

# Hi-Fi WORLD

MARCH 1992 £2.00

**FIVE BUDGET  
TUNERS**  
around £100  
compared  
Indoor aerials tested

**SCOOP!**  
**MICROMEGA  
MICRODAC**

**CASTLE CHESTER**  
loudspeaker

**COMPETITION**  
Win an Audiolab  
8000DAC  
CD convertor

**FREE!**

**ALIGNMENT  
PROTRACTOR**  
for your record deck  
and **SME IV**  
reviewed

**LINN KREMLIN**  
tuner - full review  
plus comparison with  
Naim NAT-01

World Radio History



# Naim lift the lid on the next generation of CD players.



## Our new CDS CD player.

Something new from Naim is not to be treated lightly. Least of all by Naim itself.

So when we develop a CD player, it is an event to set the hi-fi world talking.

After all, such a CD player has a lot to live up to. We haven't spent the last twenty years making a name for

ourselves in amplifiers, tuners and tone-arms to just squander our reputation on an upstart CD player.

So a CD player from Naim has to be good.

It has to be so good that people whose opinion we respect say of it:

*"A reference class machine without equal"*

STEFAN SCHICKEDANZ AND STEFAN ZENKER, HI-FI VISION, GERMANY

*"The CDS easily surpassed all that had gone before it"*

MALCOLM STEWARD, HI-FI WORLD

*"A landmark product in the development of the Compact Disc"*

PAUL MESSENGER, HI-FI CHOICE

Enough said? Then talk your way into your nearest Naim dealer and lift the lid on our CDS for yourself.

**Now you know what's in a Naim.**

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

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naim audio





Cover Photograph by  
John Bruce. Tel: 071-625 6056

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Benchmark Press 0442 891151

Distributed by:

COMAG, Tavistock Road, West Drayton, Middlesex, UB7 7QE  
Tel: 0895 444055

Origination by:

Ebony Ltd., Heathlands Rd., Liskeard, Cornwall. Tel: 0579 46880

Printed by:

Southernprint, Poole, Dorset.

HI-FI WORLD

is published monthly on the 2nd Thursday of the month preceding.

**AUDIO PUBLISHING LTD.,**

64 Castellain Road, Maida Vale, London W9 1EX. Tel: 071-289 3533  
Fax: 071-289 5620

Queries cannot be answered by telephone.

**MAIL ORDER**

Tel: 071-266 0461 (24 hours)

Subscription Rates:

UK: £22, Overseas Surface: £29  
Airmail: £42 (Europe & Middle East),  
£52 (USA, Canada & Far East),  
£62 (Australia, Japan & China).

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*No one was ever sorry they bought the best!*





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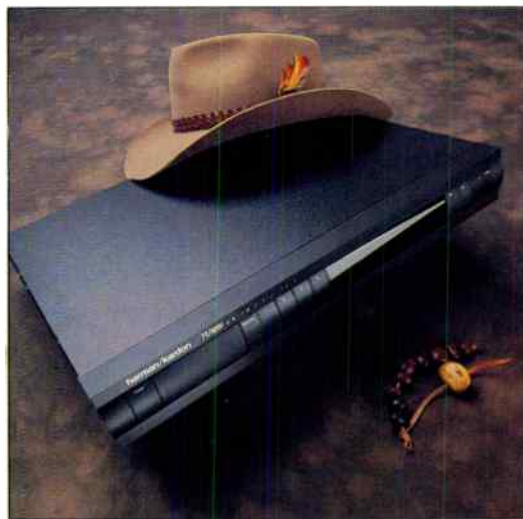
**Hi-Fi World brings you all the latest news from the hi-fi industry**

trade winds  
trade winds

## **HARMAN KARDON TAKE A BOW**

The new entry-level £169 Harman/Kardon TU9200 tuner boasts the same bowed fascia of other recent Harman products. A replacement for the TU909, it has sixteen AM, sixteen FM presets and a signal strength meter. Details from Harman UK (0753) 769111.

H-K have also announced two Compact Disc multi-changers based on the carousel principle, where five discs are loaded in to a circular tray. The TL8500, at £449 and TL8600 at £549 use a PWM (Pulse Width Modulated) DAC similar to that in the HD7500 and HD7600 players, with 35-key wireless remote control, a display which switches off and, in the 8600, motorised output level control. These players, too, sport H-K's new bowed fascia.



winds  
winds  
winds  
winds

## **MOTH CLEAN UP THE RECORD INDUSTRY**

Given such depressing figures from the BPI concerning vinyl, what better way to cheer up your depressed record collection, than to treat them to a wash and brush up. The latest record cleaning machine comes from the Moth Group.

The £299 Moth RCM cleaner is a powered machine, operating as a wet/dry vacuum cleaning system, similar in essence to the well known Keith Monks device. It features a powered turntable, a hand held brush fluid applicator and a drainable internal reservoir. All of this is housed in a metal enclosure. As it is made in the UK, the Moth RCM is only about 60% of the cost of a similar US cleaning machine.



ade winds  
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next month!

