-Bit Plus technology has remained quite unchanged.

Nevertheless I am forced to admit that its sound has made its way up rather than down stream. The same light, airy and transparent demeanour of the CDX-750 can be heard with the CDX-860 but this newer player offers a greater insight into the music, a renewed sense of poise and refinement. Its bass is not as rich but it is smoother, a leaner but more

In many respects it's the epitome of a well-judged and up-to-date mid-priced player, offering a sound that's detailed and refined yet not so civilised that it could be construed as downright boring. Inevitably there's a flipside. Push the player a little harder with the likes of Annie Lennox's 'Diva', for example, and an element of hardness will creep into its performance.

The CDX-750 was possessed of very much the same character even if

A concealed panel flips open to reveal the secondary controls.





the epitome of a well-judged and up-to-date mid-priced player, offering a sound that's detailed and refined

burst of acoustic I've come to expect. A pity this, because the CDX-860 will develop a thoroughly uncompressed and sparkling acoustic given a sympathetic CD. The player is not overly fussy I should add, but the engaging poise of simple Jazz, Pop or Classical recordings is tricky to sustain once the soundstage becomes cluttered with instruments. And it's this ability to sustain a very consistent and confident performance that separates the very good from the one or two truly magnificent machines currently available.

Keep paddling, Yamaha, for the Bitstream current will eventually lead to the tranquil waters presently sailed by the likes of Rotel, Marantz and Pioneer. And when they do reach the blue lagoon, I for one will be more than delighted to raise the flag! ●

Measured Performance

The story so far... The CDX-750 saw the introduction of Yamaha's proprietary PDM DAC (the YM7141), a natty little number that combined 2nd-order noise-shaping with a composite of 384x oversampling. In this respect it was closer to Pioneer's DACs than any from Philips. Anyway, its performance was hampered by Yamaha's first-stage 8x oversampling filter which offered a very limited 20dB stopband rejection while causing a peculiar 'bump' in the treble response.

One range later and we find the new YAC507 PDM DAC with an altogether revitalised 8x oversampling filter (the YDC101B/F). The composite oversampling rate is still 384x, naturally, but the HF bump has been reduced to a mere +0.07dB while its rejection of unwanted stopband products has improved to 72.6dB.

Meanwhile distortion has also been squashed to near-record levels, -103.3dB at 0dB and just -102.3dB at -10dB where the 'distortion' is almost entirely accounted for by noise! Even at -30dB the plot betrays just the merest hint of distortion. A fabulous result.

However, the seemingly vast 118dB S/N ratio is a product of digital trickery, disabling the noise-shapers when it detects a stream of digital zero's. In reality it's closer to 108dB (still an improvement on the older CDX-750) thanks to a spurious drone that breaks through the noise at 827Hz. On a more positive note do look at the evenly-matched L/R stereo separation - testament to the symmetry of Yamaha's circuit layout. **PM**

Frequency Response (-1dB)...2Hz-20.5kHz

Distortion @ 1kHz	Left	Right
0dB	0.00072%	0.00068%
-10dB	0.00084%	0.00077%
-30dB	0.0070%	0.0076%
-60dB	0.226%	0.156%
dithered		
-90dB	7.15%	7.0%

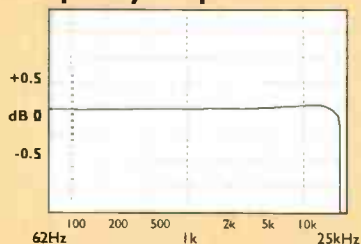
Distortion @ 10kHz

0dB	0.0054%	0.0059%
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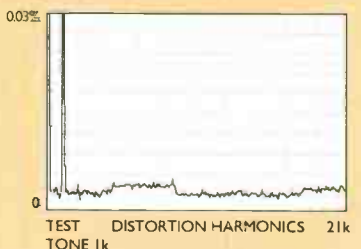
Stereo Separation	Left	Right
1kHz	99.4dB	99.5dB
20kHz	72.7dB	72.8dB

Peak Output	1.918V	1.916V
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Frequency Response



Distortion



TAKE HOME A TOP NAK



*For one Hi-Fi World
reader an opportunity to win a
top-rank cassette recorder -*
NAKAMICHI'S CR-7

"If cassette decks had all reached this standard more often in the last decade, digital recording systems might well have been received with wide yawns."

That was the conclusion Eric Braithwaite reached about Nakamichi's £1,500 CR-7 cassette deck in our August review.

Following our policy of offering our readers the best, Nakamichi's top-ranking CR-7 will go to one Hi-Fi World reader this month.

Packed with features, not a single one superfluous, the CR-7 offers the ability to make first-rate analogue recordings of unsurpassed quality. In our test, independent listeners preferred it to DAT!

Fully automatic tape tuning takes only seconds; just press the 'Auto Calibration' button. Almost before you realise it, the correct bias and level are computed, the 'Ready' flag on the display lights and the tape rewinds to the beginning, ready to record immediately. An 'Auto-Fade' switch will automatically fade out a recording just before the leader is reached - no more sudden abrupt halts as the tape runs out.

Not only is it easy to record, it's easy to find tracks on a tape, too. Nakamichi have built in a tape sensing system that can be either switched to give a four-figure numerical count or, like a CD player, will indicate 'Time Elapsed' or 'Time Remaining'.

One of the most unusual features of the CR-7 is its ability to align the head azimuth for any tape. If the angle at which the playback head meets the surface of the tape is even minutely different to that on the machine that recorded or duplicated it, the music will

sound dull or muffled. The CR-7's playback head is motorised: either turn the 'Azimuth' control on the front panel or use the Up or Down buttons on the remote control, and the head will move by fractions of a degree. 'Normal' azimuth is indicated by a red arrow as the top Recording Level indicator lights up. All you have to do is listen for the moment when a pre-recorded tape suddenly sounds most clear and snaps into focus and note the position for the next time it's played. It's extraordinary how much better many cassettes are than we believe after listening to them properly.

Part of Nakamichi's own no-compromise approach to cassette is to use three discrete heads, one for Erase, and one each for Record and Playback. Peer into the illuminated cassette compartment and they look small enough to belong in the works of a Swiss watch.

Nakamichi ignore Dolby Labs' newer innovations. With heads of this quality, it's arguable that Dolby HX-Pro has no additional benefits to offer, and dynamic range is high enough without resort to Dolby S. Tape-type sensing is automatic for Ferric, Chrome and Metal, as is the equalisation setting, though this can be manually overridden.



What else is there to say? As befits a company which has its own private concert-hall in its factory in Japan and which is distributed in the UK by B&W whose monitor loudspeakers are to be seen in recording studios around the world, Nakamichi's CR-7 makes a lot of music.

Completed entries (on the form provided - photocopies cannot be accepted) should be sent to the following address to arrive by 30th September 1992.

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

We will endeavour to publish the results in the December issue. Audio Publishing Ltd. reserve the right to publish such entries or parts of entries as the company sees fit. No correspondence may be entered into as regards this competition and the Editor's decision is final. Employees of B&W Nakamichi Ltd., their dealers and of Audio Publishing Ltd., may not enter.

NAKAMICHI CR-7 COMPETITION ENTRY FORM

Please tick the box next to the answer you think is correct.

1 Nakamichi are one of the few companies to have, in their factory . .

- An anechoic chamber
- A concert hall
- A dedicated listening room
- A theatre

2 The Nakamichi CR-7 has a unique feature to ensure perfect playback of recorded tapes. What is it?

- Assymetric three-head design
- Automatic Bias and Level calibration
- Automatic azimuth alignment
- Automatic tape-type sensing

3 Which of the following do Nakamichi *not* offer on the CR-7?

- Dolby B
- Dolby C
- Dolby S

4 Nakamichi are associated in the UK with which company?

- BMW
- BMG
- B&W
- B&O

5 Name two other Nakamichi products which are *not* cassette decks.

A _____ B _____

Tiebreaker (obligatory). In not more than twenty words, suggest why you think the Nakamichi CR-7 is one of the world's best domestic recorders.

Name _____

Address _____

Post Code _____

Daytime Tel. No: _____

Please send your entry form, completed in block capitals, by 30th September 1992 to: **Nakamichi Competition, Hi-Fi World Magazine, 64 Castellain Road, Maida Vale, London W9 1EX.**

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*Listen to some of the
UK's finest hi-fi
equipment in our two
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Denon's DL-1000 moving coil cartridge was a rare classic in the annals of hi-fi. It had a delicacy that was a delight to listen to. Its successor, the £199 DL-304, also a moving-coil, is both less expensive and less fragile I am told. It is still rare, however, but for a different reason: the few that are imported into this country are rapidly snapped up.

With its gold-coloured metal body, the '304 stands out - visually and in other respects. At 0.18mV it is a very low output device which is difficult to use without a moving coil step-up transformer. Amplifier moving-coil stages commonly do not have enough gain to cope with it. Combining the cartridge with a transformer makes it less of a bargain, since a quality one like EAR's The Head would raise the price substantially.

Apart from the problem of level, there is a mismatch in compliance between the DL-304 and most current pick-up arms. Compliant cartridges of this type went out of vogue a few years ago, to be replaced with higher mass, lower compliance types. Pick-up arms soon followed, manufacturers producing heavier, more rigid designs.

Installed in a modern arm like my own rigid, magnesium SME V, the arm waggled around on outer grooves. I noticed that these low frequency excursions were producing cone flap in my reflex loaded ProAc Response 1s - a classic sign of excessive arm mass for the high compliance of the cartridge.

Denon have traditionally been the cartridge suppliers to the Japanese broadcasting industry and the rigorous discipline and experience learned here is evident in the '304. Their DL-103, introduced back in 1963, is one of the longest running audio products around and their turntables have always been well engineered.

Denon like to be known as a 'quality' company. A flagship cartridge within the reach of mere mortals can set them apart from the other Japanese multinationals in the public eye. The DL-304 looks set to become a cult among cartridges.

Why is it so good? First, it is a superb tracker. As with the Shure VST-V tested last month, it confidently tracks at 1.0g - 1.4g without panic or problems. My sample fell in the middle of this tracking range, at 1.2g, which is exactly as the specification suggested. This, combined with an elliptical

stylus profile, makes the '304 unlikely to recut your precious records for you. As record preservation has become a major concern with many LP owners, it is a property that alone recommends the '304.

Those who love to hear a mid-band displaying superb lucidity and transparency will find that the '304 is one of the finest cartridges available under about £600. This is definitely Pink Triangle territory, where such virtues shine through.

There is a group of listeners who enjoy cartridges of this kind: they are unsympathetic to the warmth of a Koetsu Black S, the life of a Lyra Clavis or the speed of an Audio Technica ART-1. Their preference is for a cartridge that will add or subtract as little as

tautness of bass, sounding almost soggy by comparison.

Compared with my own favourite, the now-defunct Highphonic MC-A3, the Denon is a little thicker sounding, lacks a touch of the older cartridge's mid-band sweetness and doesn't quite perform the disappearing act that the MC-A3 is so adept at. However, I am hard pushed to find a current cartridge that can better the A3's transparency, so that is not a major criticism of the Denon DL-304, especially when the price is taken into account.

From the DL-304 I have heard details within recordings that I have seldom heard before. The sound of footsteps as Tom Waits walks up to the piano can be heard on any

reasonable system; with the Denon in place, you can also hear the dull thud of backside on piano stool. The subtlest ambient details are also present, making the DL-304 sound highly atmospheric; the Proprius 'Cantate Domino' is a perfect example of such ambience. With the DL-304, as soon as the faders come up, so the full life of the church hall appears

Imaging and dynamic range are exemplary. The smallest details are reproduced, without being swamped by more powerful sounds. There is justification for more expensive cartridges; this one lacks the master-tape authority of the big Ortofon or the high frequency extension of the Dynavector XX-1L. These cartridges also have an air of refinement that is less

obvious in the '304, although conversely, some have suggested that the sheer neutrality of the big Ortofons is too stark and cold and that the XX-1L has a tendency toward brightness.

I admit to becoming a collector of cartridges with especially transparent mid-bands, like those mentioned above. Sadly, most of them are no longer around - the Technics EPC-205 and the Highphonic MC-A3 especially are fetching high second-hand prices as people come to appreciate their virtues. In today's market the only alternatives are considerably more expensive. The Denon DL-304 offers superb neutrality at a comparatively low cost and, like the classic Technics and Highphonic models, it tracks like a dream.

As an owner of a Pink Triangle Anniversary, I have often been approached by other Pink owners, as well as Gyrodec and Townshend Rock people, trying to find a cartridge that suits perfectly, but doesn't cost a fortune. The Denon DL-304 is just that cartridge ●



cult cartridge

Already with a backlog of orders, the Denon DL304 is gaining cult status. Alan Sircom hears why.

possible to the music in the groove, the final choice commonly being a Dynavector XX-1L or Ortofon MC-3000. The DL-304 is firmly aimed at this band of neutrality lovers.

Subjectively, it doesn't quite match their sheer quality, yet it is very close - far closer than a £200 cartridge should ever sound.

What sets the Denon apart from its peers is low colouration. Though at this price something might be expected to go missing, nothing does; but also, uniquely, little else is added to the music. In the wrong system, the uncoloured Denon could sound thin and uninteresting. In the same price league, other cartridges tend to produce a more coloured sound. This can seem more exciting, fuller or faster to the ear. Subjectively, this isn't a problem in my view, as the best can inject much-needed magic into some systems. Where this is the case, cartridges like the Sumiko Blue Point, Goldring Elite or Ortofon Quattro need to be auditioned. In neutrality, only the moving-magnet Shure VST-V has similar virtues to the Denon, yet it lacks the

■ How digital is a digital recording? Many apparently all-digital recordings have in fact sneaked in and out of the digital domain and nestled in analogue for a while. Eric Braithwaite outlines the way a recording is made in order to dispel a delusion or two.

Those letters, 'DDD', 'ADD' or 'AAD' were invented by The Society of Professional Audio Recording Services in the mid-Eighties to help the consumer identify which parts of the process were analogue and which digital. However, they admitted earlier this year that "just to label a step in the process as 'D' for digital and 'A' for analogue is no longer an indication of much of anything. . . The code has been in danger of degenerating to simply a marketing device rather than a useful piece of information to the reader."

The chief delusion seems to be that if a Compact Disc cover claims to be entirely digital - and has the 'DDD' code - then it is digital from beginning to end, from microphone to jewel box. So, people ask, how come it doesn't sound perfect, happily equating (thanks, no doubt to subconscious memories of Philips' original slogan 'Perfect Sound Forever') digital with perfect sound quality?

First of all, we'll get one problem out of the way. The first stage of any recording process is analogue. The digital microphone hasn't yet been invented. Its job is to turn sound vibrations in the air into electrical energy, and that is an analogue process.

However this is not what the first letter of the three letter code on a CD refers to. These divide the process into three stages

Now, 'twixt cup and lip . . . or in this case 'twixt a performer in front of a microphone and a neatly printed CD in its jewel case there is more than one way to skin the digital cat.

The first commercially-issued digital recording in fact came out in analogue format - on cassette and LP; it was 1979, and Compact Disc hadn't been invented. It was Decca's recording of the Vienna New Year's concert,

1) Recording: The first letter of the code identifies the storage medium used in the initial recording process. Usually, it's a multi-track machine having sixteen or thirty two tracks, onto which the singers and instruments are individually consigned. This captures the basic performance. It then has to be processed.

2) Editing & Mixing: The second letter of the code identifies the nature of the stereo master tape onto which the multiple tracks are finally mixed. In this process instruments are positioned on the sound stage and artistic mistakes are removed, or other instruments, voices or effects are added to the original.

3) Mastering: The third letter identifies the type of 'travelling master' tape used. This may be equalised to compensate for tracing loss in LPs and azimuth error loss in cassette, both problems demanding a measure of treble boost be applied. Masters sent for CD transcription are usually unequalised though.

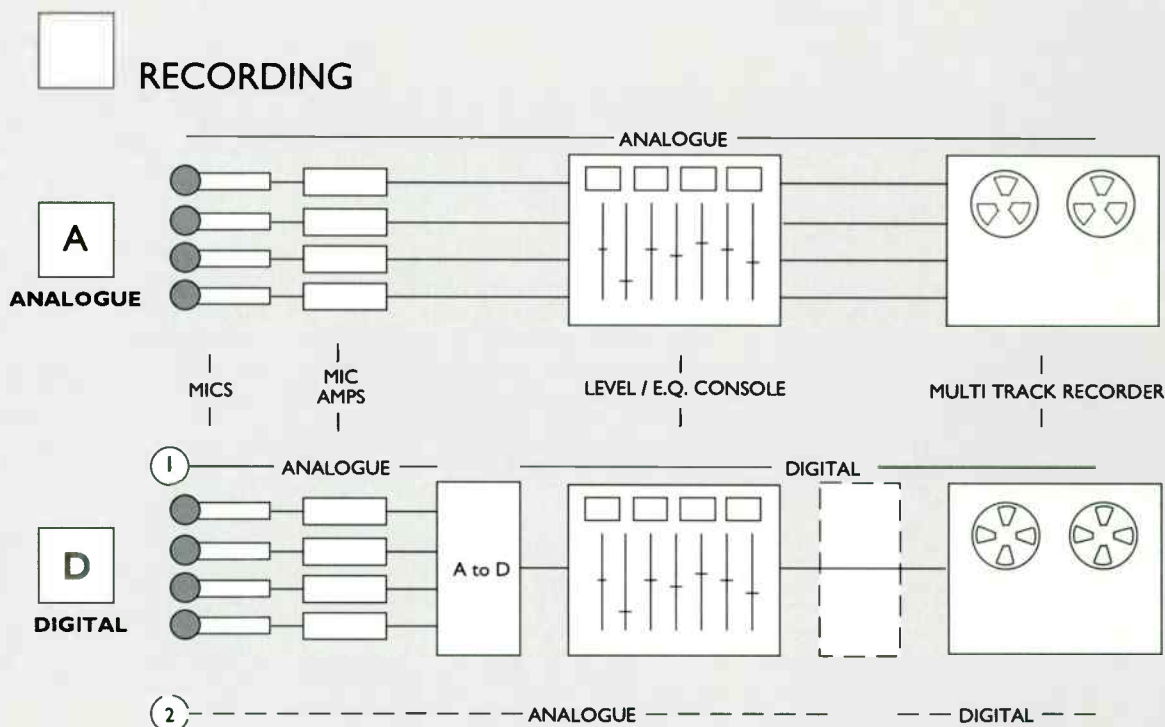
Hence 'DDD' - a recording made using a Digital recorder (a DAT machine, for example) at the beginning; a Digital editing desk for tuning what may be several hundred separately recorded snippets of a performance into a cohesive whole which lasts an hour; and the final product which would generally be recorded digitally onto U-Matic tape for the pressing plant to make the Master for the production process.

recorded on their own digital reel-to-reel tape recorder, and it sent a shock wave round the industry, just as the same company's first 'FFSS' stereo recordings had twenty-one years before.

A few years ago there was a story going the rounds that a certain pop singer, having heard of the astonishment that greeted the sound of that pioneer recording, decided that she would have to have the same clarity on her next

An ABC of AAD, ADD & DDD

Even with all-digital recordings (DDD) the front of the signal chain is analogue. Nowadays, valve amplification for the mics is not uncommon. The signal may be converted into digital form either before or after the level/EQ console. Since digital consoles are still not predominant, the signal commonly remains in analogue form through many processing stages, before going digital in a convertor placed between console output and multi-track recorder.



album. At the time, only the classical companies had got to grips with digital recording, and the hardware was mostly custom-built or very expensive, so a digital recorder was borrowed.

Now, if a drummer catches a hi-hat with his elbow in the middle of recording a song and says, loudly "Oh dearie me" (polite people, drummers, not at all profane) that has to be removed. With analogue recording onto reel-to-reel tape, it's simple. You simply cut out the length of tape which holds that mistake, and literally stick another piece in instead where it's perfect.

On a digital recording it can't be done like that. You have to change the coding itself - the order in which the 'I's' and 'O's' are on the tape. Cutting up the tape destroys it - you might as well cut all the pages of this magazine into eight pieces each, throw them up in the air and expect them to come down and reform themselves neatly beginning at Page 1.

Said pop-star and her studio discovered this rather late, and struggled with the editing for six months. It's said that the studio and record company spent hundreds of thousands, and ended up simply copying the digital tape back to an analogue reel-to-reel and sharpened up the razor blades. Rumour had it that though the album was proudly advertised as 'Digitally Recorded' - it had been! - it was the analogue copy that was used. To be fair, another rumour had it that later issues did use a digital copy of the original tape, digitally edited by a Classical engineer, who sorted out hundreds of hours of by then random bits and pieces in about six weeks.

This still happens, particularly in the Pop field, but the listener might never know - the coding doesn't tell you how many times a tape has dodged in and out of the system as an analogue copy as the hours and costs mount and a tricky bit has to be tidied up quickly. Unfortunately, when it's done, studios

keep quiet about it: the music biz - and a lot of buyers - generally believe that the word 'Analogue' anywhere near a CD is the equivalent of Leon Trotsky announcing that he's a great admirer of Adolf Eichmann.

DDD

This is the code many buyers look for, sometimes in the mistaken belief it represents perfection. Only a tiny proportion of recordings ever could, or can be perfect.

The three letters mean that the recording was, first of all, made in the first instance on a digital recorder. This may be a two track Digital Audio Tape (DAT) recorder, but it is more commonly a multi-track, reel-to-reel digital recorder using one-inch wide tape and anything up to forty-eight separate tracks. The danger within the first D of the code concerns the poor quality of some early digital recordings. Made using early and crude analogue-to-digital convertors, sometimes by engineers who didn't understand the danger of letting record level sink down low, these can suffer appalling quantisation distortion. It is most noticeable on violins, which become bizarrely shaky and rough sounding, seeming to swim in a sea of distortion. As a general rule, beware of early digital recordings - anything made in the 1970s. Often you'll find that they are offered cheap - and for good reason!

The next stage is correcting any performers' mistakes and changing the balance in the sound: making the side-drum louder compared to the lead guitar, or moving the apparent position of a sax player from one place to another. Done through a digital mixing desk, which allows the producer to change volume, position, even the frequency of instruments, the result is 'mixed down' to two stereo channels again and digitally recorded once more.

That's the second 'D'.

Finally, the resulting two-track stereo tape is encoded so that the information on track times, total length, and the instructions which are required to stop the laser trying to fall off the edge are all present. This is the last of the three 'D's'. In the CD factory, the 'glass master' forms the base for a production run which is what you see when you open the jewel box.

DAD

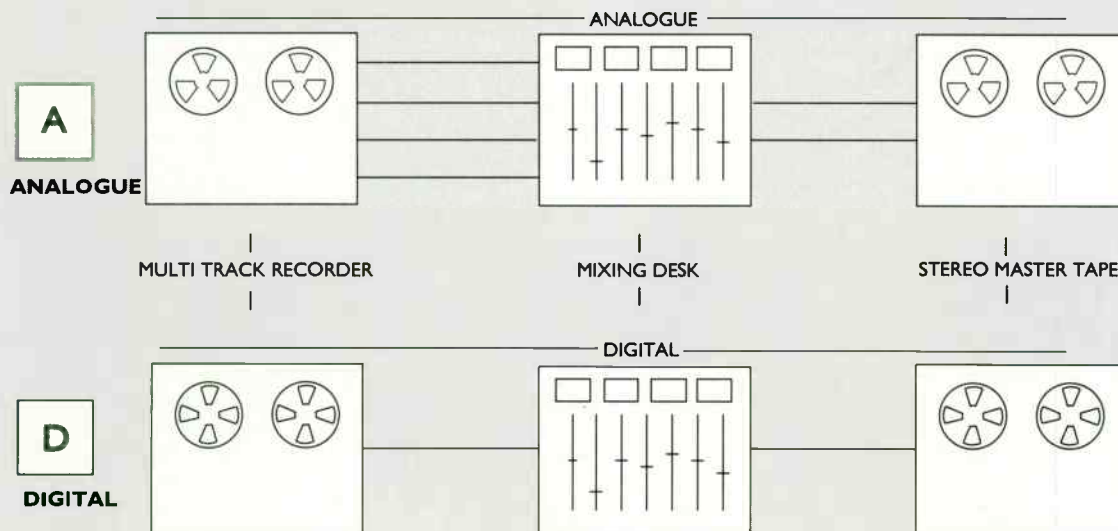
An odd one, this. However, it happens. Studios fully equipped for digital recording and mastering right the way through are pricey to use because the equipment itself is extremely expensive. The first 'D' is as for 'DDD': the recording is made on a digital recorder.

What happens next is that the original digital recording is played through a Digital-to-Analogue converter, fed through an analogue mixing desk in the editing process, mixed down to stereo and the result re-converted to digital.

The editing might be done several times until the producer feels it's right. It's not unknown for some Rock producers to even copy a digital tape to analogue and back again because they prefer the sound of a small degree of analogue distortion. Analogue time is much cheaper than digital time in an editing suite. A group might therefore be able to spend a longer time playing about to get the results they want. There are circumstances, even, when through lack of money, lack of expertise, or lack of time, a digital recording might be copied onto an analogue machine and edited the old-fashioned way by cutting the tape, throwing away the unwanted lengths and sticking it back together again.

The final stage, of course, is back to a digital transcription master for the CD factory.

EDITING & MIXING



▶▶
The second letter of the SPARS code refers to the nature of the stereo mix-down master recorder. However, the mixing and equalisation process feeding it may be either analogue or digital.