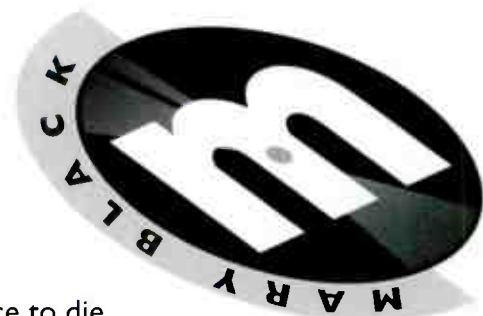
# MARY BLACK

## CD

### MARY BLACK, "A VOICE TO DIE FOR",



*On Compact Disc on the cover of Hi-Fi World April issue*



**I**n her native Ireland Mary Black outsells U2. The New York Times wrote that she had "a voice to die for". Each of the five LPs she has released over the last five years all went gold or platinum.

Babes in the Woods, her latest album, released at the end of last year, is rapidly becoming a reviewer's standard and won Today newspaper's vote for "Album of the Year".

Next month on our cover we are offering a specially compiled Compact Disc to showcase Mary Black's amazing talent.

All the tracks have been selected from her albums by the singer herself. The April issue of Hi-Fi World (on sale 12th March) will give everyone the chance to hear the voice that "has a soulfulness, passion and intensity that's rare." (Malcolm Steward, Hi-Fi World, Dec. 1991).

Mary Black goes on tour nationwide this Spring. Buy the April issue of Hi-Fi World and find out why the New York Post predicts the rising of a new star ●

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## HARROGATE HI-FI FAIR

After a false start - or false re-start - last year, the Harrogate Audio and Video Fair is back. Dates are August 5th to 9th, coinciding with the Harrogate Festival of music. A fair number (sorry!) of Hi-Fi manufacturers, having become weary of living out of suitcases, travelling constantly from one show to another in 1991, recently decided they would offer support to two major shows this year. The September Penta Show, for the South of England, will be one; Harrogate the other, for the North. Supporters of the August affair at Harrogate include U.K. companies like Arcam, Quad (welcome back!), Celestion, Mission, NAD, Heybrook, Roksan, KEF and TGI; Japanese companies Denon, Pioneer and Yamaha will also be there.

## STATESIDE TUBE REACHES SUSSEX

The American Quicksilver range of hand-built valve amplification is being imported into the U.K. again. The line-up includes a pre-amplifier with dual volume controls and three inputs, including a phono stage, at £1,745. A moving-coil step-up transformer is also available at £315. Power amplifiers available are the 90w "Silver Mono" at £2,150 per pair, and two versions of the hard-wired, printed circuit board-less Quicksilver 60w monoblocs. With a three year guarantee (excluding valves) the mono power amplifiers cost £1,845 a pair; in the 8417G output valve version, price is £1,545. Importers are Studio 2000, The Well Cottages, 4 Station View, Wadhurst, East Sussex TN5 6RY. Tel. (0892) 88 4696.

## READY, STEADY, ALMOST GO FOR DCC

The official launch of Philips' Digital Compact Cassette is set for September this year with recorders available in the shops in Europe, the USA and Japan the same month. There should be five hundred pre-recorded DCC tapes on the market at the same time, so new buyers won't be left short the way they were when Laserdisc first turned up on these shores. The first DCC machines will be "high end", with new lower-priced models appearing every few months after September. Midi-system, personal and car DCC players will follow within the year, say Philips. The build-up - lots of publicity on the new medium - begins in April when the first demonstration models will arrive and lucky reviewers and dealers will finally get to play. As the world is flooded with DCC players in September, Philips will be holding a party in Europe, the Dutch company has announced. Wonder who will get to go and wear the party hats?

## SIXTIES SOUND, NINETIES IMAGE

Philips have marked the opening of their CD-I (CD-Interactive) studio at Freeland House in Dorking with a disc of Sixties songs. Just add a CD-I player, and a television, and you can select background film and text along with the music. The Dorking studio has been set up with a computerised 'template' so that producers can mix the images into their own choice of music without too many complications. We couldn't see the pictures, unfortunately, but it all sounds fascinating.

## IN BRIEF

### BARTLETT TIMES TWO

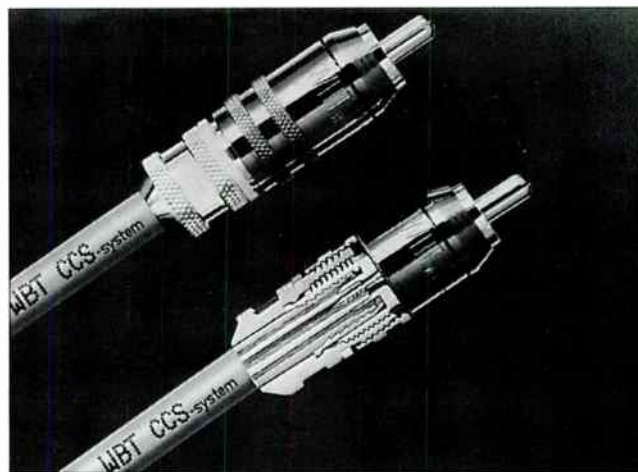
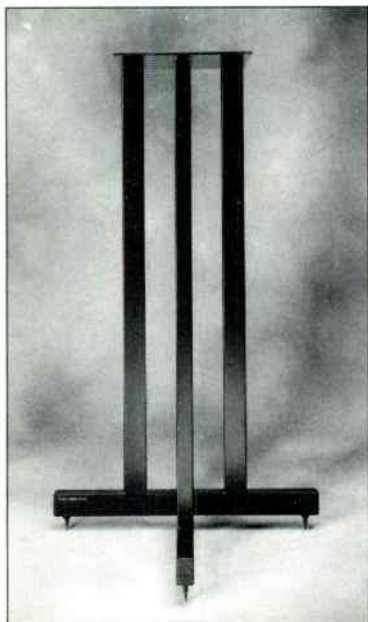
North London retailers Bartlett's Hi-Fi have opened a second branch at 11 Broadway, Woking. The store, complete with two listening rooms, is open six days a week from 9.30 am to 6 pm.