AAD

It should be becoming obvious by now, that if the first letter of the code is 'A' then the original recording has to be analogue. Once again, it can be a very simple two-track recording or a sophisticated multi-track one. Recordings were made in the Sixties using a perfectly ordinary domestic Revox A77 half-track reel-to-reel. More usually it would be a professional Studer machine from the same company.

However, analogue recording goes back much further than the invention of tape. Edison's first cylinders had a stylus cutting a wavy groove on foil, later on wax. The same principle applied to 78's, and well into the LP era.

Editing would also be analogue: either processed through a non-digital mixing desk - and there are valve ones in use! - or purely mechanically using the old razor-blade and sticky tape system.

As before, the final stage is inescapably digital to result in a silver disc in the jewel box.

A word of warning, here: it is not unknown, especially with obscure names on the CD, or pirates, for the only digital part of the disc to be the disc itself. Unscrupulous people after a quick buck have been known simply to copy an old LP, an ancient mono home recording made by sticking a microphone in front of a wireless or even a cassette through a DAC onto a DAT machine. It would still be "AAD" or, at a pinch, "ADD" - it'll also be naff.

ADD

A refinement of the above, with added optional complications. The first stage, obviously, is analogue. In historical order: cylinder, shellac 78, metal 78 or LP master, reel-to-reel tape. This is the code often seen on re-issues, though it doesn't necessarily follow. There are still musicians, engineers and producers around who prefer to start with an analogue recording and digitise it later.

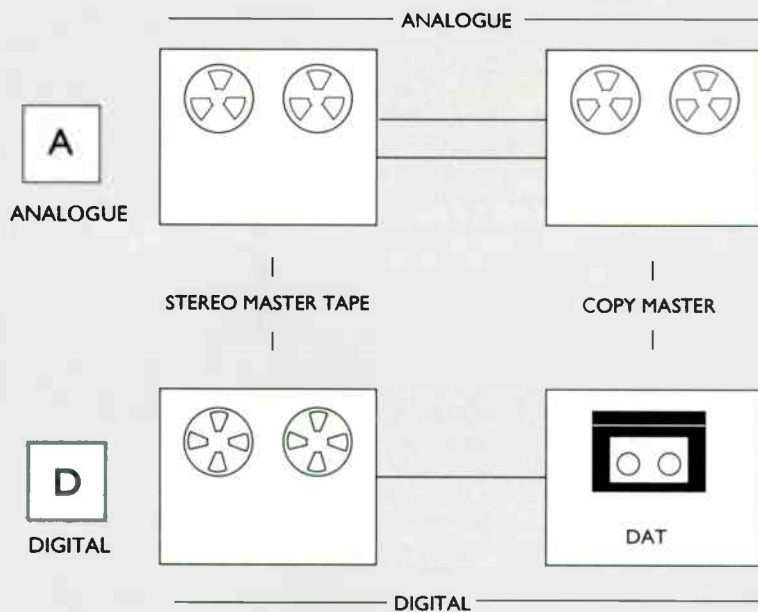
In the latter case, the processing is done through a digital mixer and stored either on digital tape or, something we haven't mentioned yet, on a computer hard disk.

The reason this is a common coding for re-releases is that digital processing at the second, editing, stage allows a wide range of opportunities for tidying up an original that had faults or failings either through uncorrected mistakes or because the technology has simply improved since.

One of the experts at resurrecting historical recordings - until his recent retirement - was Keith Hardwick at EMI. He was responsible for re-building the sound of historical recordings in EMI's archives for a quality of reproduction commonly available now that wasn't dreamed of thirty years ago, let alone when some of the great opera singers were bellowing into great horns at the turn of the century. It's amusing to consider that in the recording industry, a



MASTERING



Since the stereo mix-down master is very valuable, representing the time and effort expended by musicians, studio engineers and studio and equipment hire times, many copies are made from it, including the final 'transcription', 'copy' or 'travelling' master that is sent to the CD pressing plant. The third letter of the SPARS code identifies the nature of this medium.

Nowadays, it is commonly a small, light and inexpensive DAT tape.

record made only twenty years, let alone a hundred, ago can become a 'historical document'.

Many are marred by wear and tear, deterioration, scratches and dust on the last usable master, sometimes even by flood and fire. By and large, people like Hardwick at EMI and the engineers at Decca adopt a minimalist approach, using computers, hard disk and digital processing only to filter out hiss, particularly irritating cracks and bangs or incorrect pitch because the original recording ran slightly fast or slow. The results can be astounding, with a quality of sound and tone emerging from the accumulated hash of years that only long-dead engineers heard on the day.

Decca's typically idiosyncratic nomenclature for this is "ADRM", which is probably more descriptive: 'Analogue to Digital Re-Master.'

CONCLUSION

So how digital is digital? Quite often, not very. A sizeable proportion of a recording at the first stage can avoid any contamination by digits. Some companies prefer it that way. Philips Classics argue that their analogue mixing desk is quieter and sounds better than any digital one. Erdo Groot, one of their balance engineers, has even used Dutch designer Jaap de Jong's valve desk on purely sonic grounds. In the Pop world, too, while producers like one particular digital mixing desk because it can be set up for use very quickly, a good many engineers don't rate its sound quality.

Other companies convert the analogue sound of the performers into digits as soon as it leaves the microphone and keep it digital ever after. Some convert analogue sound into digits almost at any other stage of the initial recording process; a few not until the very last moment. Even so, at different stages, machines and samplers

and hard disk systems won't necessarily even be 16-bit all the way through: especially in the Rock recording world there are a lot of different storage media with different sampling rates and different conversions from 14 to 16-bit or 20-bit to 16.

All these methods are disguised under that seemingly obvious choice of three letters from the first four of the alphabet. No wonder many buyers have become mystified at the apparent wide range of quality between one 'digital' recording and another, even ones issued in the same week by the same company. Not even recording engineers agree: Tony Faulkner, for instance, widely respected for truthful recordings, is known to refuse to countenance DAT for the master, and uses a Mitsubishi digital reel-to-reel tape recorder.

There is no easy guide to recognising whether the best possible sound quality is on offer just from the front or back of the CD booklet. It's trial and error - and sometimes it ain't half a trial. Learn from experience. Most CD inserts now list the names of the engineers and producers along with the date and place of the recording. When you hear one which impresses you by its fidelity, look out for the same names again.

Collectors of vinyl will know the trick. The highly respected Decca 'SXL's' and RCA 'Shaded Dogs' are associated with names like Kenneth Wilkinson and John Culshaw. It's less easy with Pop, Rock, and to a certain extent Jazz. It's common for non-classical recordings to meander through several studios, many different systems and dozens of engineer's hands before they emerge at the other end. Still, the various studios, engineers and producers are now commonly credited on these sleeves too. And, of course, there's a very helpful publication called Record Collector to help guide you through the maze! ●

This month, the first of two systems with many common traits. Both live in idyllic listed buildings around the US air bases in the Norfolk/Cambridgeshire countryside; both feature Epos ES11 loudspeakers, albeit in very different systems.

The first belongs to Judy Head, who is a trade consultant in the City of London. Judy has that canny knack of discovering things by chance, as proven by her house and her hi-fi. She stumbled upon her new home by accident, when a secretary talked of her holidays in the Norfolk Broads. By chance, a newspaper fell open at the house pages and there was her cottage! A few months and some fierce negotiations later and the cottage was in her hands.

Having moved in, Judy decided to renovate it completely. Once more, the chance aspect appears. Judy was arranging a photographic shoot at a studio which was just putting the finishing touches on their previous job: photographs of Pink Triangle turntables. The style of the Pink appealed.

Around the same time she listened to a number of friends' hi-fi systems and began to compare the sounds that these made to the noise that came from her own midi-box. As Judy is very involved with her music, from here it was clear that hi-fi would be the first priority after her move.

Hearing the Pink

Having moved into her new house, she approached her nearest dealers, Basically Sound, who are situated in Bracon, just outside of Norwich. Having arranged a demonstration, she explained that she knew little about hi-fi, but she wanted a turntable-based system and she had heard of Pink Triangle. Graham, the salesman at Basically Sound, expertly described the pros and cons of buying a turntable today, although he also admitted his own preference for LP.

Basically Sound provided Judy with a system that fitted her budget without compromising her purse or the system. Although the cost was slightly more than she had hoped to pay, she felt that the sound more than justified itself. What particularly impressed her was the way that Graham never tried to force her into buying.

Once again, luck played a part in choosing the set up. It was the first played to her during the demonstration and although she could hear the changes and improvements made later it was that original system that she settled on. It consists of a Pink Triangle Little Pink Thing turntable, with a Rega RB-300 arm and Linn K9 cartridge. This was partnered with a Naim Nait 2 amplifier and the aforementioned pair of Epos ES11



Brushing away the brick dust. Judy and her new system

speakers and stands, with bi-wired QED 79 strand cable.

No tables or wall shelves were supplied, because Judy is in the process of rebuilding her house. In fact, the day before we arrived, the builders had knocked down one of the walls in the living room, so a thin patina of dust covered everything. During such times, both system and record collection are removed to the upper floor and covered in dust sheets. When all the building work is finished, Basically Sound have offered to set her system up properly later as part of the service.

Even operating in such a ramshackle manner, being plugged into a temporary 13A mains socket from the ceiling, it still outperforms her previous system, a nondescript Japanese midi horror. As it stands, the system is a happy compromise of Pink neutrality, Naim strength and Epos smoothness. Although the little Nait is not the most powerful amplifier in the world, it still has the power to make the Epos sing at moderately high levels.

Disappearing Art Form

Although Judy admits that she will need a Compact Disc player, tape deck and tuner in the future, such components will naturally take a back seat to her turntable. "I already have a large record collection and I don't have any need of a CD player yet." She has also discovered a number of superb second-hand record shops which cater for her very catholic tastes, although she swore me to secrecy about their locations. She also has a unique view of the relative merits of the two formats. "With the reduction in cover size, there is a whole art form in album sleeves that is rapidly disappearing," although she admits that CD has its uses; "It's good for listening in the bath on Sunday mornings."

People new to the joys of hi-fi often have

reader's system

Alan Sircom brushes the dust off some system - and house-building in Norfolk.

to serve an apprenticeship with poorer equipment, largely because the salesman cannot accept that people can have a starter system that is of high quality. Judy's first 'real' hi-fi system is an exception to this rule. All the components meld together beautifully. It can easily be improved, with the loudspeaker cable being changed from QED to Naim NAC A5 or Linn K400 - the most obvious area for improvement after the system is correctly and finally installed.

Amid the rubble of a rapidly developing house, it all provides a solid musical foundation on which Judy can expand her record collection. She is more than happy with her first real system, and with the excellent and professional service from Basically Sound. Around the office, it was felt that Judy had got her priorities absolutely correct - buy the house, buy the hi-fi system and worry about the other problems later. The house may be in disarray, but at least the music takes her mind off the mess ●

INNOVATIVE CHANGES

I have never written to a hi-fi magazine before, but having read so many, I feel it's about time.

My system consists of an old version Audio Innovations S300 amplifier, a Philips CD 850 CD player and a pair of B&W DM600 speakers with Linn K20 speaker cable. I am satisfied with my amplifier but I found the bass of the DM600 is not well controlled and is too boomy. Is there any way to improve its sound quality? I prefer detailed mid/treble and well controlled bass. If it is impossible, I will replace the DM600 with a better sound quality one. But the S300 is quite system dependent and the output is not high (only 10 watts), so would you please recommend some speakers to me which would be suitable for my S300? My planned budget is about £700-£800.

By the way, do you know what the valves inside the S300 are, except the 3 ECC83s, as I want to change them.

**Dennis K. M. Wong,
University of Bradford.**

The S300 amplifier is well suited to the Snell or Audio Note loudspeakers. My recommendation would be the Audio Note K on heavyweight Huygens stands. I would also recommend changing the cables over to Audio Note AN-B cable. Alternatively, try Definitive Audio's modified JPW AP2 loudspeakers, again with Huygens stands and Audio Note cable, although this time, you could afford to splash out on silver cable, remembering to braid it first.

The valves in the S300 are, as you suggest, three ECC83s in the preamplifier stage and four ECL86 valves in the power amp bit. The ECC83s are not a problem, as they are very common. The ECL86, however is not as standard; it was used in low cost amplifiers like the Rogers Cadet. P.M. Components (0474) 560521 do make a Golden Dragon version, however, and if there is any further difficulty, contact Audio Components (0305) 761017, who will be able to supply the valves ex-stock, as well as offer any further information on the Series 300 amplifier. **AS**

BRIGHT CD FROM LINN

I wonder if you would be so kind as to offer me some advice on my system. I am a devoted fan of the original Quad ESL, so much so that my main concern when recently moving house was to have a large enough room for

the speakers! The rest of the system consists of an LP12/Ekos/Troika/Lingo on a Mana table, a Linn Karik/Numerik, Exposure VII/VIII amps and a Nakamichi cassette deck. While everything is wonderful using the record deck, sound on CD is still often uncomfortably bright and lacking in bass extension.

Two dealers both recommended I upgrade to the Linn Kaim, but after extensive blind listening, comparing my amps to a Linn combination that was nearly twice as much money, I really could hear no difference between the two. All the equipment is on dedicated tables, the Quads have been modified to prevent damage caused by excessive amp output, and are placed close to side walls and about a third of the way down a large room measuring 28ft x 16ft. I upgraded to the Linn from the Meridian 200/203, although the differences were relatively subtle. Is there anything you can suggest, short of waiting for CD technology to catch up?

One final word to doubtful purchasers - the Mana table has, in my system, made a larger difference to the sound quality than either the Lingo or the upgrade from an Ittok. Hesitate no longer!

**S. M. Herber,
Grimsby, Yorks.**

Your description of your misgivings toward the Linn Karik/Numerik CD player focuses on its main drawback. Even Stereophile's very positive review of the Linn player drew attention to the 'thinness' of the treble. This 'thinness' could produce a lean or even bright sound in the wrong system or the wrong room. Ultimately, this could be due to the medium itself, but I believe that the player is responsible.

Check out the benefits of the Mana table on the CD player, DAC, and amplification. It appears to work in the same fundamental manner (no pun intended) as the Reference table for the turntable.

If this does not work then I believe that the cure for such brightness lies with the Naim CDS, or possibly the new sync. locked Arcam Black Box 5 (£449.95) with 170.3 low-jitter transport (£649.90). We haven't heard it yet, but Arcam consistently produce fine CD equipment and their 'house sound' leans toward a mellow presentation that's easy on the ear, but of a high standard all the same. Similarly, the Audiolab 8000DAC has a

refined presentation that you may well find suits your tastes and your system. We suggest you audition them.

Alternatively, try the American high-end; CD players and DACs from Theta, Proceed, P.S. Audio or even the £14000 Mark Levinson No.30 DAC with its new No.31 transport. **AS**

I've got to say I admire your Quad ESL set up. Having them close to or against side walls does crucially improve the bass. It's worth buying a home to match the Quads, 'cos you don't only get a good sound but you have to get yourself a nice, big lounge as well. I've got it in mind to follow your example. **NK**

SPRING A LEAK

I am looking at replacing my old Leak speakers for about £200 to £400, but which ones? I have mainly Rotel equipment - RCD865 CD, RD865 cassette deck, RTC850L tuner/preamp, and RB870BX power amp, which, at 100 watts per channel, seems to be too powerful for some recommended speakers.

Rotel seem to recommend Infinity (perhaps the Reference 40s?), but no one else seems to and I cannot find anywhere local that has them to give them a listen!

Are there any speakers that I should hear that would match up with my Rotel equipment? I mainly listen to Rock '60s sounds while my wife listens to Classical music. Unfortunately the speakers will have to be on stands against a wall, with a T.V. in between them, in a room 16 foot by 12 foot wide. Are some speakers affected by a close television?

I am also considering buying a new television: either a NICAM Panasonic or a Toshiba 2505D surround sound set. Could I use my new speakers with either of these?

If I bought the Panasonic, could that be converted to surround sound at a later date via an AV amp? If so, at what cost and would the result be roughly the same as the integrated Toshiba television?

Are there television programmes at present that would give a noticeable difference between the NICAM and surround sound systems?

Would it also be possible to use the Toshiba surround sound rear speakers with a CD or record deck?

**Nigel Teague,
Bromsgrove, Worcs.**

As long as you do not crank up the hi-fi, using a pair of loudspeakers with an amplifier outside their capacity is not a recipe for disaster - it just needs rather more restraint. What is more problematic is the use of a TV in between the two loudspeakers.

Loudspeaker magnets will pull the picture and blur the colour of a TV if brought very close. Just keep the speakers away from the TV. I would suggest trying the Rogers LS2a/2s, and if you notice any 'pulling' of the TV screen, then speak to Wilmslow Audio (0565) 650605 about providing some screening material. Harbeth P3 loudspeakers are screened, so this could be a good option for you.

There is some confusion over NICAM, 'surround sound' and Dolby Pro-Logic. An increasing number of terrestrial broadcasts (BBC1, BBC2, ITV and C4/S4C) are now NICAM encoded. This gives a stereo signal, with the correct NICAM decoder. As with conventional hi-fi stereo, there are only left and right channels, with no information in this signal specifically for centre or rear channels.

A select few made-for-TV programmes, together with some, usually big budget, movies are Dolby Pro-Logic or Dolby Surround encoded. Contrary to opinions held by some, NICAM is transparent to both these Dolby signals and the full coding can be broadcast by the terrestrial channels. Pro-Logic uses conventional left and right loudspeakers, together with a central dialogue loudspeaker and two rear effects loudspeakers. Dolby Surround, on the other hand, does not have the centre speech facility, but is basically similar. Some systems (such as Yamaha) take Dolby a stage further and add secondary front 'effects' loudspeakers, to create a wide-screen cinema sound.

Pro-Logic usually needs a separate decoder from the NICAM device, although many VCRs have both shoe-horned into their output sections. Please note, however, that there is a world of difference between a 'stereo' VCR and a 'NICAM stereo' VCR; both can play stereo video cassettes, but the former cannot receive NICAM encoded stereo broadcasts. The situation is made even more complex when satellite is involved, as they have their own form of stereo encode/decode system, although some cable viewers have the ability to receive



readers' queries

NICAM on certain channels, with other channels being simul-cast along the cable company's own FM 'narrowcast'. Now you can appreciate why there is some confusion!

The Toshiba 2505 has the ability to run both NICAM broadcasts and Dolby Surround features, complete with internal amplifiers, cables and rear loudspeakers. The Panasonic could be upgraded to play Dolby Surround, or Pro-Logic as you have suggested. Cost could be kept low, making it similar in price to the 2505. Ultimately, if you intend to upgrade your home cinema, then the Panasonic would be the better bet, as it gives you slightly greater future flexibility, while the Toshiba TV is a more complete, and final, package. **AS**

AIRFIX HI-FI - JUST ADD GLUE!

I am writing, in desperation, in the hope that you can help resolve a problem I have with my hi-fi equipment. My system comprises; Naim NAC 32.5 + SNAPS + NAP 160 (all modified to latest spec., Arcam Alpha CD, Thorens TD160 Mk4 with its own arm and a Goldring 1012 cartridge, all going through a pair of Rega Elas. Speaker cable is NAC, the amplifier interconnects are SNAICs, and the CD to amplifier interconnect is van den Hul.

My room is approximately 14 x 12 feet, with a solid concrete floor and the speakers situated almost 'in' a bay window - i.e. the wall is at a 45 deg. angle (approx.) behind each speaker, the wall being between 3 and 5 inches behind each speaker, incidentally. My musical tastes

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encompass almost everything except for opera and disco 'music'.

The problem I have is a lack of deep bass notes, which makes bass lines sound rather disjointed and robs the sound of some of its body. The problem mainly afflicts CD reproduction, although my Thorens is in need of a service, and is difficult to use for evaluation purposes (more of this later). I use the Phono 2 input of the 32.5 - yes it is rather old! - via the CD direct boards (the variable ones sounded awful). I do realise the Alpha isn't quite good enough for the Naims, but as it stands, it sounds as though the frequency response is being cut at the bottom end. I know that Arcam slope off the high frequency end of the spectrum, but hadn't realised that they do the same at the other end!

If you could in some way verify my feelings on this matter and also suggest a plan of action I would be most grateful. Would an off-board DAC improve matters? (i.e. add a Meridian 203 DAC? and the transport at a

later date), or should I be aiming for a CDI or something similar? Would a change of interconnects help? (I think not somehow.)

Also, could you recommend some wall shelves - I need two; one for the turntable and one for the CD player. The ones I use at present are OK, but are made from chipboard and tend to flex a bit. I cannot realistically use anything else as I have three cats! I can't really stretch to Mana tables (especially if I invest in a CDI), but I will if necessary.

The turntable could also do with upgrading; do you suggest just a change of arm/leads and a suspension overhaul, or would a complete replacement be advisable? I do have nearly 400 LP's, so something decent is required - an LP12 has been suggested (several times), but what others would suffice? - nothing outrageous here please!

Any advice you can give, to prevent terminal madness, would be greatly appreciated. I realise I've gone about my upgrades in a roundabout sort of way, but I do like my Elas and am growing to like my Naims; what I don't want to do is waste any more money!

On a different note, when I had my Marantz PM45, CD75 + Tannoy Mercury Mk1's, the bass was, at times, a bit too much; am I right in assuming that the amp and speakers were adding something in the way of colorations/resonations, that boosted bass performance? A friend has the Tannoys now, and I find them rather offensive to listen to; funny old game innit! **Nigel Smith, Bedfont, Middx.**

I am at a bit of a loss as to why the CD should sound so bass

shy. It may be due to the poor equipment support, or it may be that the Ela's transmission line is not interacting with the room properly, possibly due to the bay window in the rear wall, the small size of the room or the dry sound of the concrete floor.

I would expect such a system to sound warm and woolly, but still forceful and dynamic, with a deep bass - the opposite of the sound that you are getting.

In equipment terms, there are a few things that you can do. First, check that everything is working properly, including the removal of carriage bolts and such like. Second, check out good tables and wall shelves for all the hi-fi components - not just the CD and turntable. These do not have to be in the Mana or Seismic Sink class; two Target wall shelves and a matching table for the amplifiers beneath them would do fine. Ensure that all is tight, rigid and level.

Finally, put the same amount of care and attention into the positioning of the loudspeakers. Try to get them six to eight feet apart, and equal distances from the side and rear walls, preferably at least two feet from the side wall. When all this is done, get the loudspeakers level and ensure that they do not rock at all.

If after all that the system still has bass problems, then try to borrow a DAC like an Audio Alchemy or the Micromega Microdac, to see if that improves things. As a last ditch effort, you could try changing the vdH interconnects over to Sonic Link Violet, which is well suited to the Naim amplifiers, but I would doubt that was the root cause of the problem. **AS**

TOP TURNTABLE TIPS

Can you throw some light on what choices I should make in developing my existing system? This consists of an Elite Rock turntable/Alphason Delta arm/Decca London (Blue), Musical Fidelity A100 (recently changed from a 5 year old Incatech Claymore) and fifteen year old Rogers LS3/5a's on heavy stands. My CD player is a Marantz CD 65 II with Arcam Black Box II.

I have well over 17,000 LPs, almost entirely Classical (orchestral, choral and chamber music). The turntable combination is almost six years old now and while still very acceptable may not be quite up with the very best available. In addition, the Decca does not sound as good through the MF's phono stage as it did through the Claymore. For this reason I would like to change and upgrade it to a top flight source before the end of the analogue era arrives. However, I am in two minds as to what course to take.

One option would be to keep the existing deck and upgrade the arm to an Excalibur coupled with a high-grade cartridge from Dynavector or Shure VST-V. The alternative (and more costly option) would be to ditch the Rock completely and go for a Pink Triangle Anniversary/SME Series IV/Shure VST-V (or similar).

As you can see from my choices I want as accurate a source as possible (given a maximum budget of £2,400). I have heard both Linn and Roksan systems in the past and came away unimpressed. Also, much as I would like to go for the Rock Reference/Excalibur my girlfriend is likely to object to the cost very strongly.

In the longer term I shall upgrade the amplification and speakers but at the moment my priority is to get as good an LP source as possible to carry me through the twilight of analogue.

**Roy Boakes,
London SW18**

The Excalibur tonearm is ideally matched for the Elite Rock turntable and takes the Townshend principle to its extreme, short of the Rock Reference design. It you like the sound of the original Rock, then adding the Excalibur, a Dynavector XX-1L and a Michell Iso moving coil phono stage with Hera power supply will take the turntable into the top league. If you have any money left after such an upgrade, go for a Townshend Seismic Sink, together with good quality interconnect, of a

relatively low capacitance, such as Cogan-Hall Intermezzo Reference, Audioplan Super X-Wire or, if strapped for cash, DNM interconnect.

The logical alternative to this is the Pink Triangle route. The system that you described (Anniversary, SME IV, Shure VST-V) is a very successful combination, in a similar class to the Rock. This system would also benefit from an add-on disc stage, this time from Moth.

Although both turntables are highly neutral, they have slightly different priorities; the Rock's centre of excellence is its bass performance and its almost total absence of surface rumble, while the Pink favours a highly transparent mid-band. In a system using LS3/5a's, you may find the Pink's balance of virtues difficult to better, yet if you had full-range loudspeakers like the Glastonbury's, the Rock may be more suitable. **AS**

UPGRADE OPTIONS 3

I am looking for some advice on upgrading my system by changing my current amp to a pre-power combination. My current system comprises: Arcam Delta 170CD transport, Audio Alchemy DDE, Rega Planar 3 with Linn K9, Marantz PM-75 amp and bi-wired Musical Fidelity MC-2 speakers.

Pre-power combinations I was thinking of are: Audiolab 8000 C/P, Musical Fidelity P180 and Linn LK1/LK 280.