### CUMULATIVE NIMBUS

Nimbus Records are expanding their production operations at Cwmbran in Gwent. Some new buildings, designed by the Company of Designers from Cardiff, will improve their manufacturing efficiency, said Nimbus Director Lyndon Faulkner.

### GOLDRING TAKE A STAND

After the Black Satin loudspeakerstands and equipment supports Goldring launched at the 1991 Penta Show, the company has come up with a pair of open-frame speaker stands at mid-price. The eighteen inch MBS 180 stands cost £47.95 and the MBS 240, six inches higher, costs £49.95. Details from Goldring Products (0284) 701101.



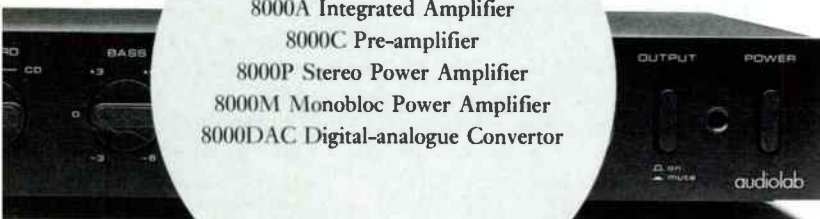
### MAKING CONNECTIONS

WBT of Germany have come up with a phono plug to delight all those who can't use a soldering iron without burning their fingers. The new "CCS-System" phono plugs require no solder. All that you have to do is cut the end off WBT's CCS (or Circular Contact System) cable, push the end into the plug, tighten, and there you have a connection which will withstand 10kg, all done inside twenty seconds. The beautifully-finished plugs are twenty-four carat gold-plated. Contact Absolute Sounds Ltd. on (081) 947 5047.

### NEW DNM CABLE

DNM's solid core loudspeaker cable, unchanged since its 1986 release, has been revamped. Originally, the solid core Rainbow cable had a central feedback return. This return was considered to be too advanced for today's materials and so the central core has been dropped. This has also allowed the two surviving cores of the cable to have a slightly larger cross section than before, also giving them better spacing. The price of the cable still remains low, at around £4.00/metre.

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## GLORIES OF GANDY'S GARDEN

Roy Gandy's Rega Research have been busy creating a new £198 amplifier to bring the cost of a complete Rega record playing system down to £600. The thirty watt Brio offers the same facilities as the Elex in a shorter case.

Rega have also come up with their own speaker cable. It's flat twin cable, made of two sets of 49-strand wires, each with a 2.5mm cross section. Plugless, the price of this clear PVC insulated cable is £1.58. Terminated with Deltron 4mm speaker plugs, a 3m length is £31.28 a pair, 5m £37.60 and 7m £43.92.

The news came along with a story which we couldn't resist:

"Roy, who knows which way is up, pondered the question of directionality for some time. Whilst giving it considerable thought he decided to walk contemplatively around his garden as he struggled with this problem. It was at the bottom of the garden that he came upon a fairy circle . . . Roy, not one to ignore an opportunity, asked for their views on the directionality of Rega cable. They responded that the cable should run so that the "Rega" can be read from the amplifier to the speaker. Roy, however, required a second opinion. Fortuitously a band of elves happened by and they said that was true unless the listening room suffered from the adverse effects of electro pollution. If this was the case, they suggested that only if small pieces of foil were stuck strategically on the cable would it be true. And so, Roy being a believer in fairies, elves, corn circles, fables, pieces of foil, myths and all things unexplained, did announce that the cable should read from the amplifier to the loudspeaker."

After Laserguide (see page 81) and the Green Pen (page 78) we too know which way is up. Or maybe we only think we do!

## DAYLIGHT FLIT

David Roth, the man behind the inimitable Day-Sequerra tuners is to direct American company Acoustic Research's Engineering programme. Roth's company, Davidson-Roth, formed in 1984 to build the Sequerra FM tuner, has been acquired by AR's parent, International Jensen Inc. Manufacture of the Day Sequerra will be relocated at AR's Canton, Massachusetts base. AR, having already taken on Cello, are looking at moving into the high end, with plans to produce a line of reference quality products. We will have to wait until later this year to see the results.

## AIWA AUDIOPHILE

Aiwa have announced a budget amplifier with "audiophile intentions" (pretensions?). The £119.99 XA-003 bears a circuit based on a stripped down version of Aiwa's more expensive designs, offering short circuit paths, direct source switching tone controls, five inputs and heavy duty speaker terminals.

## MUSICAL FIDELITY BREEZE IN

This week's release from Musical Fidelity is set to cause a storm. A fax from their Wembley HQ blew into our offices, announcing the launch of the new Typhoon power amplifier, together with its matching preamp, called The Preamp. Not the Hurricane?

The Preamp, packaged in the style of the existing B1 integrated, is a line level preamplifier. It sports six inputs, together with a tape monitor and switchable tape dubbing. It also features balanced output, coming supplied with two metres of cable, terminated with XLR plugs and sockets. Musical Fidelity's earlier 'The Preamp' helped to establish the M-F name, by virtue of its sound quality, combined with a very low cost. The new Preamp may follow in its namesake's footsteps; it costs just £199.

The 40 watt Typhoon power amplifier also has balanced inputs, together with four pairs of bi-polar transistors and a separate power supply for each channel. The bi-polar devices allow the Typhoon to deliver massive amounts of peak current for its price of £299.

## VINYL FLOORED

More depressing figures for vinyl buyers from the British Phonographic Industry. Deliveries of long-playing black discs to the record retailing trade shrunk from 14% of the total for all formats (in the third quarter of 1990) down to 8% - a cut of nearly half - in the same period in 1991.

Whether it is because people are waiting for the launch of DCC, or they have fewer pounds in their pockets, we can't know, but sales of cassettes have also declined from a 54% slice of the cake to 46%, down by a fifth. CD now takes as much of the market as cassette, going on in leaps and bounds: up from 32% to 46%. The figures, rather than the percentages, make even worse reading. Two and a quarter million LPs sold in the third quarter of 1991 against thirteen and a half million cassettes and Compact Discs.

It's only in the singles market where vinyl doesn't seem to have the same death pallor, but even so, both twelve-inch and seven-inch singles sales have declined, cassette singles doubling and CD singles up by 7%. Singles were doing well, helped apparently by enormous sales for Bryan Adams' "Everything I do."

At whatever speed they revolve, recordings are still a money spinner. BPI Director of Research Peter Scaping reckons that when the figures are all collected for 1991 industry revenue will have gone over £700 million for the first time. Dare we say that we're not surprised? Seen the price of LPs, cassettes and CDs lately? All the same, we heard that pre-Christmas takings in record shops in the South East were down by as much as fifty per cent on previous years. Perhaps this is why W. H. Smith's Our Price chain announced they would no longer sell vinyl when current shop stocks have been sold, expected to be around the end of March.



**ON SAFARI**

In the April 1991 issue Alan Sircorn says he always - when listening - wears cardboard elephant ears. My home made ones are useless, and won't stay on. Where did he get his please? **Major J.E.M. Ruffer, Middlesborough, Cleveland**

There is a very good joke shop in Bristol, which supplied the said ears, along with several other pairs, to tide me over the 1991 Bristol Hi-Fi Show. After all, with such a diversity of products on display at Bristol, a second set of ears can come in handy. Expect to see more elephant ears at this year's Bristol Show. **AS**

**IT'S BETTER - OR IS IT?**

I would like to add my voice to the Vinyl vs. Compact Disc debate. My Rega Planar 2 is the first near-decent player I've ever had. Fitted with a Linn K5 cartridge it sounds as good as my Sony CD player. I don't think either sounds better - just different.

First of all, good recordings on CD aren't in fact as plentiful as I would like. A good example is Blowzabella's Vanilla; a bad example is David Bowie's Heroes. When I bought my Revox B225 CD player years ago, I was expecting to be amazed. I wasn't. Not at all. Mind you, I had an Akai System 7 at the time, but the first CD I bought was the aforementioned Heroes.

I think the CD format still needs work. I mean - look how long vinyl has been about; we are all used to the sound. It's what we expect to hear. The fine, pure sound of CD doesn't have the distortion that you can hear in a vinyl record, and you 'expect' to hear this distortion on CD, giving a feeling of something missing. In a few decades people will be more used to the sound and by then there will be better players.

**W. S. Davis, Bristol**

**JAZZ IT UP**

I enjoy reading your magazine, but feel that your lack of a Jazz/Fusion/Soul section is a glaring omission. If you could find your way to addressing this oversight you are assured of one more subscription.

**G. Goodyear, Bishop's Stortford, Herts.**

Well, hand over the money! Jazz reviews became a regular last month; Soul and Fusion, of course, we review as space is available. **EB**

**FOOLED BY FIGURES**

About sixteen years ago I bought my first hi-fi system on the basis of distortion figures and power handling and so forth. It was all Japanese apart from the speakers, which emanated from Wharfedale. I took advice from those I thought knew best and convinced myself that if the figures said it was better, it must be better.

Five years ago some kind people climbed in uninvited and relocated it for me free of charge, so I approached my friendly insurers and asked them for some money to buy another one. Things having changed somewhat from former times; this time I was told to trust my ears alone and I plumped for a Linn Axis, Arcam Alpha and Linn Index speakers based system. The Axis was subsequently replaced by a second-hand LPI2 with Basik Plus tonearm.

My current system plays music; my former did not. I also tried different cables and supports and found they did make a difference. It's not so much when you put a better cable in you hear anything, but you realise something is missing when you take it out.

Do I trust my ears or shall I go back to trusting facts and figures?

I had hoped that these people had all retired into obscurity. They have forgotten something about human beings that is absolutely fundamental: reason and logic may be objective, but may be based on false premises. Art and our senses are subjective. Writing music may be objective, but interpreting it and listening to it is subjective. Merely playing all the notes in the right order does not make a good musician. Neither does it make a great amplifier or system.

My tastes and expectations are part of what I am. If those have prejudiced my view of the equipment I settled on, so be it. They suit my ears and that's fine by me. If we were all the same what kind of world would it be? It certainly wouldn't be a Hi-Fi World!