Which of these combinations would work best in my current set-up, or can you suggest any alternatives?

My budget is between £1000 and £1500 and I listen to pop/rock music from Abba to ZZ Top and everything in between.

**Liz Laird,
Baillieston, Glasgow.**

The MC-2's are a good rock loudspeaker that need some power to drive them properly. As such, the Audiolab 8000C/P combination's normally clean presentation might sound a little lightweight through them.

Switching over to the Linn LK1/LK280 set-up, this is in the process of fading from view. There should still be stocks of the LK1 at present, but it has been largely superseded by the more expensive Kairn and the Pretek. Likewise the LK280 is being replaced by the cheaper LK100 and the expensive Klout. A Pretek/Powertek from the Linn range would fit your bill well.

My own favourite combination would be a Croft Micro or

Super Micro valve preamplifier with a Musical Fidelity P180 power amplifier. These two combine together well and would suit your system perfectly.

This would slowly show up some of the compromises that the Rega makes, so it may be time to look at Townshend damping troughs and Seismic Sinks, or Mana tables. These are capable of transforming the performance of the Rega. **AS**

If you are still in a spending mood - or want to put it on hold for later - I would also recommend Arcam's £150 factory upgrade of the Delta 170 to 170.3 specification and also consider partnering it with the Sugden SD-1 Digital-to-Analogue convertor, a combination I have lately been very pleased with. **EB**

SHORT AND CURLIES

I have just decided on a new system which will comprise: Deltec DSP505/DSA 50S pre/power amps, Deltec PDM 2 DAC, Wadia WT 3200 or Teac P10 transport, Nakamichi Cassette Deck 2, Deltec Black Slink interconnects.

Although I am more than overwhelmed by what I am about to purchase, I am having great difficulty in choosing a pair of speakers. I have already auditioned: Kef Q90, Kef103/4, Rogers LS3/5A, Acoustic Energy AE2 and Epos ES1 I, but so far nothing has grabbed me by the short and curlies. I listen mainly to the likes of Frank Zappa, Steve Vai, John McLaughlin etc. etc. and my listening room measures 23' x 16' very sparsely furnished.

I'm not really bothered as to how much to spend on speakers and cable so long as I'm achieving the best possible results from the partnering equipment. I also intend to audition the Naim SBL and Linn Index II speakers but I would welcome any suggestions or advice you could offer me. I would also be interested to hear any criticisms about the equipment I have chosen.

**P. Sayers,
Penarth, S. Glamorgan.**

It largely depends on what you want from a system. You have listened to a varied range of loudspeakers, many of which have long been considered to be a good match for the Deltec system. The only loudspeaker that suits the Deltec better is the Quad Electrostatic, yet Quad Electrostatic fans are

generally not the sort that use phrases like 'grabbing you by the short and curlies' and listen to the league of guitar heroes that you mention.

You could try ProAc Tower or Response Two loudspeakers, together with DynAudio Contour 1.8's or Craffts although I believe that these loudspeakers need far more 'grunt' than the fifty watt Deltec can deliver.

If I knew what was wrong with the systems that you have heard in the past then I may be able to help slightly more. If you are looking for a loud, powerful and dynamic sound that is similar to the recording studio, then skip the power amplifier and go for a pair of active ATC SCM 50s. Alternatively, skip the Deltec equipment altogether and plump for a full Linn or Naim CD system, with either SBLs, Kabers or Isobariks.

All these systems have the ability to pin you against the rear wall with intense, yet controlled, music. If this doesn't work, then the answer that you seek may lie in the high-end. Have a listen to Martin-Logan Quests, Audiostatics, or Magneplanar designs through Krell, YBA, Mark Levinson or conrad-johnson amplification. **AS**

JOIE DE VIVRE

Hello again, and thank you for the advice about room acoustics in the April issue, but it only solved part of the problem. So here I am again asking you about the matching of my system, which comprises a Meridian CD206B, Audiolab 8000C/D 1991 revamped amp and preamp plus Quad ESL 63. How does this combination sound to you?

I also have a Pioneer CD player PD 4100 that I first bought years ago as an introduction to CD players and, comparing this budget CD player to the Meridian, I find the latter does not justify the extra spending as the difference in sound is not so much better, and not much more musical - or as you describe in your World Favourites, it is lacking in joie de vivre. And I am a French speaker so I know exactly what joie de vivre means; so please help me find the real thing with your advice. I'm ready to spend an extra £2000 or sell part of my equipment or all of it and add the extra £200 to £300.

To be more precise I will ask you a few questions.

1. Do I have to change my Meridian CD206B or just add a

separate DAC to really feel and hear the difference or do I have to go to the very high end like Accuphase DP70 (I want your opinion) or Naim CD player?

2. Or is it the Audiolab with its slick styling to match! Do I have to go for an easier match and bigger price?

3. Quad ESL 63s are definitely very precise and accurate, but as you say maybe it is better to consider a moving coil instead like you suggested in April unless No 1 and 2 above could bring the solution, if not which speaker do you recommend? Is the Castle Winchester a good choice or maybe buying a pair of Gradient sub-woofers will ease the pressure on the Quads?

4. Accuphase CD players and amplifiers are considered very expensive. Are they worth the money?

Last question is: Is there a way of testing the Quad ESLs to make sure they are in perfect working condition?

Oh what a long letter! But forgive me as in Egypt I have nobody to talk to about my problems.

J-P. Hagggar,
Alexandria, Egypt.

In fairness, I have not spent much time with the Accuphase CD players and amplifiers, although I admit that their overall quality commands much respect world-wide. Of the big Japanese CD players, I prefer the wedge-shaped Luxman, sadly as yet unavailable in the UK. This player is the most smooth and graceful player I have encountered, although it can be a trifle over-refined at times. In your system, I strongly believe that the Audiolab 8000DAC would be the best match. If you like the overall sound, or lack of it, from the Audiolab amplifiers, the DAC is an obvious choice as it is in a similar vein.

You should find that the Quad's balance more to your liking with the Audiolab. If you do, yet find that the ESLs are lacking in bass and dynamic range, then go for the Gradient, or the REL subwoofer. If you do not like the sound produced, then go for box loudspeakers after all. Start out by listening to the Epos ES1s, try ProAc, Monitor Audio and Snell, to see where you end up.

Unless the Quad is obviously damaged in transit there is little that can be determined by visual inspection. Only when playing music do invisible internal disorders become apparent. The most common is arcing due to the panel being

over-driven. Quads are best left to the engineers. Generally, Quad problems such as channel imbalance are due to room effects rather than damage to the loudspeaker itself. However, to check their performance, contact the Quad agent, Mr Hassan Hashimi, of Sigma, No 5 Mohamed Anis St., Zamalek, Cairo. Tel: (local) 2 347 5762. **AS**

VINTAGE SYSTEM SPEAKERS

I recently acquired an old Quad II/22 valve set-up (with tuner) at a knock down price. As I already have a reasonably satisfactory 'modern' system (although the amplifier is a Quad 33/303 so modern is a relative term), I'm toying with the idea of putting together a 'vintage' hi-fi with a Garrard 301 or 401 turntable, possibly. Any other suggestions are welcome, as with the speakers; I've thought about old Leaks or B&Ws.

What I really want to know is how such a system would compare to a more modern equivalent, in slightly more concrete terms than those which surround this end of the hi-fi market, such as 'warm', 'lovely' etc.

I assume that this kind of technology has been suspended in the 'lab' situation, but the healthy levels of interest in it suggests that it has something more to offer than simply (very endearing) aesthetics.

What exactly?

Yours grasping at straws.

Miles Hubbard,
Loughborough, Leics.

The obvious partner to the Quad II power amplifier is the original Quad Electrostatic, which can be got for around £200-£400, depending on condition. Otherwise, old KEF's, Leak and Wharfedale loudspeakers would all suit, but would radically alter the sound of the system.

With a pair of Quads, and a well cared-for Garrard 301, preferably in an SME plinth, with an old SME arm and something like a Shure cartridge, the overall sound quality can be surprisingly good, coming very close to the sound of current products. I must stress that this is largely dependent on the state of repair of the equipment concerned; you would not expect a 1950's Porsche 356, that had been left in a ditch for thirty years, to ride like new; so it is with the hi-fi.

Spend some time applying

Tender Loving Care to such a vintage system, getting it carefully restored and maintained and you have the basis of a system which could provide a match for all bar the finest of hi-fi. **AS**

Just to stick my ha'porth in, a 301 is preferable to a 401, being more likely to hold its value. Beware, however, since both were prone to rumble. It is possible to find ones that don't. Listen carefully. If you spot a Thorens TD124, which is of similar vintage, in good condition, this is also a strong contender. **EB**

You do have to be careful about piecing together a vintage system. Although the best from the past can be spectacularly good, a lot of it is old tat! Even good products in poor condition will sound pretty dire. I'll go over the problems in detail.

Firstly, the original Quad Electrostatic remains one of the best loudspeakers ever made, being preferred to its later replacement, the ESL-63, by many. Unmodified, the '63 sounds warmer and a bit 'smothered' in comparison. I bumped into two buffs the other day who had just heard, for the first time, a pair of stacked originals: they were almost in shock over the sound. These speakers offer a purity and openness unrivalled by box loudspeakers - even the most modern.

However, the original electrostatic was easily damaged by being overdriven, whereupon the internal Mylar film panels arced and holes were burnt into them. Quad (they're in Huntingdon) can repair the speakers easily (and add a protection circuit), but it will cost a few hundred at least.

Then there's the lack of bass. Against a side wall or stacked, however, this is not so much of a problem. Alternatively, a REL subwoofer like the Stadium or Stentor will match in very well I have found. They are now my preferred solution to the Quad lack-of-bass problem.

Forget other vintage loudspeakers. I have heard most of them and found little of merit. Even the original Leak Sandwich really wasn't very good by modern standards. And whilst old horns might be efficient and easy to listen to, they are often highly coloured.

The Quad II power amps are sweet and liquid sounding when restored, but they have little power at around 10watts.

Other valve power amps like the Radford STA25 or 50 are interesting, but expensive. And remember that with old amps many of the components are well past their sell by date, including capacitors and many resistors. Even output tranny's deteriorate apparently. Your Quad 303 would do as a drive amp, although it was never the most lucid sounding design. A Quad 306 is satisfactory, or an Audiolab 8000 integrated or Audiolab 8000C & P pre/powers would match.

Even though a valve amp feeding electrostatics seems like a good idea, in practice I've encountered some terrible mismatches between them (due to transformers feeding transformers I suspect), so I don't feel free to make recommendations here. You have to try it and see.

The Garrard 301 is more highly regarded than the 401, but bad 'uns can rumble. Nottingham Analogue can restore them and fit new parts to cure the rumble. A good condition 301 on a really good, solid plinth we are told will match any modern turntable.

Forget about old arms too - and especially old cartridges. I can assure you that there is no equal to today's highly rigid, one-piece cast arms from Rega (RB250/300) or SME. And whilst some old cartridges were good, they weren't that good. With a 301 I would run a Rega or SME (according to budget) with a Goldring 1000 Series cartridge or, even better, a good moving coil like the Denon DL110 or even something more expensive, should your budget stretch to it.

Sound quality? Well, it depends upon the exact item we are talking about, but the best vintage items were pretty neutral, which is why they are now highly regarded. Transparency was often good in amps and tuners too, probably because the dreaded integrated circuit with its myriads of non-linear, high feedback amplifying devices did not exist.

I suspect that many people are quick to turn to some older items because they offer an unprepossessing sound at a bargain basement price, together with the attraction of proven longevity and stable price. **NK**

STAR LETTER

One of your contributors, Malcolm Steward, once wrote an article about 'Star Earthing' and how this improved his system.

This article may not have been in your magazine but I would be pleased if he could do another (?) and describe how to implement 'Star Earthing'.

Any other information on improving my present system (Linn LP12/Lingo on Tripod stand, Naim Aro, Linn Karma, Naim 62/Snaps/140 on Ikea Tables and Naim SBL speakers) would be of great help.

**P. Marsh,
Ramsbottom, Lancs.**

Traditionally Naim amplifiers prefer star-earthing of mains cables. This involves wiring more than one cable into the same plug. In your case, this only involves wiring the cables connecting the SNAPS and the NAP 140 into the same plug, but imagine the difficulty when wiring up a four or six-pack active system, where up to eight cables have to fit into the same plug. Obviously such a situation is impossible without soldering all eight together onto a single mains lead. Such star-earthing situations are best left to the experts.

The second half of the question is far less complex. Put simply, Mana tables! Put the LP12 on a Mana Reference table, with a Mana power supply table underneath for the Lingo, followed by a custom-made two tier table for the amplification; this will produce a massive change in the system. John Watson of Mana suggests that using his special amplifier tables means that the 62 and Snaps could sit side by side, on separate bits of glass, without inducing any hum in the preamplifier.

Following Mana-isation of your system, I would suggest upgrading the SNAPS to a HI-CAP power supply, upgrading the NAP 140 to a NAP 180 or NAP 250 power amplifier and changing the cables to the latest NAC A5 spec., if this has not already been done. From here, only the cartridge and preamplifier are suitable for upgrading, unless you want to go into the realms of silly money. The Troika is slowly being phased out, but it represents one of the finest matches to the Aro. As yet, I do not know whether the new Arkive will fit into Aro arms successfully, although I do know that the Lyra Lydian, Clavis and Parnassus and the Audio Technica ART-1 suit the system well, although they may or may not have the correct overhang for the Aro. In preamplifier terms, the obvious choice is the NAC 72, although the forth-

coming NAP 82 preamplifier could be a more up-market, if yet untested, alternative. **AS**

TUNER TORMENTS AND TAPE TROUBLES

I am a new reader of your magazine. I am very fond of good sound quality but I am facing two problems with my system.

First of all my system consists of: Sony TC-WR870 twin cassette deck, Sony ICF-SW7600 world radio and a pair of Bose Roomate II loudspeakers.

Now my first problem. I am a keen user of good quality tapes. My standard tape is the TDK SA, and often I use metal as well. But good tapes and (I hope) a good tape recorder do not necessarily equal a good recording. I am planning to buy an amplifier which will be able to give 'life' to my recordings. The sort of life you usually get from the tapes you can get already recorded. What would be your advice? I am willing to spend up to £350 maximum for that purpose. Please do keep in mind that the speakers can only handle a maximum input power of 30W. I have considered amps such as the Audiolab 8000, Cyrus I and Cyrus II. Help?

My second problem. I sometimes do some recordings from the radio. But there is always a 'hiss' noise. It is not loud and by many not even understood. But it drives me crazy. I have thought of amplifying the signal, but then I would amplify the noise as well. I also thought of buying the AN 1 by Sony but I do not know whether it would work. What I can not do, however, is to place an FM external antenna, since I am a student and move from one place to another. Any suggestions?

**E.D. Iatroudakis,
London SE18.**

I am concerned that you find that your recordings are poor, when compared to prerecorded cassettes. Generally, a good home recording, especially one made on high quality tape such as TDK should sound considerably better than one made on cheap ferric tape at a high-speed duplicating plant. If that is not the case then I suggest that you consult the manual supplied with the Sony cassette machine.

Try dropping back to a good ferric tape, such as TDK AR, AD or Maxell XL-I or XL-IS. You should find that AR has a great dynamic range, AD is bright and clean, while the

Maxell tapes are nice and smooth. I feel that these tapes will not prove too taxing for the Sony's recording capacity; although there are usually bias settings for chrome and metal tapes, twin decks are often more at home with ferrics, due to head limitations.

If possible, however, I strongly suggest you look at a good single cassette recorder, like the Sony TC-K470, Technics RS-BX404, NAD 6325 or Yamaha KX-530 models. The last two companies have models with 'play trim' that can adjust the tonal balance of prerecorded cassette, and all offer good recording quality. Although twin players (i.e. dubbing decks) offer convenience and space saving, I have yet to find a model that can compete with a good single cassette recorder and generally, both recording and playback quality on twin players is not as good as a similarly priced single player.

With regard to amplification, set your sights slightly lower than the Audiolab 8000A, especially if you follow the guidelines I have suggested. I would look at amplifiers such as the Harman-Kardon 6150, NAD 3020i, or Denon PMA-350. At a slightly higher price point (around £200), the Mission Cyrus I or Arcam Alpha 3 would also suit. As long as you do not try to overdrive the loudspeakers, by turning the volume up too high, the Bose speakers will cope with these amplifiers.

The hiss that you are getting on FM broadcasts comes from lack of an adequate aerial, I'm afraid. If the noises are more like high-pitched whistles and bird calls, then this can be reduced by pressing the 'MPX' (Multiplex) filter button on the cassette recorder or the mono button on the tuner.

Sony's ICF world radios are very competent, but are designed for picking up every station known to man and not for high-quality FM listening. I would not suggest getting rid of the world radio, as they can be terrific fun, but I would recommend relegating it to portable status and using a good tuner, like the superb Denon TU-260L in the hi-fi system, together with an indoor Maxview Omnivision aerial. There will still be some background hiss (only a good outdoor aerial can reduce this to an inaudible level) but it will be lessened.

Finally, a system such as Denon tuner, H-K amp and

Yamaha cassette, would come to about £400. It would be worthwhile with such a system getting a decent three-tier stand, such as Target, Söund Örganisation or Alphason New Concept, and cables, such as QED Incon, Tandy patch cords or low cost AudioQuest, Kimber or Sonic Link for the next purchase. Eventually, you may find that the Bose loudspeakers could be replaced with a pair of Mission 760i's or Goodmans Maxim 3's, with good stands depending on your tastes. **AS**

THE CASE OF THE DISAPPEARING RADIO STATION

From my bungalow perched on the west side of the North Downs near Maidstone in Kent, I have a magnificent view across the Medway Valley. On a clear day I can see, shimmering in the sunshine, the Wrotham Hill transmitter tower a mere 6 or 7 miles away. Bearing in mind my close proximity to one of the most powerful transmitters in England, my query is - WHY can't I receive Radio 3?

Current equipment is: Naim NAC52 preamp., NAP250 power amp, Musical Fidelity T1 Mk2 tuner, Naim SBL speakers (passive), Linn Sondek/Lingo/Troika/Ekos. On my roof at the end of a big pole, I have a Ron Smith 'Galaxy 5' aerial, pointed directly at Wrotham. I have changed the co-ax cable, changed tuner (previously a Yamaha), tried a simple dipole, checked all connections umpteen times, all to no avail. By switching the tuner to mono, I can then hear something, but it's very faint and fades in and out. I have spoken to the BBC technical department, and the chap there was singularly unhelpful. He didn't really have an answer, but concealed this under a welter of technical waffle.

I find all this doubly frustrating, since my wife's Sony portable stereo radio/cassette picks up Radio 3 in glorious stereo, no problem. Incidentally, I can receive Radios 1 and 2 in stereo, even with the aerial completely unplugged! Please help.

**Anthony Miller,
Aylesford, Kent.**

Ah yes, we've crossed the North Downs many times and the view on a sunny day is wonderful. Mind you, last time across the cloud base was so low that we drove up into a torrential thunderstorm; you

forgot to mention the bad bits! Wrotham is a familiar landmark to us, since even from this distant site it serves the whole of London and the South East.

I spoke to the BBC about your problem with Wrotham and they, like us, were baffled. There are very few possible options. As you note, Wrotham is one of Britain's most powerful transmitters, turning out one megawatt (one million watts). Being just 6-7 miles on line of sight means you should be able to run light bulbs from your aerial (well, almost). The fact that your wife gets Radio 3 suggests you are not in a dead spot. The only two options left are cancellation in the down lead due to standing waves or the possibility that the tuner is not set to 91.3MHz, the frequency of Radio 3 from Wrotham, but to another frequency, possibly Talcolneston north of you in East Anglia which transmits Radio 3 on 91.9MHz. Your Galaxie 5 on a hill could pick up a transmitter like this with ease I should imagine.

Try the simplest remedy first: re-tune! If this is not the problem, then as the BBC suggested, try another aerial and, in particular, downlead. In your location a simple dipole with a short lead should give plenty of signal; just make sure it's positioned well away from the Galaxie 5 and move it around. Even a wire dipole of the sort supplied with most tuners will do for the purposes of experiment. Radio 3 should come through with no problem at all. This will prove that the problem is in the downlead or aerial and we suggest you contact Ron Smith about this. He should be able to sort it out.

It strikes me that, just

possibly, some very peculiar cancellation effect (ground wave versus sky wave, or similar) might just be causing Radio 3 cancellation at the specific position of the aerial, in which case lowering or raising it by a few feet will clear the problem, a job that must be a pleasure in your location, on a sunny day at least. I'm sure that one of these actions will provide a complete solution. **NK**

AROMATIC PROBLEMS

My present system consists of: Linn Sondek (Valhalla), Naim Aro, Linn K9, (on Target TT2 support), Naim Nait 2, Spendor LS3/5A speakers on Linn Kan 2 stands. I use Audioquest F18 flat cables as I require an under-carpet run.

I am rather unhappy about my cartridge alignment. Without the use of a stylus protractor, it is possible to see that the centre line of the cartridge points to the left of the line of the record groove. This is the case across the entire record side, and confirmed by use of a stylus protractor. The stylus on the K9 appears to be too far forward of the mounting bolts for use in this arm, and there is no overhang adjustment available, as there are holes - not slots - drilled in the headshell.

Local dealers inform me that the Aro is only suitable for use with Linn moving coil models. Apparently the position of the headshell mounting holes has been optimised for Linn Asaka and Troika cartridge geometry. Unfortunately, no dealer - or Naim Audio for that matter - can advise me on other cartridges that are suitable for the Aro in terms of geometry. Can you help? I was hoping to spend less than £200.

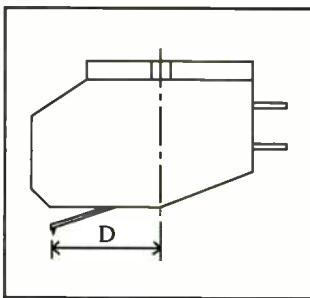
I would like to use a moving coil model. Are step-up devices for use with the Nait worthwhile?

I have also noticed that the quality of fit between the cartridge body and stylus assembly on the K9 leaves a lot to be desired. Could it be worthwhile to superglue a stylus assembly onto a mm cartridge, bearing in mind the cartridge is useless once the tip wears out. Any advice on future up-grades warmly received.

Jim Mansfield, Newmarket, Suffolk.

There are two schools of thought with regard to cartridge alignment on the Aro; Naim's - and everybody else's!

According to Naim Audio, the structural integrity of the arm itself is more important than problems caused by incorrect cartridge alignment. They maintain that the Aro/K9 combination will sound good even if it is misaligned. Others - especially in the States - feel that tracking distortion is clearly audible. While structural rigidity of the tonearm is more important than cartridge alignment, the two are not mutually exclusive. A properly aligned cartridge in the Aro will be better than one improperly aligned in our view, irrespective of the structural properties of the Aro, which we wouldn't criticise.



The crucial distance is from the mounting hole centre to the stylus tip (D in diagram). This distance is seldom specified, but manufacturers work to an agreed standard figure of around 10mm. When we asked various manufacturers and distributors to confirm the dimensions of their products it involved them in physically measuring it with their Garfield and Bart Simpson unbreakable rulers.

The Linn moving coils have an unusually short mounting-to-stylus distance of 7mm and it is for these cartridges that your Aro has been aligned. Most other cartridges (e.g. Audio Technica, Goldring and Dynavector), including your K9,

have a 10mm mounting-to-stylus distance, the extra 3mm in your case putting the cartridge obviously out of alignment.

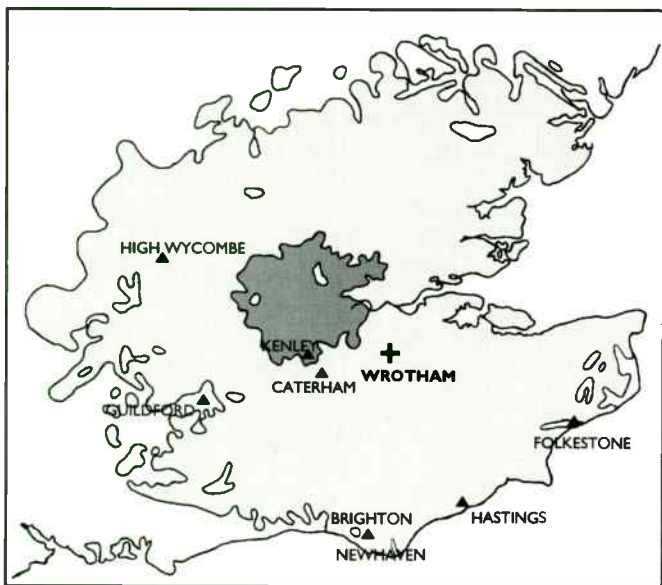
There are cartridges that come close to the 7mm figure however - they are the Ortofon 500 and 'OM' series, that range from £10 to £100. These have a stylus to mounting distance of 8mm; not 100% correct, but still far better. We suggest they offer the simplest solution to your problem, assuming you like their sound in the first place.

It should be possible to move the mounting position of the Aro back a couple of mm to suit the K9, but this would involve re-drilling the armboard, which could prove difficult. Alternatively, you could get a new arm board for the Aro, with the pillar mounting hole further back so that normal cartridges are correctly aligned.

There was a superglue frenzy among moving magnet cartridge owners in the Eighties, but fortunately it was short lived. It can be done, using a very small dab of glue, but I do not actively encourage it, on the grounds that any mistakes can be very expensive. Best to let this Eighties trend disappear, just like New Romantics, Sloane Ranger books, Filofaxes and - less fortunately - money.