**A. R. Nicholls, Birmingham**

Performance figures say more about competence of engineering than about fidelity of sound. It always was - and still is - misleading to suggest that the measurements commonly made correlate well with sound quality. A few do; most don't. At present, we still do not understand the mechanisms of human cognition, but research

is beginning to suggest that it is highly complex, being crude in some areas but acute in others. Were we to know how the ear/brain mechanism gathers information in the time domain and processes it, then we might better understand how to structure measurements that addressed the parameters that are subjectively important. We are nowhere near to this at present.

Until we reach a better understanding, the measurements we do make need careful interpretation. They are useful, I believe essential, but at present only a few can be related directly to perceived sound quality. In the meantime, there's no substitute to listening. **NK**

**VALVE DECODER**

Right. I've got my Leak Troughline (Mk II and mono). What I want to know now is when Tim de Paravicini is going to bring out his valve stereo decoder? And will I be able to get one for a tenner? Incidentally, how many valves will it actually take to carry out the task of decoding? When IC decoders were relatively new, I remember reading that for valves to perform the same function it would take a boatload of them.

Do you have any knowledge of the TDA 1005 stereo decoder IC? I've just bought a surplus circuit board containing one. It's a sixteen-pin device as opposed to the fourteen pins of the MC1310P and there's a wick of presets in the circuit. I haven't built a power supply to try it yet. Do Naim use the standard MC1310P?

Despite being just mono, I use the Leak in place of an elderly Cambridge T55. The difference between the two is quite marked, with the Leak sounding more natural and having much greater alacrity. I listen quite often to tape using an excellent Technics RS-B605 and since turning to the Leak I now find the sound from the tape a bit compressed with noticeable overhang in the bass.

If anyone who sees a newer unit at a bargain price I would advise them to buy it. At some point I would like to help out with a decoder for these units as it seems such a shame for them to end up on the scrap-heap.

Finally, is there any chance that you might consider offering a "Sales and Wants" section in the back of your excellent magazine?

**Stephen Furley, Stanley, Co. Durham**

I spoke to Tim de Paravicini. The valve decoder is on the way - expect to see more details about it in a forthcoming issue. He says it will have no more than four valves, probably double triodes, and that it will use sum and difference principles, rather than switching, as used in the Motorola MC1310P you mention. He also hopes to make it available built and in kit form. Nothing like this costs 'a tenner' these days; around £60 was thought likely for the kit and £100 for the built up version, which is good value.

Tim also says he is likely to produce an extra RF stage to improve sensitivity, since at present the Troughline is incredibly insensitive, meaning it needs an unusually strong aerial signal of at least 5mV.

Linear data books are the best place for details on dedicated decoder ICs, or manufacturers' data sheets. Both decoders you mention are available from companies like Cricklewood Electronics (tel: 081 452 0161/450 0995) and Maplin Electronics (0702 552911), from whom we often get parts. **NK**

**CHATEAU LATOUR**

Thank you for your temperate response to my letter about subjectivity in the December issue of Hi-Fi World. I accept that people such as yourself have listened to a great deal more kit than I have and this is bound to make a difference. You may well have a better ear than I do; certainly one accepts this to be true of people such as professional musicians. I understand your reference to wine tasting and the use of a specialised vocabulary and I recognise the difficulties which must arise in writing for an audience whose antipodes are let us say, myself on the one hand and sophisticates like yourself on the other.

Now in the matter of wine, I was given last year a couple of bottles of '59 Chateau Latour and two of Chateau Haut-Brion '59, which I duly drank after carefully decanting (you are not obliged to believe this but it is true). At circa £200 plus per bottle friends said I should sell 'em. These certainly were sumptuous wines and they are a notch up from the '85 Chateau Barreyres (a cru bourgeois) at £4.50 a bottle in 1988, but £200 a bottle? It is as I have long suspected, a classic case of the King's new clothes: nobody can see/taste/hear it, and nobody wants to own up.

**Mike Muse, Leicester**



I'm afraid that I cannot comment on the quality of a wine such as Chateau Latour, as I have never had the opportunity to try it. Could you fax me a glass?

I agree, however, that there is a certain amount of hype and mystique surrounding luxury products, be they bottles of wine, cars or hi-fi. Taking these products at face value, an Aston Martin Virage, at £132,775 is not worth over twenty seven times the cost of a Skoda, but few people dream of owning a Skoda! **AS**

**ONCE MORE AROUND THE HORN**

I was surprised that you have not published any comments from those who have built the small horn loudspeakers for which you sold kits. I gather that you ran into difficulty getting the cabinets manufactured in flat-pack form at a price you thought your readers would be prepared to pay and I think I had the last of your No 2 kits. I shall always be grateful to you.

For years I had been using a fine pair of speakers (Hughes and Gaynor Monitors) which I built to a design published in Hi-Fi Answers in or about 1979 - a three-unit effort using the beautiful old modified Peerless 40 mid-range units. When I saw your advertisement for the horn speakers I realised that for so modest an outlay as £189.75 I just couldn't go wrong in making up a pair. Indeed I was astonished that you were a little apologetic about the price which you explained resulted from the desirability of using the high quality dedicated units provided by Mordaunt Short.

I first realised just how good they are when I heard Elgar's Gerontius broadcast on the first night of the Proms. How well they all came through: the soloists, the orchestra, the large choir and the organ. I had never before heard such glorious reproduction. Of course, they are not perfect, though some friends tell me they find it almost impossible to fault them.