Finally, you speak of future upgrades to your system. My feelings are that you should buy a Mana Sub Frame to fit on top of the TT2 shelf. Put the remainder of the £200 in the kitty and save for a Linn Lingo/Naim Armageddon/Pink Link (or similar) power supply for the LP12, adding separate Mana tables for the rest of the equipment as and when it becomes financially acceptable to do so.

From here, the small Naim pre power, such as a 62 or 72 pre amplifier with a 90 or 140 power amplifier, beckons. Cutting costs back further, one can even have the Nait 2 modified by Naim to act as a pre-amplifier, but I have not heard this modification as yet. Once you get to this level of amplification, it would then be the best time to approach the thorny subject of cartridges, as it is easy to change the input cards from moving magnet to moving coil on a Naim preamplifier. **AS**





...continued from page 9

WAXING LYRICAL

Over the years, I have updated my system as technology has developed but recently I discovered the biggest improvement in sound quality I have ever experienced. More transparency, greater detail, in fact better everything. How did I find this revelation? Easy, have your ears syringed.

If you think about it, it is obvious. Over the years the wax builds up and leaves only a small passage for the sound waves to pass to the ear drum. Syringing opens the aperture and improves the ear's ability to process the sound.

**H.W. Morgan,
Cardiff**

Yep. This tweak can improve the sound of your own personal system - the one you were born with - and it costs around £50. But Malcolm Steward's doc refused to do it unless they were blocked. So take medical advice first. NK

GREEN PEN - THE FINAL FRONTIER

I have no doubt in my mind that the Green Pen makes a very noticeable difference to sound quality. I wouldn't have bothered to treat my 400 or so CDs if I didn't think this was true.

I don't think it changes the bass at all, which is a shame - that's where I feel CD really loses out to vinyl. On my active crossover (Wilmslow Audio), the bass amp control has to be set on less than a 1/4, during vinyl playing (Rega II + K5, Mission Isoplat, Sound Organisation table), and during CD playing (Sony 557 ESD, AudioQuest feet, audio cable, Arcam Quartz cable) anything from 3/4 to full, depending on the CD. So many CDs are very poor quality and don't do the medium justice. I notice the DDD, ADD and AAD labels have disappeared. Why? It's a bit like not saying which type of tape to select.

Anyway - I'm getting away from the point - the first time I used a Green Pen, I did a direct comparison as anyone should

do. I played one track on the chosen CD (Cat Stevens' Teaser and the Firecat) then 'greened' the outer rim and the inner circle making the inner one come over the edge, about 1cm or so. Then I repeated this, allowed it to dry, then I played it again. The difference made me do the other 400 right there and then! (Still using the same pen.)

The treble is the main difference area, making the focus much clearer: a bit like taking the Dolby away from a tape without the hiss.

Also the stereo field is much wider, the whole effect 20% up on the untreated CD. My Celestion 700SE speakers are very revealing, and I was very pleased with the difference. Anyone who has doubts should come to me with an untreated CD; I will be happy to put them straight.

I must point out that Gold coated CDs do not sound very much different, normal CDs come up to Gold CDs' par once treated.

Also I have taken your advice with my speakers (April '92, Page 80). I found the Musical Fidelity P180 too harsh, so I went for the Audiolab, but couldn't afford the monoblocks. I've got another 8000P, which really has made such a difference.

**W. Jason Davis
Bristol, Avon.**

P.S. Laserguide has helped me with a few CDs. I had about 10 that wouldn't fast forward. They all do now - good stuff.

Please, please, no more about Greening CDs. My pen has run out. AS

CD codes were so misleading they have been dropped, as we explain in this issue. Our general feeling is that Green Pens work, giving much the same benefit you identify and describe. It's sort of subtle, but it is worthwhile. NK

THE SHAPE OF THINGS TO COME

Since I live in Jerusalem, I will make some prophecies: I predict that the course of DCC and MiniDisc will follow that of DAT.

Why?

First of all we are told that this will be a better or equal medium to CD. Then that it is cheaper; then that neither of them is true. You will have 27% of the data in DCC, and each prerecorded cassette will cost £12, or £3-4 for blank cassettes.

Second, cassette is not a hi-fi medium, unless you are ready to invest in metal tapes and £1000

decks. Its popularity comes from the fact that it is cheap. I personally use it only to record CDs I don't like so much before I change them (to other CDs), or to make cassettes for the car. And for these purposes I'm completely happy. I get 80% data, or maybe 60% - but not 27%. When I want to listen to music, I put a CD or an LP on in my home.

The price problem is not of the hardware, but of software. That is very much (or was) the problem with CDs. You can buy a player for £150, the price of 10 CDs. Then the problem is who will buy a DCC: neither the hi-fi enthusiast who will find it lacking compared to CDs (and of course LPs), nor the common man, who gives not a damn about sound, he just likes his £29 Aiwa personal or JVC £299 stereo; he is just not looking for more.

Who needs DCC, when a good blank cassette costs £1?

O.K. do I just sit and wait? By the time anyone decides himself between DCC, DAT and MiniDiscs some ten years from now; I think Music-card will take them all.

**Moshe Benarroch,
Jerusalem, Israel.**

You are probably right. I have doubts about any of the new formats being the 'shot in the arm' the industry needs. Perhaps the future lies with implanted D/A converters working on the synaptic level directly. Or, even further into the future, genetically engineered radio receivers at the brain stem itself. 'Gypsy Rose Sircom'

Seriously, the price of the software is going to be a real stumbling block for DCC. According to BASF, the tape manufacturers, blank DCC tapes will cost around £5, certainly for the first year. As they must be a particular formulation, recently they were being very firm about there being no prospect of a DCC equivalent to a 99p cheap ferric. They admitted that metal tapes, of roughly equivalent cost to DCC, account for an almost infinitesimal percentage of the market (less than 1%). A marketing anomaly suddenly became obvious, with a tape manufacturer promoting the tape itself as though it were a 'high-end' product, yet the trend in promoting the hardware emphasising the middle, and soon budget market.

Polygram, too, have

announced that retailers will be charged the same price for DCC pre-recorded tapes as for CDs; this doesn't necessarily mean they must retail for the same price, but I don't see many retailers accepting lower margins to popularise the new medium. The first samples of pre-recorded DCC tapes we've had, I'm sorry to say, were not encouraging, sounding noticeably less dynamic than tapes recorded on the machine from digital sources. Analogue cassette replay on our sample DCC900 machine we all thought was preferable: surely shome mistake, here, shomewhere? **EB**

Shurrup Eric. Nobody's meant to say that analogue prerecorded cassettes sound better on a DCC recorder than digital prerecorded cassettes. You might find yourself on a non-return trip to Eindhoven. NK

VALVE ADVICE

The letter from Simon Bates, and your reply in the June edition has prompted me to say I may be of help to fellow readers.

I have a 'Radio Designers Handbook,' Langford Smith 4th edition for disposal. - The Valve Bible - plus much informative gen on hi-fi.

**J.P. Goodey
Broadstairs, Kent.**

I think that should be had a copy of the Radio Designers Handbook, as now it's mine. Best fifteen quid I've spent in a while, too. AS

DE RIGEUR FOR QUADS

In your feature on Mr. Jolly's system (July, p45) you mention Tandy patch cords 'which are proving to be de rigeur for all Quad amplifier owners'. This is interesting as the Tandy cords are very much cheaper than other interconnect cables touted in the market. As cheapness is presumably not the main consideration, what precisely are the superior sonic benefits of the Tandy patch cords?

**J. Hall,
Tunbridge Wells.**

It's all a matter of capacitance, resistance, and impedance. Tandy's patchcords are advertised as being designed for home-studio set-ups and have low capacitance, which generally - though it depends on the amplifier - is associated with relatively high transparency. It's not always that simple,

however, and I'm still struggling trying to do the equations on my abacus. Apart from being terminated in gold plugs with the soldered connections solidly sealed, and therefore less prone to coming apart, they are made in large numbers for a world-wide retail outlet, which makes 'em cheap enough to experiment with without fear of bankruptcy if they don't suit. Whatever the reason, they particularly suit Quads, sharpening them up and increasing their clarity. **EB**

WORLD PLIGHT

I feel impelled to write to you to inform you of my plight for which I hope Hi-Fi World will accept some of the blame. I have been a hi-fi enthusiast for over 20 years and also a regular consumer of hi-fi magazines. During this period, I have built a reasonable sized vinyl based music collection and been through various pieces of equipment.

I have been prone to the odd obsession such as Deccaphilia (is it illegal?). The problems started last year when I sat at home recuperating from an operation and feeling generally bored. I bought the first issue of Hi-Fi World (with free Compact Disc). This was just the beginning. I thought at the time, that it was nice to find a magazine written by seemingly kindred spirits. The free disc was good too!

I also bought a Thorens TD124 as a toy to keep me occupied (a remarkable turntable for little money). Until then, my equipment had remained settled for some time and consisted of a Logic 101/Helius arm/AT F5, Audio Innovations 300 amplifier, Decca London speakers (from the Deccaphilia period) and Technics CD player and Sony cassette deck.

Since then I have bought every issue of Hi-Fi World, many of the reviewed albums, got switched on to Rory Block (seen her live) and Mary Black (seen her live), developed a taste for African music, been to the Chesterfield Show and more. Worse still, I have got switched on to the quest for the Holy Grail; in equipment terms through old valve stuff.

So out has gone the Audio Innovations and in has come a rebuilt Leak Stereo 20 and a Luxman LV82 preamp. (Thanks Haden Boardman - a really nice guy.) The improvement is dramatic, but on the other hand, the car is knackered, the house needs decorating, my student

son has an overdraft problem and my wife is threatening to leave (and I'm not a good cook!) Worse still, bearing these points in mind, how the hell can I get my hands on a Leak Troughline in pristine condition?

**Paul Topping
Manchester.**

Easy! See our list last month - to which we should add Station Sounds on the down platform of Worthing Station, though it's a bit of a lengthy train ride from Manchester. Otherwise, there's always our new classified section! **EB**

Yes, you've 'caught it', whatever it is (medical science hasn't got around to dissecting this problem yet). Advanced symptoms are excessively early awakening on Sunday mornings to get to car boot, radio rally and what have you sales before even the cockerells have had their cornflakes. Hyper-optica eyesight develops in order to differentiate between a Troughline and an old tin of biscuits at 50yards; punched muscle syndrome projects the body over said distance in response to competitive signs from half a dozen old gaffers also moving ominously in the same direction. There's no known cure. **NK**

STUDIO PERFECTION

In studio recording there's a bewildering choice of technology available just as there is in hi-fi, only the problems of interface are multiplied. Choose some cable, choose some plugs, mixing desk, tape recorder (digital/ analogue) tape, amp, speakers, an engineer with different ideas to the last and bongo, or is it bingoo. What if the error correction system is rubbish and smoothes out the signal so it sounds so..so..so..er..smooth.

I don't know, but I have a theory most of us are suffering with a bad case of further audio rectal tremors, yes it is all a lot of hot air. As to the BIS CD. It's not sparrows twittering in the tower it's proof of the success of CD. It was bats in the belfry. Yes, CD really is that good.

**N.A.W. Garrett,
Leamington Spa,
Warwickshire.**

Er, pardon? I was talking to an engineer at EMI's Abbey Road studios a few days ago who challenged me to guess the amount of signal cable required to record the London Symphony Orchestra. I didn't even try, but I did listen to the

result. As he said, with a Classical recording costing "Ugh (wince) pounds a second" no-one in the studio can afford to be too picky about the type of cable or plug as long as it comes out of the monitors the way the artists and the producer want it to sound. In this case, the first takes had a degree of reverberation which was closer to the concert performance I'd heard the night before, but the soloist (Rostropovich, who should know a thing or two, not exactly being a novice in the recording studio!) thought it had "too much air" and wanted it "drier" with drums and cello more prominent. The recording will be different to R3's broadcast as a result: for long-term listening probably better. The required effect was achieved by re-positioning a few screens, shifting two mics by about a foot and placing a podium under the soloist's cello. Maybe the same effect could have been achieved by changing cables - but this took five minutes and the change was unmistakable. **EB**

IT'S FINNISH - OR IS IT?

Eric Braithwaite pondered the origin of 'Iso' in his review of the Michell Iso turntable. May I suggest he need look no further than Finland!

Iso in Finnish means Great as in Iso Britannia - Great Britain. Great would seem to aptly describe the much admired head amp.

**T.A. Ingram,
Wisbech, Cambs.**

Great Heavens! Strikes me as a bit tenuous, but why not? **EB**

Or, in earlier times and southern climes, it meant 'equal' - hence Isobar, meaning line of equal pressure. Just add 'ik' as a suffix and it then becomes Scots for something entirely different. Funny how these words get around! **NK**

THE AUSTRALIA STORY, PART II

I wrote to you several months ago about the high prices of British equipment in Australia forcing me to buy Japanese. Well, the reasonably priced Pioneer PD75 I had on order then duly arrived and proved to be a very classy machine; it will be staying. I also tried a Rotel 965, which was returned. Compared to the Pioneer it made a Steinway sound more like a Fortepiano. I also briefly tried a friend's Kenwood 9010

transport and Meridian 203. I didn't like this combo at all in my system: much too bright and lightweight.

After some experimentation, the Pioneer, sited on its own table and connected to my Naim preamp by Monster Interlink 400 (very important, makes a world of difference), makes some very nice noises via the Isobariks and some magical ones via the headphones (I bought the Naim and Linn equipment a long time ago when such things were affordable out here).

I suppose this means I've joined the infidels. Oh well, what odds, the convenience is nice.

**Barry Smith,
Wellington, NSW,
Australia.**

BASS BELIEF

I have just received a subwoofer from R.E.L. It is their least expensive model and it certainly adds bass to my system. (Inappropriate use of the controls can easily give that fully authentic "head in a bass-bin" club mix, but most of the time it is controlled and subtle: as you said in your review.) I believe the Stygian subwoofer improves the stage depth of my system. This started me thinking about the reason why two transverse speakers can provide longitudinal information.

I have not heard a reason why stereo speakers should give depth, but my argument rests on the assumption that instruments produce frequencies both above and below their fundamental "note". Different frequencies of sound travel at different velocities in air. The differences are tiny but the ear is very sensitive to shifts in phase which means differences under a wavelength can be detected.

If this is the case, is it not possible that we can detect different frequencies arriving at different times and connect them all with the same instrument? I don't think that such a "fast Fourier transform" is beyond the capabilities of the brain, as it seems to do many other amazing things.

If we can detect such subtle differences, then the calculation to work out relative position of a wall is not too hard. It's a bit like echo location in bats but without emitting a squeak first. Once you have the relative position of a wall, it is possible to tell which instrument is nearer the wall or further from it.

My subjective observations are as follows:

- Adding a subwoofer improves imaging by adding bass under-

tones which remain alive longer in halls than high frequencies:

- Multi-track rock recordings often sound "flatter" than live classical as computer generated reverb just isn't as good as the real thing without serious computer power:
- I and most people I have asked have great difficulty in determining the distance to an electronically produced pure tone (a digital watch alarm for example). These tones are usually pure so the argument about hearing different frequency components at different times would not apply.

This is not an advert for REL subwoofers, but I do believe that as halls reverberate bass frequencies most, these frequencies probably give a lot of "wall" information. It seems obvious that adding accurate bass can give extra depth information.

Graeme Bishko,
London W5

The general view on this is that we can and do rely on information gathered by sensual experience to recognise our surroundings. Large venues support low frequency sounds well and the presence of an atmospheric deep bass 'presence' as it were does seem to be part of the signature of a large, enclosed space - one we are able to perceive.

There's no need to conjure up the existence of 'undertones'; impulses into a resonant system will excite it at its natural resonant frequency. The air in a large space is resonant at a very low frequency. Any sudden sound, either at or above its natural resonant frequency, will stimulate it, producing a natural deep bass 'signature'. Ask yourself what you 'sense' (rather than overtly hear) when you go into, say, a large church. Is there not some sort of rumble or 'presence' that specifically does not exist when you are out in an open space?

It has always fascinated me that the LP, because of RIAA equalisation, produces a significant amount of deep bass 'noise', clearly visible on a spectrum analyser, and that this may help provide a somewhat artificial sense of atmosphere behind even the driest of recordings. **NK**

WHITHER LINN?

On several occasions you have praised the Heybrook Sextets, but whenever you have listened to them they have been partnered with fairly uncommon

amplification (e.g. Musical Fidelity SA470 - Picking the Plums - May). The first time you tested them you hinted that something fairly neutral such as the Audiolab 8000P/C might be suitable, but you never put it to the test. I'm sure that many of your readers will have "ordinary" amplifiers like Audiolab, Linn, Naim, Exposure etc and would love to know whether the Sextets will sing for them too. When you get the chance, please give us your opinion.

On a separate note, I see that Linn Sondeks have slipped from the fore and many of your reviewers (Malcolm Steward excepted) now use alternatives. However, switching from one expensive turntable to another is an unaffordable luxury to the majority of your readers, and I would hazard a guess that there are vastly more owners of LP12s amongst your readership than of Pink Triangles, Roksans etc. It would be helpful if, when reviewing equipment, you remembered that there are quite a few folk out here who are interested in cartridges, amps, speakers etc which work well with Sondeks.

Finally, when are you going to get around to doing an A/B review of some top CD players, e.g. Naim vs Linn vs Noel's current favourite?

Despite these comments, I thoroughly enjoy the magazine, and the only real problem I have is getting hold of a copy before they all sell out!

R. D. Bishop,
New Malden, Surrey.

Noel's Sextets are still in constant use, with both the SA-470 and more prosaic amplification. They are revealing of source, but work well with a variety of equipment, such as Audiolab monoblocks. My own favourite partner is a Naim 72/Hi-CAP/250, which seems to fill out the Sextets nicely, although there have been a number of equally successful combinations.

On the subject of reviewers using the Linn LP12, although many of us, myself included, have abandoned the LP12 in favour of other turntables, those who have done so usually traded in their well-worn Linn's and paid for their new turntable. Switching from one expensive turntable to another is just as much a hardship from this side of the industry.

We do try to consider Linn LP12 users whenever a piece of equipment is reviewed, however, as there are thousands of LP12s still in daily use and it is a fine product.

Traditionally, we have avoided comparison tests of expensive equipment. High-end equipment tends to be rather individualistic, with personal tastes and the system taking priority over all other areas. For example, I favour the Theta player, while Malcolm Steward prefers the Naim CDS (and Noel likes the rare Deltac PDM-II). As such, if we performed a survey of ten top CD players, we would get a different result depending on the reviewer, irrespective of whether they use measurements or not. Such high-end comparisons, as such, may be entertaining and can describe differences well, but they arguably cannot be seen as a definitive guide to what others might like. **AS**

Just to re-iterate Alan's point, people tend to assume that reviewers don't have to pay for the equipment they use. They do! My own Gyrodec, as it happens, was chosen in preference to a Linn before I became a reviewer, though a friend went the other way at the same time, preferring an LP12.

I was happy, but my bank manager wasn't - he wasn't at all impressed by the argument that "if it's worth having it's worth the bank paying for it." I had to live off bread and cheese for a month (sob, sob). Alternative disc sources seem to have come out of the closet more lately; at one time the LP12 was so dominant that people who used other turntables tended to be regarded as wilful renegades. I'd like to think the Hi-Fi press now has a more open and balanced perspective. **EB**

LEAK LOVE

In your January 1992 issue I read with great interest your article about the work of Peter Lindley and his restored Quad II valve power amplifiers. I decided to do a similar job of restoration on my own Leak Stereo 20 power amplifiers.

Firstly, I stripped down the amplifier and reprimed and repainted the chassis and transformer covers. I then rewired the whole amplifier with Kimber TC internal wiring cable,

including the hardwiring on the underside of the tag board and the input/output wiring in the transformers. I also replaced the valve bases with new high quality ceramic types; new polypropylene twin 32µF reservoir capacitors replaced the old electrolytic types. I then replaced the original phono connectors with new high quality gold plated types and I did away with the eight pin power/signal connector for use with the Leak Point One stereo preamplifier.

On connecting my now completely restored amplifier to the rest of my system, I found a huge improvement in sound quality even compared with the original restoration. The rest of the system is as follows; Source turntable with 3D power supply and Odyssey tonearm with Audio Technica OC5 cartridge, connected to a Beard P500 preamplifier with the restored Leak Stereo 20 amplifier driving a pair of DCM Time Window IA transmission line loudspeakers. The latter are very underrated speakers which I have never seen reviewed in any hi-fi magazine in this country.

Patrick Smith,
Glasgow.



It looks like a real labour of love. Others might be tempted to follow. **NK**

A LONG MONTH

I was most interested in Peter Wood's 'Letter of the Month' and NK's response in the June issue, with particular reference to Philips' view that "cassette has suddenly and inexplicably gone into rapid sales decline". (This sounds like wishful thinking, with DCC on the horizon.)

I don't see anything inexplicable there at all, since anyone who has been near the sharp end of retailing in the period 1985-92 will be only too well aware of the fall in demand for non-essential goods - it's called recession!

From the B.P.I. graphs, we see that both LP and CD trends have also worsened in the same period, as one might expect.

The design specifications for DCC call for a number of technical requirements: data compression, thin film recording heads, auto-reverse mechanism, nine tracks to follow accurately, etc., etc., that tend to put up question marks, in my mind at least, with regard to long-term reliability.

But let us assume that none of these technical hurdles give any trouble and the sound quality of production units turns out to be immaculate, at least to the ear of Joe Public.

If a new product is to penetrate a market it is self-evident that the product has to have something new to offer - if you like, an incentive to buy. Past history comes down very heavily with firm confirmation of this view.

1) L.P. offered improved sound quality, reduced noise, long playing time etc., etc., previously unavailable in one system.

2) Compact Cassette offered convenience, small size, light weight, home recording etc., etc., previously unavailable in one system.

3) Compact Disc offered better quality sound, reduced noise, small size, light weight, long-term reliability, convenience etc., etc., previously unavailable in one system.

So surely it is pertinent to ask what has DCC to offer that is not currently available? Aside from a *potential* for better home recording sound quality and a number of CD-like operational tricks, er, - well, really not a lot!

We are told that the minimum 'entry price' is to be in the order of £300+ which will almost certainly mean that potential customers, will in the main, *not* be first time buyers of home recording equipment (Philips acknowledge this by specifying analogue replay capability), having started their cassette collections on the budget rungs of the upgrade ladder. O.K., so A. Customer has up to £350 to spend on an upgrade home recorder and, aside from reel to reel, has two choices:

1) Analogue Cassette, of which NK has been known to remark that "the TD-V541 returned a stunningly good performance when recording and when replaying pre-recorded tapes" (p.19, December '91). We have to bear in mind that where Nakamichi, JVC and Technics lead today the rest of the herd will follow tomorrow (or go bust) - analogue cassette is still getting better. This choice would fully integrate with

existing software to allow the filling of those blank tails on home recorded cassettes, and allow tapes to be made for the car and personal replay. O.K., so it ain't digital and DCC may give marginally better sound when reviewed by NK and others *partnered with high-end amplifiers and speakers* in order to allow the best of the review machines to shine. The margin between the best of the review group and the 'also-ran' competent machines may be a lot less obvious when partnered with downstream equipment in their own price field.

2) DCC may deliver CD quality sound, or better, but will not fill the tails of existing cassettes or record tapes for the car or personal use - and has unknown long-term durability of the hardware (reviewers commonly advise against auto-reverse mechanisms in price-for-price comparisons) and a software durability that cannot hope to compete with CD, and more than twice the price of the Compact Cassette! In Analogue Cassette's position my decision clearly has to be for choice No.1.

No high-volume manufacturer is going to make a fortune selling hardware at the £300+ price level - the volume just is not there and at the lower price levels the situation becomes worse for DCC as its potential for super quality sound becomes drowned by the mediocrity of amplifiers, graphic equalisers (YUK) etc., etc., that are the sad components of the world of the midi system. And it is just this market in which analogue cassette has been such a success - with its shortcomings masked - long enough for manufacturers to improve machines and tapes to the current high standard.

I feel that DCC has much in common with Philips' now defunct video cassette format, V2000, in that an over-long R&D period has allowed the competition to improve to the point where the market no longer waits.

I hope for Philips' sake that I'm wrong but I can't help wondering how atypical my view may be.

**Rod Smyth,
Porthmadog, Gwynedd.**

P.S.

There was a young man from La Paz
Who soaked his CDs in warm Daz
They came out so clean
Like none you have seen
And made Beethoven's 9th
sound like jazz!

Your feelings about analogue cassette over DCC, while valid, do overlook some rather critical points in the new format's favour. First, Philips' expectations of DCC's market does have the advantage of being spoon-fed titles by their recording companies, such as DG, Philips Classics and Polygram. This helps to aid market penetration.

Secondly, there has been a substantial down-turn in software sales; both LP and Compact Cassette have fared badly, with CD sales currently seen as the only software market not suffering from 'negative growth'. DCC arrives at a time when cassette sales are at their nadir. The captains of the music business are pinning their hopes on DCC 'awakening' the flagging tape market. Once again, this smoothes DCC's path into the high street shops.

Third, few consumer electronics products have created the sort of market awareness that DCC has. The British public have long been considered as 'digital ready', by the marketing men, otherwise 'digital' would not have become bastardised into a buzz-word, like 'turbo'. It is suggested that over 40% of the general public have heard that there is a 'digital' tape player coming soon. The last product that had such wide public knowledge prior to launch was said to be the Sony Walkman.

Cassette technology arguably, peaked in the mid-80's. Current developments in cassette are aimed more at fitting more features into a player for less money (witness the current plethora of three-head machines with powered doors at a price that was unthinkable in 1990).

This appears to be true throughout the board, as even the current crop of Nakamichis, albeit considered by many to be the best our industry can currently offer, are not quite as superb as the earlier classics, such as the ZX-9. There are exceptions to this, such as the long-awaited Dolby S players and generally the base standard of cassette has moved slowly forward as high-end technology filters down into more prosaic devices.

Finally, at the launch of DCC, the hardware price is quite high, at £500. At their Battersea show, Philips were pointing out this was the price of the first CD players, ten years ago. As with Compact Disc before it, however, this

price will fall steadily, until it rapidly becomes incorporated in the midi systems of the late-90s.

I am not convinced that DCC, or Mini-Disc, is going to be the medium of the future, any more than certain pundits were unconvinced by CD as a medium back in 1982. I do feel, however, that DCC has a better chance of survival than you give it credit for. Crystal-ball gazing in the present climate is a precarious business. In an industry where the next format is always just around the corner (whether it be better or worse than the existing medium), such predictions are next to impossible to make. **AS**

And, talking about predictions, did I ever tell you the one about a journalist who predicted that DAT would wipe out CD in *The Sunday Times*?

No? Well, its good for many pages and a laugh or two, but since we're getting through forests here faster than a beavers convention on improved working practices, I'll keep it short.

The prediction that DAT would wipe out CD got Philips into a real huff and also made the music business run out and move the goalposts sharp-ish, just as the Japanese thought they were about to score.

That prediction was based on the core belief that a dual role medium will, in the end, supercede the single role medium. Or in other words, why do we need something that only replays, like LP and CD, when we can have something that records as well.

It's no accident that the two new systems being proposed are dual role; single role media will probably never walk the earth again. Of the three now on the table, DAT is moribund, leaving MD and DCC to slug it out. By the year 2000 or so just one medium will prevail. Replay only media (i.e. LP and CD) will be all but dead. Analogue cassette will get knocked off by the retail trade and music biz. Sony's MD has the best chance of acceptance, but Philips say there's no proof it works yet.

Who knows, just as Philips or Sony think they are about to score this time around, someone will run out and move the goalposts again, just like they did when I said that DAT will wipe out CD. Then all these predictions will be invalidated. Still, it keeps us all entertained in the meantime. **NK**

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High Fidelity mag. May 1990

Because they are voted by the public! Satisfied customers are so impressed by the service, advice and ultimate quality of the hi-fi we supply, that not only do they recommend their friends but also take the trouble to nominate Grahams for these honours. Five air-conditioned dem rooms, probably the

finest hi-fi facilities in Europe (most people are amazed when they visit us for the first time), lots of FREE parking, helpful, trained staff, 60 years trading, systems from £400 upwards. Ring for a chat, an appointment and a map!



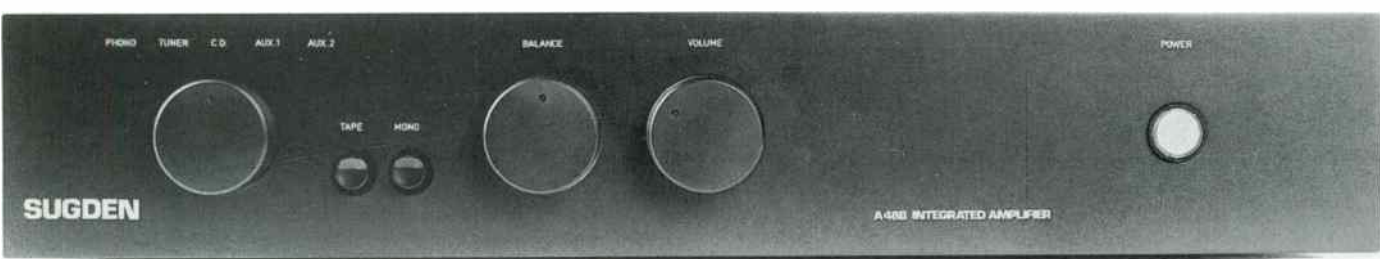
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FREE TICKETS TO IN-CAR '92 - AND TWO POPULAR TDK TAPES - FOR SPEEDY HI-FI WORLD READERS!

In-Car '92, staged this year at Hall 3 in London's Wembley Exhibition Centre on 5th and 6th September 1992, is every driver's chance to see and hear the very latest in-car entertainment equipment - and to listen to live music staged by London's favourite dance station, Kiss FM.

Hi-Fi World readers have the chance to visit the show absolutely free of charge. We have fifteen pairs of admission tickets to give away, along with two TDK AR-90 blank audio tapes, for the first fifteen names drawn out of the bag. Simply write your name and address on a postcard and send it to:

**In-Car '92 Ticket Offer,
Hi-Fi World,
64 Castellain Road,
Maida Vale,
London W9 1EX**

The first fifteen readers drawn out of the bag will receive a pair of tickets and two TDK AR-90 blank audio tapes.

SPECIAL OFFER!

In-Car '92, the International In-Car Entertainment, Security and Communications Show, is sponsored by leading audio tape manufacturer TDK. All the latest and newly-launched in-car entertainment equipment - from tape decks to multi-play Compact Disc systems - will be on show to be seen - and heard. Kiss FM's Road Show will be broadcasting live from the Exhibition Centre, playing the latest dance music to hit the charts and testing the crowd's music knowledge with music quizzes and giving away lots of fun prizes.

For the second year running, In-Car '92 will play host to the finals of The National Sound challenge - a contest to find the very best in-car sound systems in the country. Nearly two hundred competitors' cars will be judged by experts for the quality and ingenuity of their sound systems.

If you've installed the best in your car, you want to keep it! This year's show has an exciting new addition - The 1992



In-Car '92
INTERNATIONAL IN-CAR ENTERTAINMENT,
SECURITY AND COMMUNICATIONS SHOW

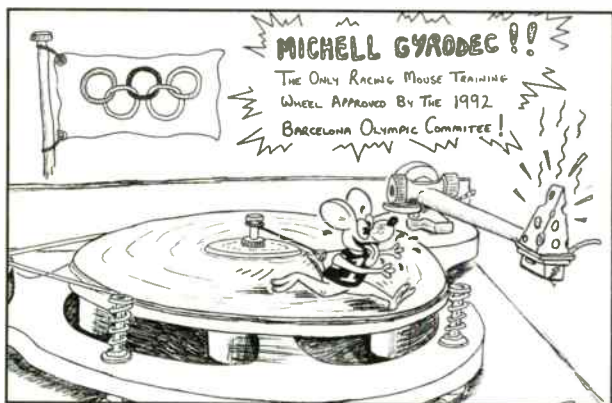
Security challenge, the first ever in the UK. See some of the most advanced security devices being tested for effectiveness.

If you're looking for quality sound, a security device to protect your car or a means to communicate whilst on the move, don't miss In-Car '92. The Show is open between 10am and 6pm Saturday 5th and Sunday 6th September. Admission, except for the lucky fifteen, is £5 for adults and £2.50 for children ●

WINNERS!

MICHELL GYRODEC WINNER

When we asked for imaginative non-hi-fi uses for a Michell Gyrodec, we hadn't realised how many of our readers had been invited to the Royal Enclosure at Ascot and wanted one as a hat, were in dire need of a Kebab rotator, or had a problem with flabby rodents. We were delighted by some of the accompanying illustrations, especially a working Zoetrope band.



Finally, swayed by the sheer number of hamster-multi-gyms, we decided on Mr. Lee Wilkinson of Brockley's timely Olympic cartoon. He will shortly be receiving his rodent-exercising turntable, and we hope he will put it to its proper use as soon as the Olympic flame has been extinguished!

Thanks to all the other entrants for their inventive and imaginative replies. Sadly, there is not enough space to print all of them, but we particularly enjoyed the entry from Mr. Griffin of Manchester, which read "For use as a rotating display of Noel Keywood's head in the foyer of a Japanese cassette deck manufacturer." Strangely, Noel didn't find this entry especially amusing - we can't think why! Congratulations to Mr Griffin - a special prize of a free T-shirt is on its way to you.

PENTAX CAMERA WINNERS

Everyone who heard the message on the April Mary Black cover CD has now received their Pentax WeatherZoom camera. Pentax Managing Director, Gerry Dingley, recorded a message to all the lucky winners, but we thought we'd print it instead of putting it on another CD:



Pentax would like to congratulate all nine winners from Hi-Fi World's Mary

Black Competition in April.

We hope that they are pleased with their Pentax WeatherZoom camera.

Our thanks to Hi-Fi World magazine for their support in making the competition such a success.

All of us at Hi-Fi World hope the winners are happy with their holiday snaps. We weren't allowed to win a Pentax, but not wanting to be left behind we've upgraded the editorial pin-hole camera to a Box Brownie!

The lucky nine were:

Mr R. S. Bull of Egham,
Ms P. Chown of Huntingdon,
Mrs J. Davenport of Watford,
Mr A. Hillard of Yeovil,
Mr D. Holbert of Southampton,
Ms I. Matthews of Lancaster,
Mr T. McLoughlin of Feltham,
Mr. R. Sales of Edenbridge and
Mr C. Withers of Middlesborough.

NAIM CDI COMPETITION

Following his successful entry in our Naim audio competition, Chris Bennett's Naim CDI Compact Disc player was installed by Gary of Stereo Stereo in Glasgow. Gary travelled the round trip of over one hundred miles, leaving him delighted at its performance.

Our thanks to Naim Audio and Stereo Stereo, who literally went out of their way to help Mr. Bennett with his new CD player.



competition results

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 CLEANERPRICE £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 fingerprints. 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



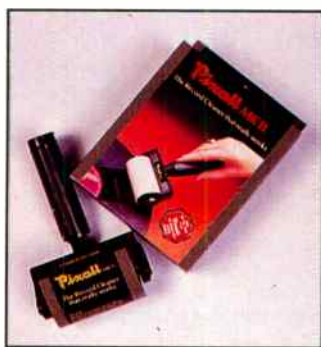
AUDIO ACCESSORIES

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



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

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

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

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

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 AV 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),

the panels are milled to have strong side joints. We have specified a durable black paint finish to give it a smart, yet unintrusive appearance. The screws are self-starting, but clearance holes are pre-drilled. It comes in a flat pack with screws and Allen key for easy home assembly.

RECORD STORAGE CUBE PRICE £42 EACH

FREE!

20 RECORD SLEEVES WITH 2 CUBES
50 RECORD SLEEVES WITH 4 CUBES
FOR 6 CUBES,
JUST PAY FOR FIVE (£210)
FOR 8 CUBES,
JUST PAY FOR SEVEN (£294)

GOLD PLATED SPADE CONNECTOR

For amplifiers with loudspeaker screw terminals, here is a heavy, duty gold plated spade connector. It has the same unique axial clamp connector as the 4mm plugs described above.

SPADE CONNECTOR (4)£10.00



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SORBOTHANE CD FEET

Four big, round rubber feet, 50mms in diameter and 18mms deep. Made from a soft, slightly

sticky feeling form of artificial rubber known as Sorbothane, these feet have the peculiar ability to soak up vibrational energy, due to their high internal kinetic losses. Some people go nuts with them, swearing they improve everything, from the TV to the fridge! We sell them for use (as intended) with CD players, turntables and various other hi-fi components that might be sensitive to vibration. They improve sound quality by providing a more stable platform. Well-nutty and a lot of fun.

SORBOTHANE CD FEET £27.95

AUDIOPLAN MUSICABLES

Audioplan MusiCables are rapidly gaining a reputation for high quality, hi-tech construction, using space-age materials for inspiring sound quality. The loudspeaker cables, supplied terminated with Audioplan MusiCable's unique silver plated copper 4mm plugs, are carefully braided to avoid RF interference. The three cables, LS 3.5, LS 6 and LS 12 are designed for mid-price and high-end and reference systems respectively, though since some amplifiers are designed for specific cables, check with your dealer first.

AF and Super AF interconnects, terminated with good quality gold plugs, are principally designed to as standard interconnects, while the thinner X-Wire and Super X-Wire are used for low level sources, such as with turntable to amplifier or when using a passive preamplifier. The latest cable, Digitenna, is designed to be a reference co-axial lead for aerial downloads or digital interconnect. It can be supplied unterminated, or

with phono or BNC plugs. Finally, the knowledge acquired in signal cable design has recently been adopted in power cable design, with microphonically damped mains cables of very high quality. While the Audioplan MusiCable range is not the cheapest on the market, they are some of the finest sounding around.

AUDIOPLAN MUSICABLE
LS 3.5 per mono mtr £11.00
LS6 per mono mtr £27.50
LS12 per mono mtr £54.50
AF MKIV per mono mtr ... £37.50
AF MKIV 0.5 mtr pair £77.50
AF MKIV 1.0 mtr pair £100.00
SUPER AF per mono mtr £52.50
SUPER AF 0.5 mtr pair .. £106.00
SUPER AF 1.0 mtr pair .. £140.50
SUPER X-WIRE 0.5 mtr pair £127.00
SUPER X-WIRE 1.0 mtr pair £168.50
DIGITENNA per mono mtr £27.50
DIGITENNA per mono mtr terminated £42.50
PRICES INCLUDE POST AND PACKING AND MAY TAKE UP TO 4-6 WEEKS FOR DELIVERY

AUDIOQUEST OPTICAL LINK Z

This is a wide bandwidth, ultra high performance optical cable for digital links, made by Audioquest. The most common use is linking a CD transport to a digital-to-analogue convertor. It is available in 1metre and 2metre lengths with conventional TOS-link connectors.

OPTICAL LINK Z
(1M) £69
(2M) £99

AUDIOQUEST QUARTZ INTERCONNECT CABLES

A fully balanced analogue signal cable with heavy duty, gold plated phono plugs and advanced Quartz Hyperlitz cables using polypropylene insulation. The Quartz cable we have chosen from our own experience as a fine sounding type. It uses FPC-6 ultrapure copper (99.99997%) and the plugs are welded.

AUDIOQUEST QUARTZ CABLE
1METRE LENGTHS £79/PAIR
2METRE LENGTHS ... £120/PAIR

ARCAM RCA PHONO PLUGS

Specially made in Japan to Arcam's specification, this heavy duty phono plug will accept audiophile

cables up to 7mm in diameter. The 36mm long body is nickel plated and the contacts gold plated. Superbly built, we supply in polarised pairs with one/two ring end identity to allow send/receive ends to be established to take into account directionality. These plugs must be soldered with care to cables.

RCA TYPE PHONO PLUGS (4) £15.50

MICHELL ENGINEERING PLUGS

Craftsmanship marks out Michell Engineering's range of gold - and rhodium plated - plugs from the



competition. Simple, but elegant.
GOLD-PLATED SIDE ENTRY BANANA PLUGS (4) £10.00
GOLD-PLATED SURE-LOC BANANA PLUGS (4) £14.95
SURE-LOC RHODIUM-PLATED BANANA PLUGS (4) £18.95
GOLD-PLATED SPEAKER CABLE CONNECTORS ... £10.00

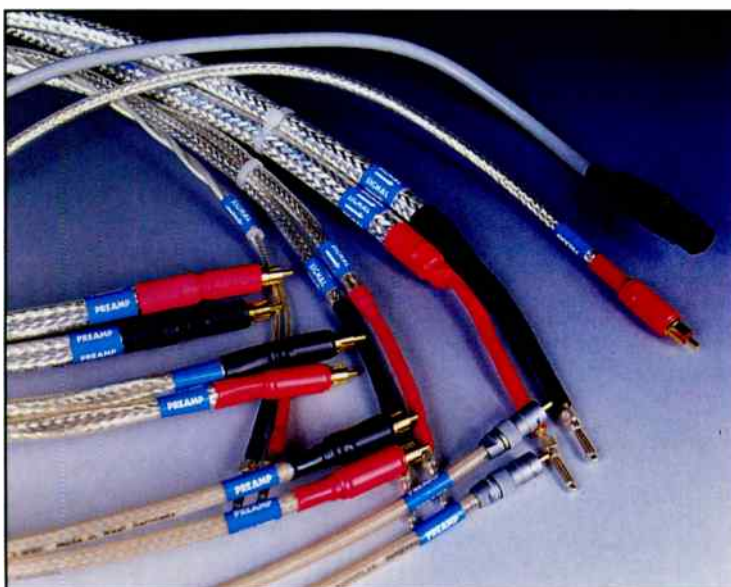
KONTAK

Contact Cleaning Fluid
Kontak is an effective two part cleaning solution that removes contaminants from electrical connectors of all sorts. It is applied with pipe cleaners supplied. Clear instructions list the most sensitive contacts that need treatment in a hi-fi system, although items like fuses which are not mentioned should also be treated.

The dirt that Kontak removes is clearly visible on the pipe cleaners, demonstrating just what degree of contamination contacts have reached and what Kontak is achieving.

Users commonly express surprise at the amount of dirt and contamination Kontak removes. After application, a system regains its original life, sparkle and vigour.

KONTAK PRICE: £21.20



Hi-Fi World AUDIO ACCESSORIES

HI-FI WORLD SPECIAL AUDIO ACCESSORIES ORDER FORM

Please send me:

- Record storage cube £42.00 each
- Sweatshirt (state size and colour) (XL, L, M) £12.00 each
- Hooded track-top (one-size) £15.00 each
- T-Shirt (state size and colour) (XL, L, M) £7.99 each
- Pixall MkII Record Cleaner £10.75 each
- Pixall refill roller £2.75 each
- Hi-Fi World Dry Stylus Cleaner £1.95 per sheet
- Kontak cleaning fluid £21.20 each
- CD Jewel Case £1.00
- Nagaoka Anti-static record sleeves £7.50 (50)
- Nagaoka rolling record cleaner £10.20 each
- Nagaoka CD cleaning kit £10.50
- ON Stylus Cleaning Kit £2.50
- Lasaway Green Pen £8.50 each
- Laserguide £14.95
- Audio Technica CD Lens cleaner £16.25 each
- Audio Technica Record Cleaning System £10.50
- Audio Technica Green CD Ring Stabilizers £6.50 (Pack of 5)
- Audio Technica electronic stylus cleaner £19.95
- Audioquest Sorbothane feet £27.95 (4)
- Audioquest Optical link Z £69 (1m)
- £99 (2m)
- Audioquest Quartz cable (pair) £79 (1m)
- £120 (2m)
- TDK Head Cleaning Kit CK-A1 (double bottle) £5.50
- TDK Head Cleaning Kit CK-TB (single bottle) £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
- Audioplan Musicable LS 3.5 per mono mtr £11.00
- Audioplan Musicable LS6 per mono mtr £27.50
- Audioplan Musicable LS12 per mono mtr £54.50
- Audioplan Musicable AF MKIV per mono mtr £37.50
- Audioplan Musicable AF MKIV 0.5 mtr pair £77.50
- Audioplan Musicable AF MKIV 1.0 mtr pair £100.00
- Audioplan Musicable SUPER AF per mono mtr £52.50
- Audioplan Musicable SUPER AF 0.5 mtr pair £106.00
- Audioplan Musicable SUPER AF 1.0 mtr pair £140.50
- Audioplan Musicable SUPER X-WIRE 0.5 mtr pair £127.00
- Audioplan Musicable SUPER X-WIRE 1.0 mtr pair £168.50
- Audioplan Musicable DIGITENNA per mono mtr £27.50
- Audioplan Musicable DIGITENNA per mono mtr terminated £42.50

- Gold plated spade connectors £10.00 (4)
- Arcam RCA phono plug £15.50 (4)
- Michell Engineering Gold-Plated Side Entry Banana Plugs (4) £10.00
- Michell Engineering Gold-Plated Sure-Loc Banana Plugs (4) £14.95
- Michell Engineering Rhodium-Plated Sure-Loc Banana Plugs (4) £18.95
- Michell Engineering Gold-Plated Speaker Cable Connectors £10.00

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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
		Soon to be replaced with 'Legato Link' version.	Oct 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 single 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.	May 91
LITTLE PINK THING		Improved GTi version also available.	Nov 91
ROKSAN RADIUS	£550	(with arm) Isn't tripped up by unsettling music, the Radius acts a good mid-price turntable.	Apr 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.	Jun 91
PINK TRIANGLE EXPORT	£676	Terrific soundstaging properties, good bass and a neutral performance that considerably improves upon the LPT.	Jul 91
VOYD VALDI	£699	Similar to the Pink Triangle, the two-motor Valdi is an expressive performer, best suited to Audio Innovations equipment.	May 92
ROKSAN XERXES	£785	Highly analytical and exciting turntable. Can be almost CD-like in its presentation.	Sep 91/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.	

TONEARMS

MØRCH 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 MC15	£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!	Feb 92/May 92
MØRCH DA CAPO	£500	Scan-Tech designed moving coil cartridge. Musical and accurate, without any flaw.	
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.	Nov 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	Silly smooth sound, but very insensitive and needs a good aerial.	Feb 92
MUSICAL FIDELITY TI 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 52	£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	Gente 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.	Jan 92
AUDIOLAB 8000P	£545	Powerful solid state stereo power amplifier. Clean, natural sound with a slick styling to match. Very well made.	Jun 91
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 P180/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 HBI Mk III	£249	Powerful, efficient loudspeakers. Loads of welly, loads of bass, but somewhat unrefined.	Apr 91
TANNOY 609	£250	Cheapest Dual Concentric loudspeaker in the range. Fast and fun, but occasionally a bit unsubtle.	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 FOCCUS	£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 I 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.	Jun 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 recording, 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
CELESTION 700SE	£1399	Small box, carved from Aerolam. Excellent imagery, transparency and detail. Needs power and careful positioning.	Mar 92
TDL STUDIO 4	£1499	Need a large room, but can move a lot of air. Best with organ music, the 4's can sound impressive, awesome and frightening.	Jul 91
DYNAUDIO CONTOUR 1.8	£1589	Floorstanding two way ABR design. Highly detailed, studio monitor sound. Need a big power amplifier.	May 92
PENTACOLUMN	£1795	Active floorstanding loudspeaker using Bandor metal drivers. Best with valve amplification on treble. Stunning imagery, excellent detail. Speakers that excel at everything.	Dec 91
QUAD ESL-63	£2072	(Pro version, £2240) Legendary electrostatic loudspeakers. Can lack bass, dynamic range and volume but have detail and imagery impossible to better.	Apr 91
TANNOY GRFM	£3500	Giant horn loudspeakers. Capable of awesome sound. Need good valve amplification.	Jul 92
NAIM DBL	£6127	Huge active loudspeakers, capable of producing immense sound pressure levels. Not for the squeamish.	Mar 91
MERIDIAN D6000	£7500	Meridian's statement in active loudspeaker systems. Effortless power and dynamics, but can sound bright.	Aug 91

MISCELLANEOUS

AUDIOPLAN DIGITENNA	£55	High-tech coaxial cable, for CD to DAC connection. Highly focussed sound.	Jul 92
AUDIOPLAN MUSICABLE	VARIOUS	Superb, high quality cables that represent the finest in European cable.	Mar 92/May 92
BEYER DT41 I	£54	Excellent 'studio' quality headphones. Deep bass, powerful sound, if a bit splashy at times.	Jun 92
CELESTION DLP 600	£349	Digital signal processor for the Celestion 600 series loudspeakers, sounds like a £400 upgrade.	Jun 92
FRANCINSTEIN	£79	CD stereo enhancer, which adds crosstalk to make the sound more 'analogue'.	Jan 92
FURUKAWA FD-11 CABLE	£85	Coaxial cable, for use between CD and amplifier. Good quality, utilitarian cable. Safe choice, easy sounding.	Jan 92
FURUKAWA 7N PC-OCC	£900/£350	per mono metre. Very expensive cables. Highly detailed, sounds like an equipment upgrade.	Jul 92
KONTAK	£22	Space age contact cleaner. Upgrades your system at a single bound.	Mar 91
LASERGUIDE	£15	Coating for a CD surface. Is said to improve clarity, focus and spaciouness.	Dec 91
MANA TABLES	VARIOUS	Unique glass and L-section frame supports that can transform a system.	May 91/Jul 91/Feb 92
SONY ICF-SW7600	£150	Superb 'world' radio. Good reception, simple to use, even has a clock!	Aug 91
SONY WALKMAN WM-DD33	£90	Simple to use, high-quality playback only Walkman. Excellent, stable sound quality.	Aug 91
SONY WALKMAN WM-D6	£260	The famous 'Pro' Walkman. One of the finest cassette recorders at any price, but portable. Superb value, if a little 'touchy' at times.	Mar 91
SONY WALKMAN TCD-D3	£500	Better known as the 'DATMAN', this small, sophisticated DAT portable is a technological wonder.	Aug 91
TECHNICS SL-XP700	£200	Portable CD player. The thinnest and most stylish of the breed, just happens to sound the best.	Nov 91
TDK NF-C09	£10	Designed to lessen Radio Frequency Interference in cables. Works too!	Feb 92

HI-FI WORLD The Music Pages

Edited by
Eric Braithwaite

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**Did intelligent pop slip into
a coma when XTC stopped
making plans for Nigel?
Will burning books see it
reawakened? Read on to find
the answers . . .**

Malcolm Steward

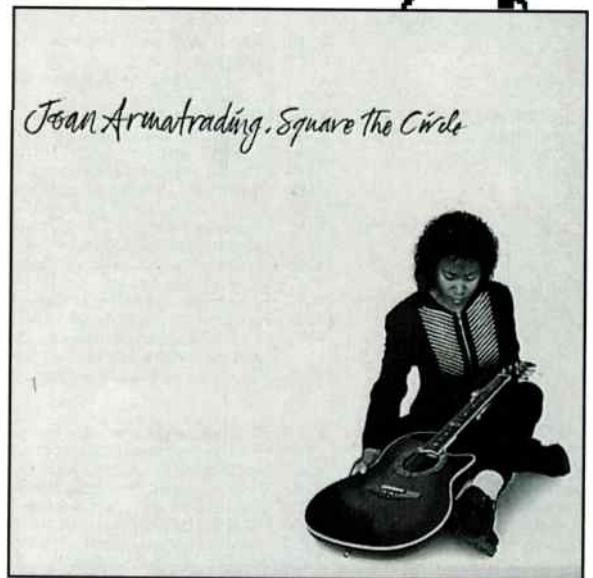
JOAN ARMATRADING Square The Circle A&M 395 388-2

● It's hard to believe that Joan Armatrading's Glyn Johns-produced eponymous debut album, the one that made her the darling of sensitive hi-fi demonstrators everywhere, was released in 1976. Subsequent albums saw her moving away from the acoustic troubadour image of the first album towards a less spartan, rockier style incorporating elements of reggae, soul and mainstream rock.