The only really first class speakers with which I have been able to compare them are another friend's Quad ESL's. When he first heard them he said "Just like electrostatics, but with a far deeper bass." Well, of course, prolonged listening satisfies one the Quads are purer and more accurate in the mid-range but your horn speakers aren't very inferior to them. You rightly say that they give a smooth and graceful delivery of the mid and upper registers, but



surely their real glory lies in the speed, smoothness and depth of the bass. Mind you, to reduce the bass volume to a level suitable for classical music I had to use all the artificial wool provided - and some old socks as well. At one stage I tried cushions stuffed into the horns!

But, you see, here we are, comparing them with ones costing ten times as much. I don't know with what they really compare, but I'm sure I'd prefer them to some of these enormously expensive alloy-covered efforts which are so critical of their amplifiers and can be so shrill. I'm sure your speakers would do anyone proud coupled with, say, the new budget-priced Arcam Alpha amplifier at £200, a CD player from the same stable and a good but cheap tuner such as the Denon TU-717: a complete system leaving quite a bit of change out of £1000 and which would give great joy for years.

I must add that over twenty friends have heard your horn speakers, all of them classical music lovers with their own systems, and I think they've all felt that they were listening to reproduction of a pretty high order.

I hope, therefore, for the benefit of those to whom you have not been able to provide a kit of parts you will re-issue them, if necessary at a higher price. They'd still be in for the best bargain of their lives.

**C. G. Churcher, Southampton**

**Thank you very much for your kind comments. The company making them closed down and it proved impossible to find another that could supply at similar cost. This altered the**

**value-for-money balance to a point where we became uncertain about it, bearing in mind that a kit loudspeaker should rival commercial designs costing much more. NK**

**WORD PLAY**

Wadia know! Old Smiffie, W.H. to us, has chucked out the LP. I knew it was coming, Technics making it cheaper to make a CD. Audiophiles can be seen down by the old Woodside bemoaning the bits and chips, and North of the Border it's "Akai the new". Not to worry, they say Micro Seiki in this week's arm wrestling on cable. A couple of years or so ago, to own a CD Player meant one had a Pioneering spirit - a Dual personality some said on seeing the little black box sat upon the Teac sideboard. Not so now; it is said that we do not buy as many LPs. Well that is because they are fast disappearing, dictated by the powers that be: we can't buy what we can't get.

Oh worry not, keep yourself Well Tempered, help is on hand. One does not need to go to Rega, nor stay at home and gather the Moths from your wallet. The likes of Linn's ministrations will get you going. Put away your Revolver, do not do anything rash to darken the Voyer. Get up and go together. Demand, cajole or even just ask: we want to keep the LP. Enlist an equipment supporter, get some good leads, go off in search of the system of the LP dream. Once grasped, sit back and Rock with Townshend and Who?

(A tongue in cheek moan at the demise of the LP!)

**Mike Wray, Waterlooville, Hants.**

readers' reply

**Send your letters to:  
Hi-Fi World Letters  
Page, 64 Castellain  
Road, Maida Vale,  
London W9 1EX.**

**HOT DOWN UNDER**

Greetings from Down Under. I have just finished reading the November 1991 issue of Hi-Fi World, and must congratulate you for an excellent journal: anyway a good change from what I have been used to, but it takes so long to arrive!

With regard to your comparative test of the six integrated amplifiers, I think I have a comment or two to make for your reference. I use a Creek 4140S2 and had the opportunity to pit it against a Musical Fidelity A1 two years ago. It was a straight A/B test, driving a tweaked Goodmans Maxim 2/ subwoofer set-up. Both amplifiers exhibited individual approaches, but during the first part of the test the A1 was well trounced by the 4140S2. Sure it had loads of Fidelity but was not at all Musical, lacking in the sort of toe-tapping "involvement" and "presence" of the Creek. It was, of course, due to the amplifier not being hot enough to reach its optimum operating condition; the owner has since adopted the policy of not switching his A1 off at all. It gave him a good place to keep his coffee warm.

Continued on page 77...



The future does not look rosy for the Long Playing record. A walk into your high street 'music' shop will confirm this; row upon row of cassettes, videos and Compact Discs, proudly displayed for all to see, with the LP section tucked away in the corner, almost like the top shelf of a newsagents. Ask the assistants about LP and they'll tell you tales of poor sales and say that nobody's interested in records any more.

Go into a specialist record shop and things are radically different. In these, which cater for the music enthusiast, they say there is still a brisk trade in vinyl, albeit that there has been a major change in the record buyer in the past few years. This



journeys, parents seem more than happy to provide cash for the Game Boy cartridge, while asking the question "Do you really need that Guns 'N' Roses CD?" at the music store.

Thus, the teenage music buyer appears to spend less on his or her music, preferring to have more Game Boy cartridges instead. When they do buy albums, no teenager is going to want to own an old-fashioned record player, when they can get their parents to buy them a ghetto blaster complete with CD for £99, in a colour that matches their £200 Nike Air shoes.

The true music enthusiast, unconcerned with Nintendo or the colour of their equipment, faces a different problem.