Square the Circle is her slickest, most contemporary-sounding release to date and demonstrates an interesting synthesis of her intimate, personal vocal manner with the ephemera of pop music. In plain English that means the ubiquitous "keyboards" get - I think - too much of a look-in at times. I find her voice most effective placed against a simple, uncluttered backdrop. At times the washes of synthetic sound tend to distract from and dilute the power of her singing.

I wasn't especially concerned by the fact that she was singing in front of a backing band or with back-up singers. In fact, former Japan bass player Mick Kam's insistent, pungent bass lines - well to the fore throughout - provide a fascinating counterpoint to Armatrading's distinctive voice. But I'll admit to being prejudiced: in general I hate, loathe and detest synths and I think that Armatrading's is one voice that works most effectively with minimal accompaniment.

Nonetheless, I enjoyed this album, even if it is a little too smooth and easy-going in places. Check out the CD's



ninth track 'If Women Ruled The World' to hear Armatrading (and Kam) hitting a persuasive peak. This particular track made me wonder what an album of Armatrading and Kam duets would sound like. If you've ever heard Mary Coughlan's 'Seduced' you'll know what a powerful combination a female voice and bass can be.

MELISSA ETHERIDGE Never Enough ISLAND CID 9990

● Ignoring the risk of attracting violent letters from outraged feminist readers, I've got to admit that my usual reaction to the fairer sex singing hard-hitting rock songs is to fall about in paroxysms of rib-rupturing laughter; OK Janis Joplin was an exception. An unfair reaction in socio-political terms, maybe, but have you ever heard Bonnie Tyler trying to out-Percy Robert Plant? Can you honestly tell me that you kept a straight face?

Melissa Etheridge, however, manages to sound convincing without, I might add, sacrificing one iota of her femininity. My only qualms about this latest album concern the way she looks now; on previous albums she's looked natural and funky, now she's gone for the peroxide Toyah Wilcox image. It doesn't fit.



Her music, however, continues to grow more powerful with each album. This disc has displaced *Brave and Crazy*, an extraordinarily good album, as my favourite for introducing friends to her music.

There's a good mix of material here, all intelligent and engaging, even when the subject matter isn't going to win any prizes for profundity. Examples feature the might of the full band or just Etheridge and sparse - one or two - acoustic instrument accompaniment, like 'Place Your Hand' and 'The Letting Go'. Tempos vary as well, from the urgency of rockers like 'Ain't it Heavy' and the industrial grind of '2001' to the gentle lilt of 'Place Your Hand' and 'The Letting Go'.

The album's title track has had a fair bit of airplay on MTV but don't take that as an anti-recommendation. I might think that Melissa Etheridge's image is awry but she's no air-head. She writes good songs and performs them with unseemly aplomb and gusto. Pass the smelling salts, Jeeves, this unladylike behaviour's got me all hot and bothered.



LOS LOBOS
Kiko

SLASH 828298-2 (ALSO ON LP & MC)

● I enjoyed Los Lobos' 1984, T-Bone Burnett album *How Will The Wolf Survive?* immensely but subsequent albums didn't have the same effect upon me. I think I was suffering from a dose of over-exposure to gratuitous strains of ethnic music due to record industry band-wagon jumping again: "Hey, this Chicano stuff must be the in thing. Let's get some of that action on our label and our artists' records. Hire some accordions and acoustic bass players. Whaddya mean they're not in context? Hell, just

get some Hispanic flavour into that music and who cares if it doesn't fit."

Time has done its usual healing trick. I was ready for another infusion of The Wolves' Tex-Mex, electro-acoustic reverie when Kiko arrived. The passion and traditional spirit that fired their 1984 album is still evident in their music and the producer - this time it's Mitchell Froom - has succeeded in capturing it. I don't know whether it's the songs themselves or just the predominance of "real" instruments that gives this music its vitality and refreshing demeanour but it's inordinately uplifting. Songs like 'Dream in Blue', 'Short Side Of Nothing', 'Whiskey Trail' and 'Reva's House' simply make me feel particularly glad to be alive. Even on tracks where the beats are fewer per minute the music still has an invigorating, effusive quality.

If you've always avoided Chicano music this album will convince you that there's more to it than 'La Bamba', the Ritchie Valens hit that Los Lobos repopularised by playing along with eight other Valens songs for the biographical movie of the same name. Check out the jazzy 'That Train Don't Stop Here Any More' and its delicious walking bass line if you want concrete proof.

Chris Daniels & the Kings

In your face



CHRIS DANIELS AND THE KINGS

In Your Face

PROVOGUE PRD 70342 (CD & MC ONLY) DISTRIBUTED BY PINNACLE

● I'd no idea who Chris Daniels was until this CD landed on my doormat the other morning. I was in no doubt who had provided its cover artwork, however. Those duck mouths (beaks?) were unmistakably the work of Neon Park, the pen responsible for all those wonderful Little Feat sleeves.

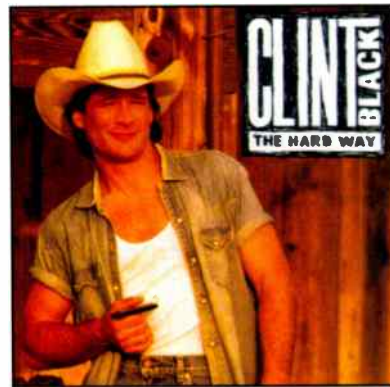
The press release that accompanied the disc informed me that Daniels hails from Denver, Colorado and that he and The Kings have been touring the States and mainland Europe since the mid-Eighties. They have supported acts like BB King, Jeff Healey, Little Feat, Bruce Hornsby and Bonnie Raitt, who apparently is such a big fan that she lures to sit in with the band when she can.

I've got a feeling that the band's horn-section will come across even better live. On disc they sound a little too polished, but I suspect this will

change in front of an appreciative audience. They will be touring the UK for the first time in the late summer and early autumn, so if you enjoy the disc, look out for dates where you can catch them live.

This is the kind of music that any red-blooded rock fan's going to feel at home with: a powerful rhythm section, geetars various and a-plenty, and a horn section that kicks. They work their way through R'n'B based material that weaves in and out of Blues, Soul, Metal and all points of the American rock compass, lifting a riff here, a chord progression there, fuelled by an obvious zeal for laying down a groove. As Daniels says in the sleeve notes "To all those who love rockin' hom band music like Tower of Power and Blood, Sweat and Tears . . . this record is for you."

Blood, Sweat and Tears, eh? And I thought that nobody else remembered them. Good to know I'm not the only dinosaur on the planet!



CLINT BLACK
The Hard Way

BMG 07863660032 (CD & MC)

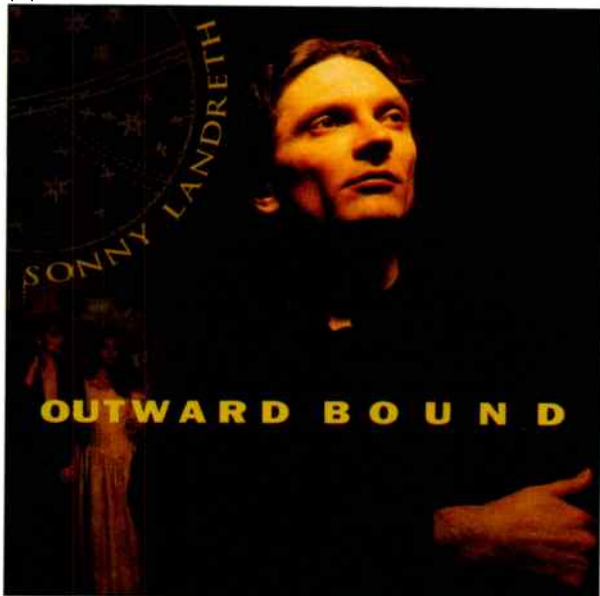
● So as to establish my liberal credentials and general political correctness I'm going to review a country music album without cheap shots like calling anyone "the man who put the **** in country music."

It's hard, mind you, to take it at all seriously. Even though Clint Black (every time I read the sleeve notes my eyes see Clint but my brain says Cilla) is one of the new-wave of country musicians, with more in common with Lyle Lovett than Roy Rogers, there's no shaking off the tradition. Unfold the CD sleeve notes and what have you got: a poster of the handsome, smiling hulk in regulation jeans, leather jacket and Stetson hat. All that's missing is his horse. It says a lot about country music fans, don't it pardners?

The redeeming feature of this disc is that Clint ain't got a bad voice and it's not until the fifth song that he mentions the obligatory Rocky mountains.

If you're a fan of the redneck rumba then you'll enjoy this disc. Even I found myself wailing along doing harmony vocals at times. But if you want to hear more adventurous country music, try Lyle Lovett. Clint doesn't really push the

genre's envelope quite so hard as he of the improbably large quiff and dubious suits. Mind you, that I actually got to the end of this disc without pumping the next-track button or falling out of my chair laughing speaks volumes for it. This is a dangerous disc: I'll be buying a pick-up truck and wearing tooled leather boots next! You've got a lot to answer for, Cilla . . . er, sorry, Clint.



SONNY LANDRETH
Outward Bound
ZOO (THROUGH BMG) 72445-11032-2

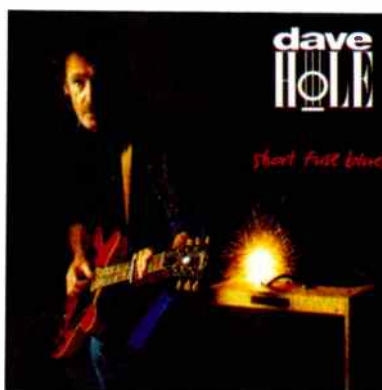
● Regular readers of this column will know that I'm a sucker for tasty guitarists. I don't even care if they play with lack-lustre bands or try to sing when they really oughta be gagged, if they can manipulate six strings in a fashion that makes me - as a failed plucker - sickeningly envious, I'm happy.

Enter Sonny Landreth, whose band is fine and whose singing voice is passable if undistinguished, a guitarist who has both technical skill and, more importantly, wicked feel. One track from this album, 'Back to Bayou Teche', was all it took to make my eyes turn a noxious shade of green. His playing here isn't techno-flashy, superfast or particularly demanding, it just grooves effortlessly and he drops all the right notes at all the right moments. There's a David Lindley-esque swing to his slide playing on this song. It's not squeaky clean, nor is it swimming in distortion (a sure way of covering up dodgy intonation); instead he strikes just the right balance. Throughout the album his playing is equally measured and understated,

whether he's working out on electric, slide, dobro or acoustic.

I was surprised when I reached tracks five and nine and heard John Hiatt's distinctive voice back in the mix. It later transpired that Landreth and his band, under the name of The Goners, had worked with Hiatt on the latter's Slow Turning album and tour. He has also worked with Zydeco and Cajun musicians of the calibre of Clifton Chenier and Beausoleil. With this kind of experience under his belt it would have been hard to produce a duff album as his debut.

If I were in super-critical mode I might say that *Outward Bound* would benefit from one or two songs with a bit more impact but I'm not complaining. It's satisfying enough to hear a guitarist with Landreth's sensitivity and flair.



DAVE HOLE
Short Fuse Blues
PROVOGUE PRD70362
(LP & MC ALSO)

● If you thought that Australia's only exports were remarkably drinkable Chardonnay, equally horrible lager and emetic soap operas, it's time to reconsider. Dave Hole is Australian and he's none of these: he's a blues guitarist. Influenced by Elmore James, Albert King and Hendrix, Hole plays a mean slide. USA magazine *Guitar Player* described him as "magnificent, staggering, almost beyond belief", and he has been favourably compared - though by whom I know not - to Stevie Ray Vaughan. I smell a bit of hype here: I wouldn't argue about Hole's credentials as a fine technician but SRV's playing - and singing - had rather more soul.

That's not to say that the

antipodean doesn't have his moments; to his credit he injects some interesting personal touches into his cover of Peter Green's 'Albatross', which has to be better than playing it straight. But that's not the same as saying that he adds anything to the song. His drummer and bass player's contributions, to my mind, desensitize its timing. The trio come together more effectively on the subsequent track, penned by Hole, 'Night Cat', where their funky approach is more appropriate. They should, however, have left Hendrix' 'Purple Haze' to rest in peace: it's not a song that lends itself to being covered and it would have been better had they resuscitated the ubiquitous 'Little Wing' instead.

Hole and his boys have more success with another cover, Robert Johnson's 'Travelling Riverside Blues', but if we're in superlative shedding gear you should hear Jimmy Page's version before passing comment. Hole really comes into his own playing solo, as on Willie Johnson's 'Dark Was The Night (Cold Was The Ground)'.

As you've gathered, I found *Short Fuse Blues* to be a mixed bag. I'm sure that's less a reflection upon the artist and more a reaction to the ticker-tape welcome extended to everybody who picks up a guitar and plays the Blues these days. Do we honestly need replacements for players like Hendrix and Stevie Ray Vaughan? I'd sooner hear players with something of their own to say.

THE SUPERSUCKERS
The Songs All Sound The Same
EMPTY RECORDS EFA-11351-25

● People keep telling me that we live in a global village, that the world is - metaphorically - getting smaller. Here's your chance to prove or disprove this theory. I couldn't find any records by The Supersuckers in my local record stores in London so I bought this album in Tower Records when I was in Chicago, earlier this year. If you can't get a copy from your local stockist tell them to order it from the US: after all, are we



Rock & Roll

in a global village situation or what?

The Supersuckers are part of the Seattle SubPop scene that introduced the ever-shrinking world to bands like Nirvana and Pearl Jam. If the fact that even your grandmother has heard of Kurt Cobain means that you need another new band to restore your credibility, look no further than The Supersuckers. Edward Carlyle Daly III, Daniel Scott Siegel, Ronald Neal Heathman, and Dan 'The Steak' Bolton are so unspeakably hip that they're not ashamed to cover a Madonna song on this album. Only their version of 'Bumin' Up' really does live up to its title.

If you think that the aforementioned Nirvana and Pearl Jam are pretty noisy then your senses will get severely disturbed by The Supersuckers who make Sonic Youth sound like a school choir. Their version of Bators and Chrome's 'What Love is' (there are

three covers on the eleven-track disc, the third being Nazareth's 'Razzmanazz') is a particularly fine example of this. Ever heard a thrash guitar wah-wah lead break? Interesting.

A perverse but fascinating element on the album - one among many - is the chainsaw-chord outro to the last track 'Razzmanazz', which lasts a sanity-threatening thirty-three minutes and fifty-four seconds by my reckoning. Is it possible for a CD player to get stuck in the groove, I wondered, or was it a sub-code trick? Or did they really extend that outro to over half an hour? Just when I was ready to kick seven shades out of my CD player the drummer changed pattern and the song stopped. Massive amounts of musicological brownie points will be awarded to anyone who listens to it enough times to tell me if it is non-stop chording or if it's faked.

RECORD OF THE MONTH

XTC
Nonsuch
VIRGIN CDV 2699

★ I lost touch with XTC many albums ago despite counting myself as an earnest fan of this quintessentially British, intelligent pop band. I saw them play a particularly exciting set at the Lyceum, probably more than ten years ago, and revelled in their skilful mixing of punk angst, articulacy and lyricism, and musical dexterity. I bought the albums that were then available - and despite enjoying them and playing them regularly throughout subsequent years - I've still found few songs that match angular pop classics like 'This is Pop', 'Statue of Liberty' and 'Making plans for Nigel' - I never investigated more recent releases.

If Nonsuch is anything by which to judge I've made a big mistake. On the evidence of this disc XTC should be accorded the acclaim that has been wrongly and regularly foisted upon a thousand-and-one far less deserving talents.

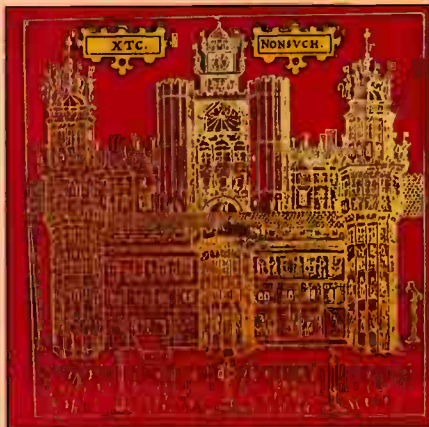
XTC have virtually everything you could ask for in a pop band. Their off-beat musical sensibility approaches paradigm status and Andy Partridge's masterly and inventive use of language is probably peerless in contemporary songwriting. His outwardly straightforward music is approachable and effective but is also wryly humorous and delightfully condemnatory.

It seems that during their exile from the limelight XTC have been stockpiling songs. Nonsuch runs to seventeen tracks and there's not one among them that is redundant or makeweight. Nonetheless, several stand out as particularly distinguished specimens: I'd choose 'The Smartest Monkeys' and 'Then She Appeared' as personal favourites, partly because of their morphology but also because of their melodic charm. However, if I were asked to select just one song to accompany me to a desert island it would be the track that closes the album, 'Books are Burning'.

Why? Because it's one of the loftiest, most poignant songs that has been written in the past decade, or more likely, one of the peaks of creative writing in the history of pop music. Period.

The album has been thoughtfully arranged and recorded but not so well that you can hear former New Hi-Fi Sounds' editor Neville Farmer singing backing vocals in the final chorus of 'Books Are Burning'. I'd call that a cataclysmic oversight on the producer's part. (Only kidding, Nev!)

Nonsuch is a landmark album. Do yourself a real favour and buy it immediately.



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Rock & Roll



**This month, some curios
from the long sighted label,
See For Miles, and a Techno
album free from
techno fear.**

Eric Braithwaite

BE BOP DE LUXE
Singles A's and B's
SEE FOR MILES: SEECD336

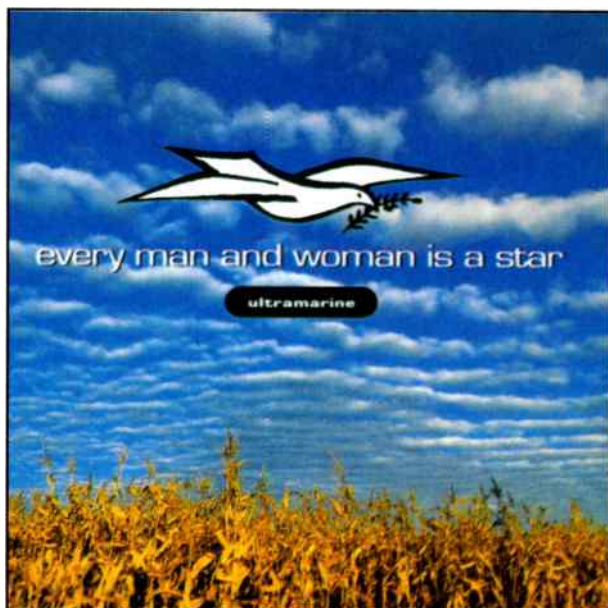
● Be Bop de Luxe missed out somehow: seven albums, seven singles between 1974 and 1978 and then total demise. It's a great pity, because this compilation of the A and B sides is a breath of fresh air after all the sampling and synthesising that's so ubiquitous now. Bill Nelson, a spectacular guitarist - "Yorkshire's first guitar hero" says the sleeve note, and why not - deserves the re-exposure. He's fluent, fluid, and stylistically brilliant. Even better, he came to be backed by a band any one of whom would have been in demand as a session man - whether it was a pop or jazz track that was being laid down. There's the rub: this band is as together, as inventive, and as improvisational as any jazz quartet and they play real music. Trouble is - some, no, most of the words are pretty naff. That - in the end - probably explains why they never made it big in the face of competition from people like Bowie. Or even, later, Magazine, who favoured the same kind of style but with a more metronomic beat, less inventiveness - but better words: "There's a crystal at the heart of every tear/On reflection making her perfection clear." I ask you. Yet in musical inventiveness they can sometimes match Bowie in musical terms. Probably this is why I prefer the B sides: less hot-house, less trying to match the trend of the time. Even so, the A sides are a constant source of fascination. Forget the words, Be Bop de Luxe had a musical inven-

tiveness that tells you an awful lot of New Wave, The Skids or XTC might not have made it without this band ahead of them. 'Lights' for instance - for all its soft-centred vocals - is a must. 'Futurist Manifesto' proclaims the birth of New Wave. Up front is that amazing style of Bill Nelson who might just have been too clever for his own good in the Seventies: he can out-Marvin Hank Marvin and take on Hendrix, and never does the band fall behind. The music is the message: 'Crying to the Sky' was there ahead of the Alan Parsons Project. For a taste of Be Bop de Luxe's more relaxed style - less of the pressure to 'prove themselves' in the marketplace - listen to the B sides first. It's an hour of pure musicianship with not a single note of dross. Where have we been going since?

ULTRAMARINE
Every Man and Woman is a Star
ROUGH TRADE R2892

● I've been known to fulminate against the Dance-Bore sounds and synthetic music that have taken over this last year. Ultramarine's album, 'Every Man and Woman is a Star', changed that. Anyone who reads Wyndham Lewis and then puts out a first EP quoting that weird 1920's satirist must be OK; their music confirmed it.

Underneath the omnipresent dubby beat of their first album is a construction of sexy sonic textures that sneaks in Blues, Latin rhythms, a few strangely twisted House cliches, snatches of rumba, Chinese flute and even a few bars that Jethro Tull would have been proud of, forming them into an alarmingly clever kaleidoscope of sound. "Accordion meets acid groove", says the press release, and on 'Geezer', so it does, along with owls hooting and night noises. Weird,



or what? But it's innovative and fun as well.

Consistently, it's the intros that catch your ear, from the first Arkansas Grandpappy pipe-sucking "Up there in the mountains . . ." words of the first track - through the rest. On 'Saratoga' there's even a bit of scat singing woven in and snatches of jazzy piano intro to catch your attention.

These guys know what a bar-line is and they can beat time without having to plunder a drum machine. Every track is brilliantly put together with real musical craftsmanship, mixing the occasional hypnotic robotic vocals with some neat work on trumpet or harmonica from Phil James, or Charlie May on keyboards.

I'm an occasional Techno fan - when it's live - but Ultramarine have found themselves a niche that owes something to Minimalism, takes on Laurie Anderson - and takes the Mickey out of American angst subtly as well. Here, they've come up with a dance album that really swings. And there's inventiveness aplenty too; on 'Canoe Trip' a swirl of watery ripples, keyboard chords and sonar can only be described as 'amniotic ambient'. It's Techno without Techno-fear, Dance without drudgery. In short, I'm a convert, and so should you be.

with her and turned into The Mamas and the Papas. Now, who doesn't remember 'California Dreamin' and 'Monday Monday'? If there's anybody out there who thinks the blow should have been fatal, go read another review.

Like many another group in the days when people bought singles and EPs, the Mamas and the Papas had a bright but short heyday. They lasted only two years and flourished in the folk-rock hothouse that LA became in the late Sixties. Already there when they arrived were the Byrds, Sonny and Cher and the Turtles. First cut (and first in this collection) was 'California Dreamin' - melodic and tinged with melancholy. Along with the Byrds' 'Mr Tambourine Man' it became an international best seller and landed the Mamas and the Papas their first recording contract. It, and 'Monday Monday', became anthems.

Among the twenty tracks on this CD, there are all the A and B sides from the prolific period of 1966 before harder sounds from Janis Joplin, The Who and Jimi Hendrix overtook the doe-eyed residents of Haight Ashbury. Apart from their own inimitable songs, it includes their unmistakable revamp of Martha Reeves and the Vandellas' 'Dancing in

the Street' and the Shirelles' 'Dedicated to the One I Love', with the gospel undertones emphasised and some emotion tugging minor chords. Look out for the others, too, from the second album, less well-known, but well provided with melodies.

It might just be nostalgia, but with all hard-nosed street cred flying about now, this is a

perfect and gentler corrective. Call me old-fashioned, I don't care. It's a great way to spend an hour. Note-for-the-history-books section: Cass Elliott, whose silky voice made them famous, died in 1973, two years after an unsuccessful group reunion. John Phillips, also a group member and father to the 'Phillips' part of the current US girl-group Wilson Phillips, succumbed to drugs, to emerge rehabilitated in the Eighties.

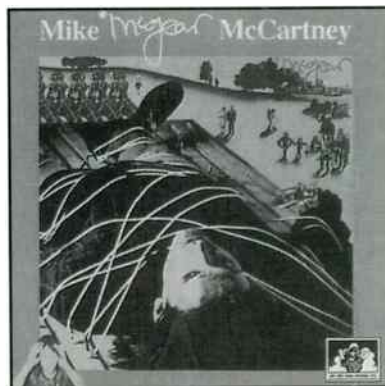
A reformed Mamas and Papas still tours - but attempts to recapture golden ages, especially a Sixties one, never really work. It's best to stick with the originals.