One of the vinyl junky's greatest misgivings of recent years has been the poor quality of today's pressings. I strongly believe that if the vinyl LP went upmarket, with better pressings and tighter quality control, similar to the Decca days, then music lovers and audiophiles would be prepared to pay the difference. After all, today there are only three types of people still buying vinyl albums: those who buy one record a decade, those who cannot afford a CD player or a tape recorder and those who refuse to buy CDs because they have a good record player. This last group would accept this price increase if the quality could be maintained.

The LP is refusing to lie down and die. Both CBS Sony Music Entertainment and MCA are rumoured to have had to reopen vinyl pressing plants in the U.S. in the wake of public pressure. The BPI suggest that LP sales are down to a mere eight percent, but this is at a time when many music stores only stock the most perfunctory vinyl collection. If there was an eight percent downturn of total music sales in the UK, the main players would be distinctly concerned.

I can see the LP becoming a cause, in a similar fashion to the beer industry in the late 1960's and early 1970's. Traditional brewing techniques were being superseded by methods which allowed beer to be stored and served with ease, as well as making the cost of production far lower. This threatened to put the small brewers out of business. Enter CAMRA, the Campaign for Real Ale, a small pressure group, determined to cause a turnaround and re-establish the better tasting 'real' beer into pubs up and down the land.

Several years later, helped no doubt by the Monty Python team's attack on 'Bleedin' Watneys Red Barrel', CAMRA succeeded, causing the fizzy chemical beer to take an eventual third place, behind real ale and lager, as the British national pastime.

Analogue Addicts are such a pressure group. I'm sure that over the next few years, with more and more people becoming dissatisfied at the lack of choice in the music store, such pressure groups will gain momentum, causing the LP record to maintain its position as the analogue champion in a digital world. The turntable is every bit as valid as the Compact Disc. Why should it be suppressed by the marketing men ●

## Feedback from Alan Sircom

# sircom's circuits

change, which also affects the non-specialist music business, has potentially disturbing ramifications.

In the past, the major record buyers were usually teenagers, who would spend their pocket-money on buying singles and the occasional LP. Fifteen years on, many of these people have slowed down their buying from the fever pitch that often accompanies teenage fads. But they still buy music.

Today's teenager appears to be faced with a different set of priorities. The singles market has effectively died, buried by rising prices and album milking; it was far cheaper to buy Michael Jackson's 'Thriller' album than it was to buy all the single releases from it. With that market's death, the buying public have had to become more canny. Safe recording stars such as New Kids On The Block, (MC) Hammer and the PVWL/Kylie/Danii/Jason/Sonya team, produce mainstream pop that will sell consistently, because of their 'formula' sound; you like one PVWL record, you will like almost all of them.

Ten years ago, no self-respecting thirteen year old would admit to liking old groups like Free or T-Rex, let alone Sixties music. Refresh these records, together with attractive people squeezing into denim, chewing gum or opening bank accounts, and we have a

successful hit. These commercials, designed to appeal to the twenty-to-thirty-somethings with disposable income, have had a knock-on effect in the music business, making the advertising spin-off a healthy and lucrative business.

Why is this a problem? Unfortunately, when the buying public only wants mainstream music, or safe hits from the past, it allows no room for an alternative music to evolve. A lot of the 'classic' music, used in commercials, was anything but mainstream at the time it was released. Some - such as the Rolling Stones' "Gimme Shelter", or anything by The Clash or The Doors - was considered almost subversive compared to the perfect pop records of the day. Why didn't they use Gilbert O'Sullivan's "Alone Again, Naturally" for a Levi's ad, instead of T-Rex's "20th Century Boy"? Or Joe Dolci's "Shaddup Your Face" instead of The Clash's "Should I Stay Or Should I Go?"

With such plastic pop music dominating the charts, and the ever rising cost of buying an album, it is little wonder that the teenager with money to burn now heads for the computer game shop to buy the latest cartridge for his or her Nintendo Game Boy. As these cost about the same as a CD, are nowhere near as noisy as playing music full blast during Eastenders and keep said child occupied on car

Walking into a music store, one sees a vast range of cassettes and CDs; closer inspection shows that, while in some areas the range is well covered, with a good back catalogue, there will be a few recordings that simply do not exist. On the Classical stand, for example, there may be several versions of the 'pop' classics, such as Vivaldi's Four Seasons, or Beethoven's better known symphonies, but it may also be altogether devoid of one of the lesser known composers, even ones as popular as Adolphe Adam or Hummel.

This is where the specialist music shops come in. For the true enthusiast, these shops offer a wider selection of recordings than would be thought possible if you had previously visited high street stores alone. Many of these stores also have a thriving second-hand section. It is here that the rationale behind buying a turntable becomes clear.

Many of the hi-fi manufacturers in this country bemoan that it is now so difficult to obtain vinyl in high street chain shops like Our Price. While this is true, it is also worth pointing out that it is equally as difficult to buy their products from high street shops like Dixons. The world of vinyl has become specialised; record collectors have become more discerning and, I feel, are prepared to pay slightly more for their vinyl recordings - as long as they are of suitable quality.

The nutty side of hi-fi is the fun bit, and I'm sure Tim de Paravicini won't mind if I say that 99% of his projects and ideas have us rolling around the office laughing.

Better still - he's deadly serious!

Only Tim would insist that the Leak Troughline should be fitted with a valve stereo decoder, and only Tim has the knowledge, will and sheer determination to actually build one.

It will join his fabulous but rare EAR valve amplifiers, valve microphones, valve cutting lathes, valve tape recorders and, dare I even mention it, an even bigger collection of solid-state equipment.