MIKE MCGEAR McCARTNEY

Mike McGear McCartney

SEE FOR MILES: SEECD339

● The trouble with having a famous brother is that he's famous. It could be there's deep psychology behind that



Gulliver-in-Liliput cover. The big man tied down by lesser ones? If there is, there's probably more on that five inches of paper than there is in the songs, but let's not be too mean. Mike McGear, alias Macca's bro', will be familiar to most through that comic lot Scaffold which produced gems like 'Lily the Pink' and 'Thank U Very Much' and which McGear left in 1973. "We were a verbal Bonzo Dog Band, and they were a musical us," McGear said later. In 1974, brothers Paul and Mike went into a studio in Manchester and produced this album. Most of the titles are credited to the pair; Macca being then in his Wings period, most of the dozen tracks have a strong Wings-ish sound.

Some of them, alas, are also make-weight and marking time - 'Rainbow Lady' or the flowers-and-kaftans 'The Man Who Found God on the Moon' which displays some of the blandest vague and un-minatory coyness of the period. Best are the ones where McGear himself is strongest: 'Sweet Baby' is not an especially strong song, but it's simply produced, light and charming.

Out of place in the context, and the better for it, is 'Casket' - one of the Liverpool Scene's best, a mordant, sardonic poem by Roger McGough, one of the best of the Liverpool poetic trio of McGough, Patten and Henri. It's a poem turned effectively folksy with the aid of Paddy (Chieftains) Moloney's pipes. This I would have liked more of - it's something McGear was obviously more in sympathy with and could feel more seriously about.

In many ways - too many, maybe - this is not an album that was put together to be an alternative to The Scaffold, but an escape from it, and it's too various to be strong. It didn't do too well first time round - but despite reservations it deserves a place on the 'So this is what happened next' section of the shelf, showing what else Macca was up to.



THE MAMAS AND THE PAPAS

The EP Collection

SEE FOR MILES: SEECD 333

● It's a funny thing, but one of the hits that everyone remembers from the Sixties - and one that still haunts anyone who hears it, might never have happened but for a singer being clobbered with a lead pipe. It wasn't an outburst of long hot summer violence or the effect of the haze over the Hashbury. Cass Elliott was the victim, the blow changed her voice, and The New Journeymen abandoned the Virgin Islands for LA, joined up

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Jazz

Fusion became the best-selling - and critically the most hated! - development in Jazz's brief history. Some classic re-releases provide an opportunity to show that Fusion doesn't suck.

Simon Hopkins



Of all the many, many terms bandied about in discussions about Jazz, the one which undoubtedly earns the most derision is Fusion. Which may seem strange, if one stops to consider the inherently hybridized nature of Jazz, (and hence the presence of some kind of musical fusion in even the simplest of the music's forms); but nevertheless the specific marriage of Jazz improvisation to rock rhythms and instrumentation to which the term Fusion got pinned sometime in the early Seventies became paradoxically the best-selling and the critically most hated development in Jazz's brief history.

Perhaps the most surprising thing about this critical dissent is its extent;

mutually distrustful groups of fans, avant-gardists, traditionalists, beboppers, West Coasters, were at least united in their contempt for Fusion, and now, twenty years on, it's not unusual to witness a critic swoon over the prospect of, say, one of John Zorn's thrash-metal, hard-bop collages and yet choke on his own laughter at the very mention of the word.

In the long run, a lot of the criticism turned out to be prescient. Far too much Fusion drew on the worst aspects of the musics it, er, fused: psychedelic rock's endless, harmonically dull, guitar solos; a tendency in Jazz to tag any sort of structure or composition onto a jam session almost as an afterthought; the very worst sort of white rockers' approximation of funk rhythms; an over-dependency on technical accomplishment (and a corresponding need to show it off) and on and on. HOWEVER . . .

The record that probably kicked this off was Miles Davis' apocalyptic *Bitches Brew*, and the music made by some of that sessions' alumni (and Lord knows, there were some truly stellar musicians on that date) actually lived up to Fusion's original promise. All the CDs reviewed here (recently re-issued through Sony) represent, in some form or other, the fall-out from the *Bitches Brew* date, and go some way towards scotching the myth that all fusion sucks.

MAHAVISHNU ORCHESTRA Birds of Fire COLUMBIA 468224-2

● The greatest band ever to have graced the planet, or very probably. If it's the done thing to knock Fusion, then the British-born guitarist John McLaughlin (and the band he led throughout the early Seventies, the Mahavishnu Orchestra) has become the chief target for jazz-rockophobics. McLaughlin had already done the rounds, and raised a few eyebrows by the time he formed the orchestra; in the *Bitches Brew*/In a Silent Way Miles Davis band, he had become the trumpeter's substitute Hendrix, churning out massive, distorted, staccato solos against the impressionistic background of Miles' proto-jazz-rock. (Indeed, Miles named an entire side of *Brew* 'John McLaughlin' - a measure of the esteem in which he held this quiet Englishman.) In his lifetime, drummer Tony Williams had been at the centre of an electric jazz maelstrom, a sort of Coltrane-meets-Cream. But nothing quite prepared the jazz-listening public for the Mahavishnu Orchestra.

Truth is, the term Fusion, in its very broadest sense, could have been

invented for Mahavishnu. There was so much stuff in there: hugely difficult odd time signatures and polyrhythms, pan-ethnic melodies (the very beginning of McLaughlin's long and fruitful relationship with Indian music), rapid-fire solo exchanges, beautiful acoustic balladry and, of course, McLaughlin's staggering, virtuosic guitar pyrotechnics. It's easy with hindsight to see these as the elements of the worst kind of pretentious Seventies eclecticism, and the albums' titles don't help much either: *The Inner Mounting Flame*, *Between Nothingness and Eternity* and (get this!) *Visions of the Emerald Beyond*.

But the music throughout *Birds of Fire* (still this writer's favourite, although it's close) burns with such intensity that to be cynical about all the non-musical stuff isn't clever, it's plain dumb. This record seldom gets mentioned as a Jazz classic, but the plain fact is it's up there with Coltrane's *The Shape of Jazz to Come*.

This was actually the band's second album but retained the same line-up as the debut *Inner Mounting Flame*: McLaughlin, bassist Rick Laird, violinist Jerry Goodman, the phenomenal drummer Billy Cobham - who imbues the most pedantic cross-rhythms with fire - and keyboardist Jan Hammer. His artistic career went downhill at roughly the same speed as the swelling of his bank account - you'd never guess that the man behind the distorted electric piano here went on to write music for *Miami Vice*, but them's the breaks.

A great, great band, and their finest moment; also their final studio appearance. They recorded the live *Nothingness* set shortly afterwards and then split. But, at the risk of sticking my neck out, I'd say this is probably the most essential Jazz re-issue of the year.

JOHN MCLAUGHLIN Electric Guitarist COLUMBIA 467093-2

● By 1978 John McLaughlin had moved on in the way that would take most musicians several lifetimes (no pun intended). The original Mahavishnu had been augmented with first a string trio and then an entire orchestra conducted by Michael Tilson Thomas (*Apocalypse*). It was then disbanded by McLaughlin, who went on to form the acoustic Indian-jazz supergroup *Shakti*, along with violinist L. Shankar.

Electric Guitarist, then, was at once a career summation and a statement of intent, a series of collaborations with musicians with whom he'd worked over the years, kicking off with a Mahavishnu-ish band (featuring Goodman and Cobham), working down through various quartets, a duo, and ending up with a beautiful solo version of 'My Foolish Heart'. It's almost as though McLaughlin's saying "Look, I



can do this and this and this, and now it's time to move on again." And with the chord-melody solo at the end, he's right back to his roots - the pure Tal Farlow jazz guitar he'd left behind long ago.

Which makes this all sound a bit drier than it actually is. In fact, the album contains some of McLaughlin's sublimest moments on record: a stunning, breakneck tribute to John Coltrane (actually based on the chord changes to the tenorist's classic 'Giant Steps') with Chick Corea, Stanley Clarke and Jack de Johnette; the eloquent 'Friendship' with Carlos Santana and his band; the ferocious duet, 'Phenomenon'; 'Compulsion' with Billy Cobham, and perhaps best of all, 'Are You the One? Are You the One?' a huge, strutting funk-up with Jack Bruce and Tony Williams.

All in all, not McLaughlin's most ground-breaking record, but in many ways a more relaxed, less formal one than the earlier Mahavishnu stuff and a good jumping-on point for those who persist in doubting John McLaughlin's stature as one of the most significant jazz artists of the last twenty years.

WEATHER REPORT Weather Report COLUMBIA 468212-2

● A bunch of other bands emerged from the late Sixties Miles Davis groups, notably the pianist Chick Corea's Return to Forever and keyboardist Herbie Hancock's Headhunters, but the group which undoubtedly ranks alongside the Mahavishnu Orchestra is Weather Report, the group formed by ex-pat keyboardist Joseph Zawinul and soprano and tenor saxophonist Wayne Shorter.



In some ways Weather Report have aged better than Mahavishnu, and it's probably down to the less overtly complex nature of their material. Not that the music on their eponymous 1971 debut was any less ambitious than McLaughlin's. The band's concept was largely that of Zawinul, who wrote at least seventy-five per cent of the band's material throughout their many line-ups and nigh-on twenty-year career, but in 1971 it was nonetheless a profoundly

democratic concept. Each of the eight songs on Weather Report is a miniature tone-poem, partially written, partially group-improvised (Zawinul was fond of saying at the time that "We always solo and we never solo", a typically elliptical reference to the band's constant group interplay), and where the Mahavishnu material is highly dramatic, that of early Weather Report is more impressionistic and often very much darker. Up against the spiritual asceticism of Mahavishnu, Weather Report were urban, threatening, and, in the long run, more hip.

The debut line-up of the band pretty much set the standard for subsequent ones: Zawinul, always a consummate innovator (he'd been one of the first Jazz musicians to use an electric piano, after hearing Ray Charles, and thirty years later, having experimented with every major electronic keyboard development from the Fender Rhodes piano to the Moog synthesizer, he was the first jazz keyboardist to use the stupefyingly advanced Synclavier system) contributes some of the most memorable compositions in all fusion, and colours everything with rich dark hues. Shorter, who was rapidly developing into the most original of all post-Coltrane tenorists, which he remains to this day - a Shorter solo, with its rhythmically

angular, melodically obtuse lines, is recognisable within nano-seconds. Czech bassist Miroslav Vitous proved to be one of European Jazz's most unique voices; Brazilian percussionist Airto Moreira, who was present on so many great sessions in the Seventies; and drummer Alphonse Mouzon, the driving force at the heart of this heady, pan-global gumbo.

This was an inspired line-up, and Weather Report was an inspired debut, if only a taste of the stuff to come. Once again, I'm afraid, an essential re-issue.



WEATHER REPORT Heavy Report COLUMBIA 468209-2

● Six years later and Weather Report was a different beast indeed; the group interplay remained, but Zawinul's writing was asserting itself more and more, with tight song structures replacing the tone poems of Weather Report and I Sing the Body Electric. And one of these songs, the snappy up-beat, and irritatingly hummable 'Birdland' proved to be a massive worldwide hit, making 'Heavy Weather' the most widely known of all the records here.

Trouble is, it's also the weakest. The band at this stage had become dominated by its young stellar bassist, the late Jaco Pastorius, whom Zawinul still rates as the finest musician to have passed through the group. Any group with Pastorius' flamboyant, extrovert playing (and personality) as its focus, was probably never going to have the power of the earlier ones, for all its popularity, and despite Shorter's playing like a dream throughout.

In fact, Zawinul put a new Weather Report line-up together in the early Eighties, with the young drummer Omar Hakim as its star, which, despite its being critically completely overlooked, in many ways returned to the impressionism of the original line-up; but Heavy Weather, the band's greatest commercial success, is probably their artistic nadir.

Classical

Just to show there are no hard feelings about the treatment of our trawler nets, not to mention our lamb and the lorry blockade, this month's reviews are dominated by French music, from the Seventeenth century to the Twentieth. We're even including a little French haute cuisine, courtesy of Keith Floyd. Just one little fly in the proverbial: perhaps the best-known 'French' tune among these recordings was written by a German (I'll leave you to discover which one). There are also two very fine symphonies, both composed in Russia yet worlds apart musically and intellectually. And there's some uncommon Mozart: not the music so much as the performers.

Peter Herring

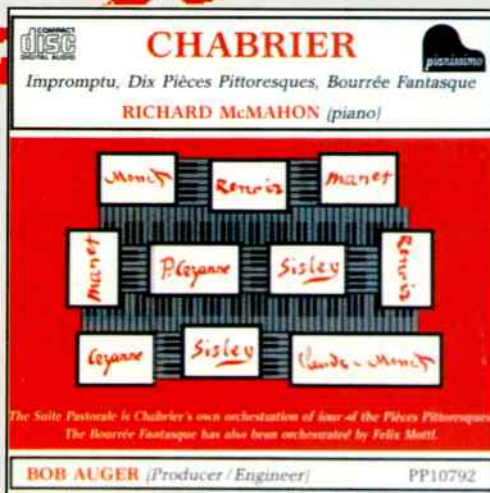
successful voyage through the vast sea of piano music (the other, equally enterprising, is of piano sonatas by Carl Maria von Weber). Born in the Auvergne district of France in 1841, Emmanuel Chabrier's composing career was lamentably short. The first eighteen years of his life were spent in the civil service and it was not until 1872 that he wrote anything of any substance, the Impromptu recorded here. Dedicated

to the wife of the painter, Eduard Manet (Chabrier was a great friend of the Impressionists and assembled an enviable collection of their works), there is nothing of the beginner about the piece. Rather, it displays a great deal of ingenuity and a notable appreciation of the subtleties of rhythm and harmony.

However, the key event in Chabrier's development came eight years later, hearing Wagner's Tristan and Isolde at Bayreuth. In 1881, he published the Dix Pieces, his greatest contribution to the literature of the piano and, musically, a work

of exceptional variety and originality. It has its roots in the world of Couperin and Rameau, but is far from mere pastiche, owing more to Chabrier's own legendary improvisations. Here, Chabrier was able to successfully interweave all manner of moods, from the delicate charm of the Idyll to the cheery vigour of the Danse Villageoise. His most brilliant piano work - in terms of sheer bravura - remains the Bouree Fantastique which concludes Richard McMahon's programme. The work became so popular it was later orchestrated by the composer's friend, Felix Mottl.

Beautifully and thoughtfully played by McMahon, this recording is actually ten years old. Engineered by Bob Auger in the Concert Hall of the University of Wales in Cardiff in 1982, its original incarnation was on LP on the Oriana label. With so little of Chabrier's piano music in the catalogue, let alone as well played and recorded as this, its reappearance is both overdue and welcome.



EMMANUEL CHABRIER
Impromptu/Dix Pieces
Pittoresques/Bouree
Fantastique
 Richard McMahon, piano
PIANISSIMO PPI10792 (DDD/51.43)

● Launched in May, the Pianissimo label - as you might deduce - is to be devoted to the piano repertoire, which is hardly limiting its scope. As with many Classical labels, it will be offering all-digital recordings on Compact Disc only, but Pianissimo also promises unusual and even otherwise unavailable repertoire, and is looking to introduce young artists to a wider audience. It also matches artists with repertoire which, given some of the ill-judged partnerships between composer and performer that appear, seems a wholly laudable aim. Looking ahead, we are promised two discs of piano duets: Martin Jones and Richard McMahon in Grainger (including the Fantasy on Porgy and Bess and A Lincolnshire Posy) and Arthur Benjamin; and a recital by Claire and Antoinette Cann featuring Brahms, Saint Saens, Tchaikovsky, Debussy, MacDowell and Liszt. Next year will see another disc from the Cann sisters (Ravel, Shostakovich and Poulenc among the composers featured) and solo recitals of Franck, Saint Saens, Scriabin, Kabalevsky, Tchaikovsky, Dohnanyi and - particularly interesting - John McCabe playing his own works for piano.

This Chabrier recital is one of two CDs which hopefully will embark the Pianissimo label on a



REINHOLD GLIERE
Symphony No3 in B minor
Op42 Ilya Muromets
 BBC Philharmonic Orchestra;
 conductor, Sir Edward Downes
CHANDOS CHAN9041 (DDD/78.08)

● This late flowering of Russian romanticism (the work was premiered in 1912) is a modest little symphony - just fourfold woodwind, eight horns, five trumpets and a glittering battery of percussion. Put like that it sounds - well - inflated to say the least, a little like over-the-top Liszt, if you can imagine such a thing. And the programme music of Liszt was certainly the inspiration, but Gliere's gift for scoring and for orchestral colour produces a work where there is seldom any hint of excess and where the many fine melodies are allowed to shine through. Here, you feel, the influence of Rimsky-Korsakov made a telling contribution.

Like other Russian composers who lived through the Stalin era, Reinhold Gliere produced his quota of tubthumping Socialist realism, but his ballets, *The Red Poppy* and *The Bronze Horseman*, evidence a greater talent and this symphony, with its roots in a primeval folklore akin to Wagner's *Niebelungen*, is a total triumph.

In the hero figure of Ilya Muromets, we have the Russian equivalent of Achilles, or Odysseus (or even, perhaps, Siegfried). The music is on a suitably epic scale to embrace the thunderous collision between the old powers and the new, the heavenly forces which act as a metaphor for the victory of Holy Russia. The programme, which begins with Ilya Muromets stirred into action after thirty years of motionless inactivity, ends with him again motionless, this time turned to stone after his defeat in the last, great battle. It is worth being familiar with the programme, but a detailed knowledge is unnecessary to appreciate this gloriously uninhibited, full-blooded, but also frequently lyrical and noble music.

The Chandos engineers turn in a splendid sound from the concert hall in New Broadcasting House, Manchester, and the BBC Philharmonic yet again demonstrates what an outstanding orchestra it is. Sir Edward Downes, a conductor I wouldn't normally associate with this repertoire, directs with a combination of passion, intensity and authority that would not be amiss in St Petersburg or Moscow. A spectacular recording of some quite spectacular music.

MARIN MARAIS
Pieces en Trio - Three Suites/
La Reveuse/Le Badinage
 Ensemble Fitzwilliam
VALOIS/AUIDIS V4638 (DDD/65.54)

● Neglected, yes; unjustly so? That's more debatable. Marin Marais was born in Paris in 1656. His uncle, Louis Marais, was a cleric at the church of Saint Germain l'Auxerrois and it was mainly

RECORD OF THE MONTH

"It's about Stalin and the Stalin years," was Shostakovich's description of his Tenth and, arguably, greatest symphony. At least, that was the sentiment he expressed to the writer, Solomon Volkov, whose book 'Testimony' - a series of conversations with the composer published after his death in 1975 - remains the subject of much debate.

The musical and historical evidence suggests that this may well have been Shostakovich's motive for the work. In 1946, his response to the end of the Second World War (or the Great Patriotic War, as it was called in the Soviet Union) was his Ninth Symphony, a work more of joy and relief than a hymn to victory. Within months, along with Prokofiev and Myaskovsky, Shostakovich was singled out for venomous 'artistic' criticism by Stalin's appointed cultural apparatchik, Zhdanov. For seven years, Shostakovich wrote no further symphonies. Indeed, he wrote little 'public' music at all.

With Stalin's death in March 1953, it can be safely assumed that Shostakovich at last felt able to express the feelings that had been suppressed for those seven years, and conceivably more. He began work on the Tenth Symphony in the summer of that year and completed it in the October. The first performance was conducted by Yevgeny Mravinsky with the Leningrad Philharmonic Orchestra on December 17, 1953.

As with so much of Shostakovich's music, the Tenth is far from straightforward. Its finale has the hollow, bogus jollity shot through with black irony characteristic of the Fifth Symphony. The second movement unquestionably suggests a kind of evil mayhem and indiscriminate brutality. It may well be, as some have suggested, a musical portrait of Stalin himself. There is the mounting tension of the first movement, almost unbearable at its searing climax, and the sardonic humour of the third. And, perhaps most telling yet ambiguous of all, there is Shostakovich's use of the four-note motif derived from his own name: DSCHE. It was not the first or last time he was to use this musical device but its relevance in the context of the Tenth remains open to interpretation.

It would be wrong, however, to suggest the Tenth Symphony is impenetrable; it is far from that. Its impact will be felt upon the very first hearing; further playings will enhance that impact and reveal more of the layers of this work, one where you feel every phrase is making a statement, however veiled, however elliptical.

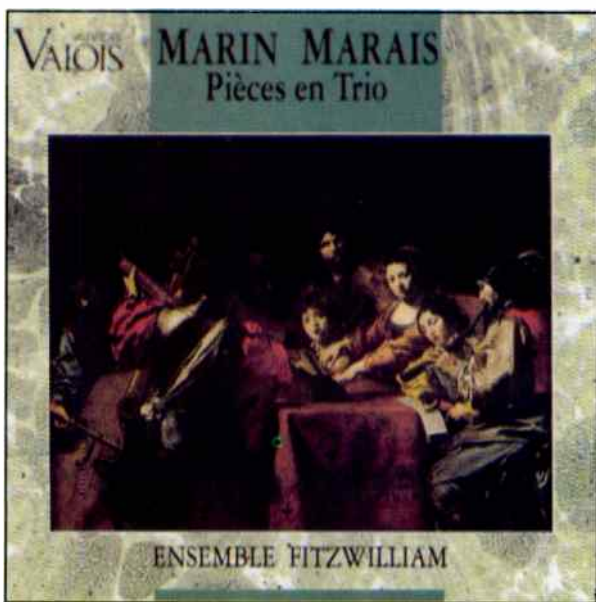
From the pioneering recording by Dmitri Mitropoulos, Shostakovich's Tenth Symphony has benefitted from some superlative interpretations. This new recording by Eliahu Inbal and the Vienna Symphony Orchestra now joins a distinguished list.

DMITRI
SHOSTAKOVICH
Symphony No10 in
E minor Op93
 Vienna Symphony
 Orchestra; conductor,
 Eliahu Inbal
DENON CO-79474
(DDD/56.18)

★ Eliahu Inbal has come to Shostakovich after a series of memorable recordings for Denon of Mahler, Bruckner, Berlioz and Ravel and has brought with him the understanding and judgement which characterized so many of those earlier performances. This is an interpretation that builds inexorably and compellingly, and with no small measure of authority. Tension is sustained throughout the long opening movement and there is much fine playing from the VSO's woodwinds and brass as this uncompromising music unfolds. In the second movement, Inbal controls the explosion of naked aggression, emphasizing the detail without losing the necessary demonic quality. He is even more successful in pointing the bitter, weary humour of the third movement, with its telling shifts from deceptive lightness to ominous darkness. The conclusion is especially effective as the rustic dance becomes something altogether more barbaric. As might be expected from Inbal, the Mahler-like qualities of this score are highlighted, the irony, the fusion of the banal with the tragic, the search for some kind of inner resolution. Shostakovich admired Mahler and the latter would no doubt have appreciated the complex emotions and subtle mockery of the finale.

Recorded in Vienna's Konzerthaus, Inbal's illuminating performance benefits from an equally illuminating sound quality. Refined, atmospheric and well-balanced, with the orchestral detail and timbre nicely caught, this is a sonic presentation to match the qualities of the interpretation. There are full marks, too, for the general presentation: the disc is lavishly indexed on the basis of a structural analysis of the symphony by music critic David Fanning, and Yasuhiko Mori's written interpretation of the music is as cogent as Eliahu Inbal's musical one.





thanks to that connection that Marin Marais became a chorister there in 1667. However, his ambition was to become a viola da gamba player and he studied the instrument with the finest virtuoso of the period, Saint-Colombe. At the age of twenty, he was recruited into the orchestra of the Academie Royale de Music which, at the time, was under the direction of the composer, Jean-Baptiste Lully. Lully was to be an important influence on Marais' career and three years later, in 1679, he became a musician at the royal court of France. Later, he became the director of the Paris Opera orchestra. His forty-year career also embraced teaching and he made a modest contribution to French music, with numerous vocal and instrumental works and four operas. He died on August 15, 1728.

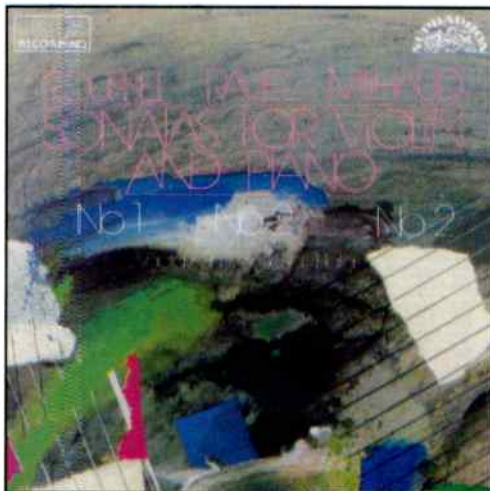
The three main works recorded here are dance suites - in other words, entertainment music. They have charm, delicacy, elegance and, when demanded, a certain robustness, but, for me, they rarely ascend above the ordinary. But then, this music was never intended for analytical listening. Thoughtful, scrupulous, but too often rather pedestrian playing also means the music doesn't entirely work as background music.

I was much more enchanted by the two solos for theorbo (a form of lute) which punctuate the suites. La Reveuse, which is taken from another suite entitled D'un Gout Etranger (Foreign Taste) is especially haunting and beautifully played by Pascal Monteilhet. Overall, though, I would have to conclude on the evidence of this recording that the music of Marin Marais deserves to remain a speciality taste. Unless there are greater riches to explore, the neglect in this case may not be altogether misplaced.

**DARIUS MILHAUD
Violin Sonata No2 Op40
MAURICE RAVEL
Violin Sonata No2 in G Major
ALBERT ROUSSEL
Violin Sonata Nol in D minor
Op11**

Vaclav Snitil, violin; Josef Hala, piano
SUPRAPHON 11 0103-2 (DDD/65.55)

● Two things are immediately striking about this recording: the freshness and vitality of the playing and the presence and finely-chiselled clarity of the recording. The balance is particularly good: in the Ravel, for example, the violin interacts with the delicate figurations on the piano rather than swamping them - a perfect example of how good recording can enhance the appreciation of a composer's intentions. The Ravel is unquestionably the



finest piece here, the originality of its ideas and sonorities only leaving the listener wondering why Ravel limited his output of chamber works to just seven. The Czech duo of Snitil and Hala are completely at home in the special idiom of this sonata, with its unmistakable jazz echoes and the result has both finesse and fantasy; many moments are also revelatory.

Roussel's First Violin Sonata of 1907-8 is less inclined to leap over the classical boundaries but is no less enjoyable for that, while the Milhaud also has its American influences, this time from the south of the continent. Although he was one of the most prolific composers of the Twentieth Century, with some seven hundred works credited to him, Darius Milhaud was by profession a member of the French diplomatic service. During the First World War, he enjoyed the good fortune of being posted to Rio de Janeiro and it was there that he became entranced by Brazilian folklore and music. The sonata dates from that period.

These are three very different, very enjoyable examples of French chamber

music, engagingly played and satisfyingly recorded. No more can be asked - or is needed.

**WOLFGANG AMADEUS
MOZART
Flute Concerto Nol in G
Major K313/Oboe Concerto
in C Major K314/Clarinet
Concerto in A Major K622**

Philippa Davies, flute; Celia Nicklin, oboe; Angela Malsbury, clarinet; London Mozart Players; conductor, Jane Glover
ASV CD DCA795 (DDD/74.40)

● Notice anything special about this recording? It is, I would venture, something of a first: all three soloists are female, and so is the conductor. Regardless of the sex of the participants, however, it is a very generous coupling of three of the popular Mozart wind concertos, including the towering masterpiece of the Clarinet Concerto, Mozart's last completed composition (as far as we can judge - a full autograph score has never come to light). Mozart's love of the clarinet is evident in every bar here; yet his equal dislike of the flute ("an instrument I cannot bear") could never be guessed from the delicious simplicity and charm of the G Major Concerto. The work was written - grudgingly it would seem - to a commission from a wealthy Dutch amateur, a Mr De Jean (or De Jong) and he got something of a poor deal, for the second of his concertos was no more than a transcription of the Oboe Concerto K314. De Jean apparently got his revenge by paying Mozart only half the agreed fee.

It is the original form of K314 which is recorded here, as composed for the Italian-born principal oboe of the Archbishop of Salzburg's orchestra. Mozart was just twenty-one when he wrote this delightful work and in a quite different frame of mind from fourteen years later when called upon to write a Clarinet Concerto for the virtuoso, Anton Stadler. Yet the music from his despairing last months radiates from the same cloudless skies and the slow movement of K622 is surely one of the most purely beautiful and disarming pieces of music ever composed.

The performances here are uni-



formly fluent and stylish, as is the orchestral playing under the flowing guidance of Jane Glover. Indeed, the soloists exemplify the depth of talent currently enlivening the British musical scene. Philippa Davies is principal flautist with the London Mozart Players and a professor at the Guildhall School of Music. Works have been written for her by Sir Peter Maxwell Davies, Robert Saxton and Jonathan Harvey. Celia Nicklin has been principal oboe of the National Youth Orchestra, then of the City of Birmingham Symphony Orchestra and of the Academy of St Martin-in-the-Fields. She has been a principal with the LMP since 1983.

Finally, there's Angela Malsbury whose list of playing commitments leaves me exhausted just reading it: a member of the Albion and Primavera Ensembles; of the De Saran Clarinet Trio and the London Winds, and of the Musicians of the Royal Exchange. Somehow she also finds time to duet with her husband and give master classes, as well as play with the LMP and teach at the Royal Academy of Music. She has been the recipient of compositions by Paul Patterson, Wilfred Josephs, Gordon Crosse, Derek Bourgeois and Simon Bainbridge. In assessing the achievement of all three on this ASV issue, one can but say, well done ladies. For anyone wanting these three concertos - and not concerned about obtaining authentic instrument versions - this disc strikes me as an ideal choice.



**JACQUES OFFENBACH
(arranged Rosenthal)
Gaité parisienne/Les belles
americaines/Genevieve de
Brabant - galop
JACQUES IBERT
Divertissement for small
orchestra**

Cincinnati Pops Orchestra; conductor,
Erich Kunzel
TELARC CD-80294 (DDD/65.53)

● There's something ironic about the fact that the composer of what has almost become a second French national anthem, the Cancan, was born in Germany. Jacob (later Jacques) Offenbach, dubbed by no less than Rossini as the 'Mozart of the Champs-

Elysees', was originally a virtuoso cellist touring with no less than Liszt and Mendelssohn. After a succession of his stage works were turned down, Offenbach resorted to becoming his own impresario. He leased and renovated a theatre on the Champs-Elysees and staged a series of one-act comic musical sketches in the summer of 1855. In the process, he not only found himself the toast of Paris, but the creator of a new genre - the opera bouffe - which, exported across the Atlantic, became the basis of the Broadway musical.

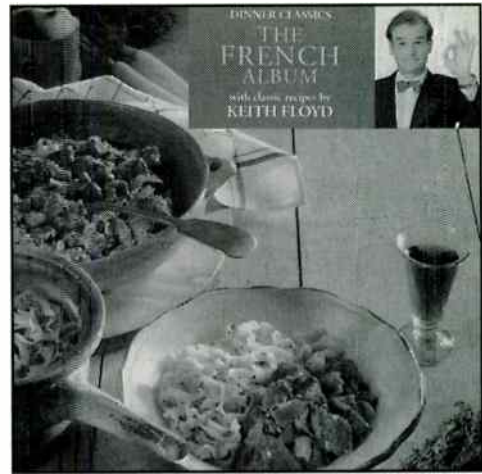
Opera bouffe was a mixture of catchy tunes and pure burlesque, its irreverence in sharp contrast to the pretensions of grand opera. Beginning with Orpheus in the Underworld, Offenbach enjoyed fifteen glittering years of success before the Franco-Prussian war of 1870 brought a more sombre mood to the French capital. The choicest 'bon bons' of his music can best be enjoyed in the forty-minute suite deftly assembled by the composer/conductor, Manuel Rosenthal, and entitled *Gaité Parisienne*. It is the main work here, played with predictable wit and sparkle by the Cincinnati orchestra and vividly recorded. It is augmented by the delightful waltz sequence which Offenbach wrote after a highly-successful concert tour of the United States, *Les Belles Americaines*, and by the Galop from *Genevieve de Brabant*, one of the less successful of his opera bouffes, largely because of its rambling libretto. The keen-eared will spot in the Galop a theme which later became the basis of the familiar march tune of the US Marines, thus forging an unlikely marriage with a medieval French - female - saint.

This French frolic from Telarc is rounded off very appropriately with an exhilarating performance of one of the wittiest pieces of music composed this century, Ibert's glorious send-up of things musical, the *Divertissement* of 1930. Replete with quotations of other composers - including

a metamorphosis that transforms Mendelssohn's Wedding March into ragtime - and bizarre instruments, the joke extends right to a finale of magnificent, raspberry-blowing vulgarity. All good, clean fun, as they say.

**DINNER CLASSICS - THE
FRENCH ALBUM
Various artists
SONY CLASSICAL CD45543
(ADD/68.40)**

● If you thought that ways of repackaging back catalogue had been not just fully explored but exhausted, you have reckoned without the ingenuity of the marketing people at Sony Classical. They have come up with



'music to dine by', with the musical sleeve-note replaced by recipes. They tell me the idea has sold very well in the United States, so now it's our turn. In *The French Album*, which was supplied as the 'taster' for the series (bit of a pun, there), you can listen to music by Debussy, Ravel, Faure, Delibes, Gounod, Berlioz, Offenbach, Satie and Respighi, who was Italian, but the excerpt from 'The Birds' does have French origins. And while the likes of the Cleveland, Philadelphia, Royal Philharmonic and Philharmonia Orchestras play you can tuck into a menu of vegetable terrine, daube a la Provençale with noodles and rich Lorraine chocolate cake devised by television presenter and bon viveur, Keith Floyd.

Mock not, as the late lamented Francis Howard would say. How often have you anguished over which music to play as background at a dinner party? Now the problem's solved - and at mid-price, too. There's an Italian album (Puccini, Mascagni, Verdi, etcetera); a Japanese selection, with the likes of Yo Yo Ma, Jean-Pierre Rampal and Isaac Stern interpreting traditional Japanese themes in arrangements for flute, violin and cello; a 'romantic collection'; an album of Viennese 'bon bons'; and, for Sunday brunch, a programme of what are described as 'bright Baroque favourites'.

With orchestras of the calibre of those listed above, and conductors such as Eugene Ormandy, George Szell, Andrew Davis and - most appropriately, given the 'hook' for the series - Charles Munch, you would expect the performances to be generally good and they are, as is the production, which draws on CBS masters from, I would guess, the Sixties and Seventies.

It's a fun idea and, frankly, pieces such as Debussy's *Clair de Lune* and *Girl with the Flaxen Hair*, Ravel's *Pavane* and Satie's *Gymnopédies* have already been so ruthlessly exploited in television commercials and theme tunes, I can't see it matters if they now unashamedly become background music. I trust, though, that the planners of the series are now compiling Chinese, Indian and, one hopes, 'Roast Beef' albums. If nothing else, they have to be a dam sight better than the background music played in most restaurants. Bon appetit!

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Classical

We're often asked what we think of 'audiophile' recordings; this month, the Music Editor looks at two recent releases. One is from a major company who have combined twenty-bit recording and valves; the second from avowedly audiophile label Reference Recordings.

SONY CLASSICAL GO 20-BIT - AND VALVE

An insight into Sony Classical's recording techniques has wafted our way from across the Pond. Christian Constantinov, Vice President of Audio Operations in New York, has announced that Sony have developed a 20-bit recording process. It allows them, he says, "to extract the fullest amount of sonic information from a classical session - up to sixteen times more data than that generated by conventional 16-bit recording systems." These, say Sony Classical in the States, seldom offer better than 14- or 15-bit resolution by the time the various recording, editing and mastering processes have been gone through.

Sony are not alone, in fact, because Technics provide a twenty-bit recorder for the recording sessions they sponsor in the U.K., but Sony Classical (nee CBS) are one of the major players. Decca engineers have said for a number of years that they believed Classical recording needed twenty-bit resolution at least; Sony have gone a step further by using twenty-bit throughout the CD-mastering process. Recordings are made on a Sony PCM-

3304 digital reel-to-reel tape deck using quarter-inch tape at 15 inches per second. Editing is performed on a Sonic Solutions editing system which also has 20-bit resolution. The final conversion to the 16-bit CD standard is performed by ultra high-speed custom-built computers using a process Sony call 'SuperBit Mapping.'

In case all this digitisation turns people off, valves get a look-in on Sony Classical recording sessions! The signal from the microphones is amplified by Jensen or custom-designed valve amplifiers before it passes directly to the analogue-to-digital converters and the digital recorder.

Decca, the doyens of purist recording for many years, have also infiltrated Sony's recording techniques. The Japanese-American company now use a modified 'Decca Tree' which is basically two microphones aligned to cover left and right portions of the stage, with a third placed centrally. If all three are used, Sony say the two-channel stereo mix is produced through a simple high-quality passive mixer, introducing no additional electronic processing.



**MUSSORGSKY
Pictures at an Exhibition
STRAVINSKY
Trois Mouvements de
Petrouchka
TCHAIKOVSKY
Dumka**

Yefim Bronfman, piano
SONY CLASSICAL SK 46481

● Following rapidly on from the Press Release came this Sony Classical 20-bit piano recording.

What of the sound? It is certainly impressive. Extremely realistic in tone - a rare achievement in piano recordings, which are notably tricky to bring off - it is clear, clean and well-balanced in sound. In terms of recording quality, it sparkles with clarity, a very wide, appropriate dynamic range and a

notably quiet background.

This new recording is well up in the ranks of the very best, alongside DG's digital (but not 20-bit) Chopin Nocturnes by Barenboim for example. Sony's combination of valve and 20-bit reel-to-reel has produced a splendidly vivid concert grand. It's fairly close-miked, and therefore for some tastes somewhat over-wide, something very much dependent on whether the listener's own preferences are for being ten feet from a piano or twenty. It therefore requires a commensurately high volume for full potential realism, or it will sound rather flat.

Bronfman is a name new to me. I heard Pollini playing the Stravinsky work last year, to considerable applause, and my reference recording is, in fact, his performance on Deutsche Grammophon - an analogue recording. While splendid, this new DG issue is notably thick in texture by comparison. While Bronfman plays with great technical expertise and flair - being wholly admirable in this respect, even stunningly virtuosic - his interpretation leans more to the emphatic rhythms of Stravinsky's *The Rite of Spring* than the more childlike magic of the fairground that Pollini infuses into his playing. Pollini strikes me as someone who instils his own vivid memories of childhood carousels and fairground barkers into his wonderfully cohesive and vivid performance. Bronfman is more of a spectator than a participant.

Both the Mussorgsky and Tchaikovsky pieces, performed with equal technical brilliance, come off rather better, the seriously wide dynamic range of the Sony recording aiding the sonorities of *Pictures* particularly, where Bronfman's muscular but well-defined treatment of the score fits superbly.

As is so often the case, I have mixed feelings on this new recording. In terms of sound, Sony have put it at the top of the demonstration list for piano recordings. It will certainly test the capabilities of a system; in performance, though, I would have hoped for more in the way of insight into the scores. A friend who listened to the two Stravinsky recordings with me wouldn't be gainsaid - 20-bit or no (I didn't tell her until afterwards), she insisted on walking off with Pollini. Ah well.



**ARNOLD OVERTURES
Beckus the Dandipratt; The
Smoke; A Sussex Overture;
The Fair Field; Common-
wealth Christmas Overture
London Philharmonic Orchestra,
cond. Malcolm Arnold**

REFERENCE RECORDINGS RR-48CD

● Last year was Malcolm Arnold's seventieth birthday; after years of neglect, he was offered a celebratory concert in London. By comparison with William Walton, film-music composers both, Arnold hasn't received much recognition. I suppose I'm party to this too; like many others, I tend to dismiss his compositions as enjoyable, bubbly, tuneful - but lightweight.

Among the five pieces here (four of which are premiere recordings), the Commonwealth Christmas Overture is perky but insubstantial. A melange of tinselly tunes - it was a BBC commission in 1957 to celebrate the 25th anniversary of the first royal Christmas broadcast - it has a cheerful pastiche of calypsoid (is that the word?) Christmas jollity, with a trumpet refrain which bears more than a passing syncopated resemblance to 'God Save the Queen'. Jokey, and fun, but not to be taken seriously, or twice; a bit too much of 'Friday Night is Music Night' about it.

The other overtures are rather more serious, though I still feel Arnold is liable to escapism rather than development in his compositions. *The Smoke* is a brash cityscape and a nocturne together with a burst of jazz as Arnold prowls the London streets. This is Soho and Covent Garden - when it was still fruit and veg. - rather than Bliss's tourist tour or Elgar's imperial Edwardian pomp. A glorious Cockney celebration but with some dark, sinister undertones.

The short *Sussex Overture* is a Scherzo written for the Brighton Philharmonic Society in 1951. It is a kaleidoscope of colour in its developmental section with some glorious

brass writing in the coda. (Arnold joined the London Philharmonic at 21 as principal trumpet and played with them for seven years before he began composing full-time. It shows.) As conductor, Arnold has such style in his variety of tempi, his subtleness of colour, an amazing grasp of the transition from pp to ff, which all makes this a stunning performance.

All this suffuses *The Fair Field*, superficially rather Waltonian - it was dedicated to him. Yet the apparently simple fairground waltz is transformed by unexpected transitions and antitheses into more than a short display of bravura. Under the gloss, below the accessible surface, there is in Arnold more than simply melodic invention. Outwardly, the music is all bright tunes, chiselled out in orchestration with astonishingly sharp, vivid edges. Inwardly, there is the brooding saturnine underpinning - the sort that had Walton writing *Con Malizia* before a movement. There's evidence of this in *The Smoke* and in the single piece on this recording which has seen the light of the laser before, *Beckus the Dandipratt*.

Completed in 1943 and first performed by Eduard van Beinum - a great proponent of new music in those days - and the LPO in 1947, this is an original scherzo. It's an abandoned, but tightly controlled continuum of themes and motifs which are combined, disrupted, interrupted, separated, re-combined yet it appears to be the series of melodies that structurally it is not. It's a constantly mobile kaleidoscope, comic, mischievous and startling. Arnold was a great admirer of Sibelius and Beckus hardly seems at first to bear any resemblance to a Sibelius symphony, or even to *Finlandia* or *Karelia*. But beneath the brightness there are distinctly darker textures and a disruptiveness that makes this a supremely attractive piece on two levels. Enjoy the tunes, by all means, but also search out the sub-stratum of a darker mind.

Recorded at Watford Town Hall last summer, by 'Prof' Keith O Johnson, the recording quality is high. Arnold uses all the dynamic range of an orchestra available to him as a conductor, and all of it is on the CD. All the bright, clear orchestral textures he delights in are captured to perfection. This is a demonstration recording - and a supremely enjoyable introduction to Arnold's shorter pieces. Under his baton his old orchestra play with great flair and vivacity. This is one 'audiophile' release where the quality of music, music-making and the recording all come together. Full marks too to the booklet, which is extensive and informative, written by producer Christopher Palmer.

Coming soon in the October issue!

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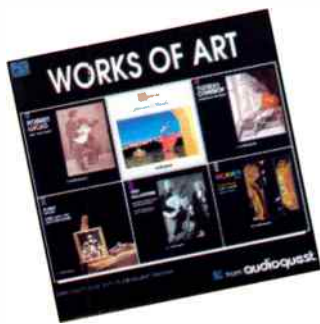
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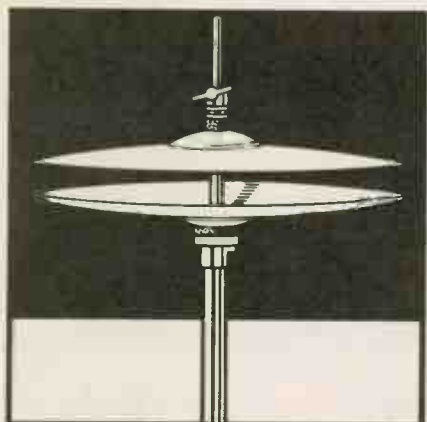
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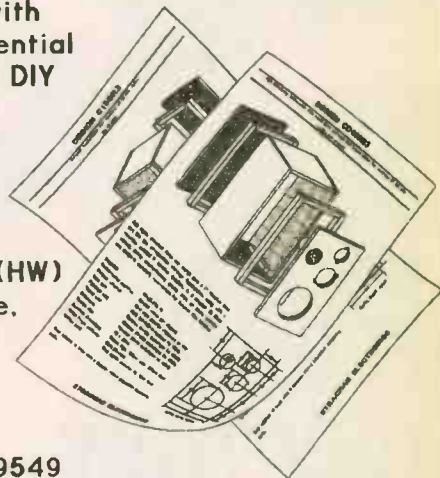
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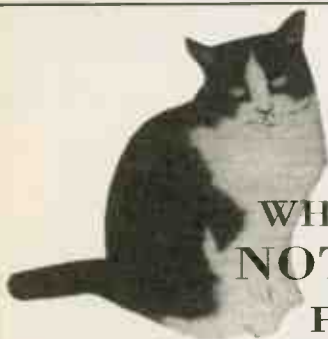
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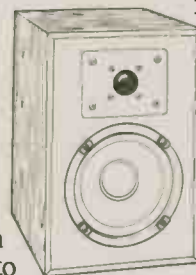
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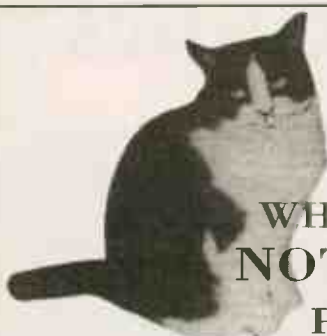
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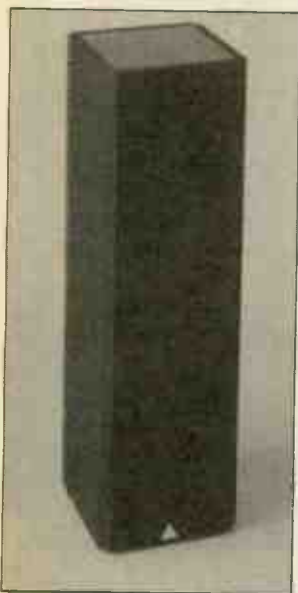
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MAG AUDIO have produced a brand new two-way full ribbon panel speaker based on the magnetatic principal, but by using new technology the cost has been substantially reduced - without changing the quality which will satisfy the most demanding music lover.

MAG AUDIO A90 is able to reproduce the finest details which will disappear in a traditional speaker. This is due to the extreme light weight of the membranes which are driven over the whole area by 184 single magnets. The result is unique low distortion.

MAG AUDIO A90 is built without compromise, from first class components.

MAG AUDIO A90 has been placed in the TOP CLASS by the German hi-fi Magazine HI-FI VISION, which also gave it the verdict "very fast, very understandable and extremely transparent."

MAG AUDIO A90 can be delivered in Mahogany, Ash, Pine, Pear tree or Oak natural or stained. Rare woods are available at extra cost.

For further information contact:

MAG AUDIO UK,
 43 Henniker Point, Leytonstone Road,
 Stratford, London E15 1LG
Tel/Fax: 081-555 1222

WHEN YOU'VE PRODUCED A GOOD REVIEW IT'S GREAT TO GET ONE BACK.

● Splendid! Stunning! Gorgeous! Breathtaking!
Whew – these are killers – KILLERS – K-I-L-L-E-R-S!!!
What more is there to say? I've been more impressed
with the ProAc Response Threes than I've been with
any – *any* – speaker I've ever auditioned!

– Jack English, *Stereophile* Vol. 14 No. 9, September 1991 ●

We'll remain neutral.

Suffice to say that the subject of the review, the Response Three, is our flagship loudspeaker and the culmination of more than twenty years' design experience.

As you can see from the picture, a pair of Threes is a hefty proposition. They stand almost four feet high on their sonic plinths and weigh in at a hefty 100lbs each. And that's before you start tuning the bass with sand or lead shot.

They feature a unique blend of critically positioned drive units fed by an expensive and sophisticated crossover network. Available in a range of beautiful finishes they work best with high quality ancillary equipment. We shall say no more. For the rest, perhaps we should just let Mr. English have the stage:

“**Bass.** The low end of the Threes (once they are properly loaded with sand) is extended, controlled and powerful. I never expected this quantity and quality of bass out of a two-way speaker every note is clear, rich and precise.

Subtle gradations in volume are recreated with aplomb. Nuances, such as fingering and plucking techniques, are admirably real. On more complex material the double basses are dynamic, clear and powerful. On powerhouse rock recording the bass is startlingly visceral, the dance beat unavoidable. In short, the character of bass in the recording is exactly what you'll get.”

The bass/midrange drive units are two 6½" polypropylene models built to ProAc

specifications. With the tweeter they are positioned in a mirror image offset configuration on the front baffles. The review continues

“**Midrange.** Full, rich, lush, musical, involving – in short, lifelike. The midrange suffers not a whit from the bass load on these smallish, doubled-up drivers. The unique sonic signature of every instrument, a result of its own unique mixture of fundamentals and overtones, is simply right (listen to the naturalness of the oboe, the blat of the brass, the

tured exclusively for ProAc. It seems to meet with approval

“**Treble.** ProAc has always impressed me with upper-end performance; the Three is no exception. The top is extended, lightning-fast, and extremely clean. Triangles, a devastating task for most speakers, float effortlessly within the sonic fabric of the music (again, listen to Dukas's playful tone poem). Upper harmonics abound, and there's air aplenty. No, the Threes are neither peaked nor exaggerated in the highs, neither bright nor hard. They're fast and real. If the source has a rough top end, you'll have to live with it. The Threes will reveal all and hide nothing.”

Mr. English is equally enthusiastic on aspects of Soundstaging and Imaging, Inner Detail and Dynamics. But his summary says it all:

“The ProAc Response Threes are marvellous in every regard, and merit audition with speakers at any price. They are without question, the most satisfying audio component I've auditioned in years.

Without doubt the ProAc Response Threes are Stuart Tyler's crowning achievement. They are outstanding in every aspect of sonic performance usually discussed. More important they are unequivocally faithful to the music. *Go hear them now!*”

We couldn't have said it better ourselves.

For a copy of the full review and dealer information, contact us at the address below.



plucked strings from *The Sorcerer's Apprentice*). Or try the richness of voice – the mix of chest and throat, the amount of nasality, are spot on. There's nary a trace of any textural coloration, and never a barrier between you and the performers. The crossover point doesn't seem to exist. No peaks. No dips. No attenuations. No exaggerations. Nothing. Nothing but the music.”

The tweeter is a 1" soft dome with a special coating, once again manufac-

 **ProAc**
Perfectly Natural

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