For Tim takes the strictly engineering view that if it does the job well in objective terms, then it does the job well. It's just that where normal mortals would recoil, Tim sees no problem.

That's why he's designed a preamplifier with no fewer than fifty two valves in it, a valve amplifier that produces an easy 250watts (EAR 549) and cutting lathe amplifiers that push out even more.

Those with an intimate knowledge of hi-fi might then wonder about a connection with monsters like the Musical Fidelity SA-470 amplifier and - yes - the stamp of Tim de Paravicini is to be found here too.

Who else but Tim would design an amplifier that three men can barely lift, produces 300watts per channel and has power supplies reminiscent of those once used in valve amplifiers, to feed modern transistors (MOSFETs)?

Since we receive a continuous stream of letters from people who have bought/unearthed Leak Troughline tuners, the likely arrival of a valve stereo decoder for it, costing around £60 in kit form and £100 made up, should be great news.

The Troughline was designed at the end of the Fifties, so all the earlier versions were mono. When a stereo decoder was added in the Sixties, it was a solid state unit. Everyone agrees that it gives somewhat hazy stereo by current standards, even though this seems not to affect sound quality much in other ways.

The Leak has other problems any potential owner should know about before making permanent acquaintance. It is extremely insensitive; I was sobered to read a letter the other day where it was assessed with a piece of wire acting as an aerial.

This is just the sort of thing the Troughline should not be subjected to. It may come cheap and look a little tatty after thirty years (ye gods, how many modern tuners will last that long?), but it isn't a piece of junk. It should be partnered with a proper aerial delivering a strong signal.

Tim has an answer for this of course: a additional RF stage. This would be an extra valve (EF183?) acting as a front end amplifier, presumably broadband tuned to Band II. Hopefully, we'll be able to supply more details in the future.

Another couple of problems I ought to mention before leaving the subject of the Troughline are misalignment due to ageing and low output, the latter meaning the amplifier's volume control will have to be wound right up.

Old tuners need realignment by a skilled radio engineer using proper RF test equipment, something that shouldn't be ignored with this unit.

I used our Troughline regularly as an 'abstract' reference during the group test of tuners in this month's issue, as well as in the Kremlin test. It is so much clearer, crisper and more lucid than current solid state tuners that comparisons are just about pointless, at least for the time being.

This sort of sound isn't currently available, so I used it solely to remind myself of what could be possible. It wouldn't be realistic to refer to the Troughline in these tests, and in any case a reference wasn't actually needed when transmitting through our own stereo generator: the original sound was available upstairs!

It struck me that a modern valve synthesiser tuner would be a practical proposition. The local oscillator could be a normal crystal controlled solid state design type controlled by a microprocessor.

This would give a stable tuner with programme memories, just like the five tuners in our group test.

Mike Creek disagreed however. He felt that voltage tuning and solid state oscillators were both unwanted evils. It happens that Mike, before he started Creek the amplifier company, worked for Ambit, who specialised in tuner parts, so he has a good, inside knowledge of the problems involved.

His view was that we need to return to vaned, air spaced tuning capacitors, rather than continue with the voltage controlled diodes that displaced



## Reflections from Noel Keywood kaleidoscope

them. And guess what, he just happened to be designing a valve tuner with such a capacitor at its heart.

This is something that Tim has been threatening to do for a long time, so the idea of a modern valve tuner is currently afloat in the hi-fi business - and thank heavens! The sooner we start to get back to high standards reached by many old, simple valved items, the better.

My greatest hope is that critical parts that have been crammed onto silicon chips, namely the demodulator that turns the radio frequencies into audio frequencies and the decoder that turns the multiplex signal from the demodulator into stereo, are not used in these new designs. I have a suspicion that tuners are being hampered in sound quality by their use of such common parts.

Mike agreed, saying that they were the lowest common denominator and brought all tuners down to the same level in quality, no matter how sophisticated some were in other areas.

Until tuner designers abandon common and popular chip sets for tuners, they are unlikely to differ much in sound quality or ever start to rise above the current norm, toward what I would suggest was, in comparison, the stratospheric height of the Troughline.

I strongly suspect that Leak's tuner sounds so good because it

is at heart a fairly straightforward design with fewer parts than are used nowadays.

Modern tuners are just too complex for their own good. The complexity is encapsulated within dedicated silicon chips that carry out various functions, including intermediate frequency amplification, demodulation from a radio signal into an audio signal and decoding, where the mono signal and stereo information are transformed into stereo and is not 'seen' or suffered by the hi-fi designer.

If it was, then matters wouldn't have reached this state. It is the large semiconductor companies that make dedicated silicon chips (integrated circuits), such as Motorola and Philips.

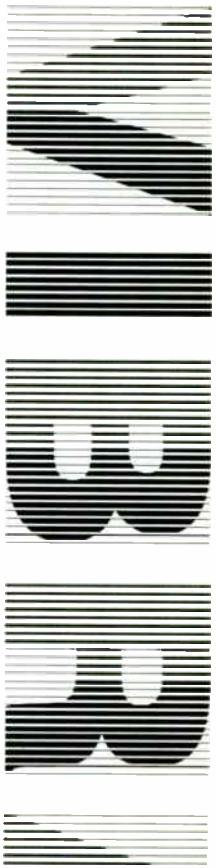
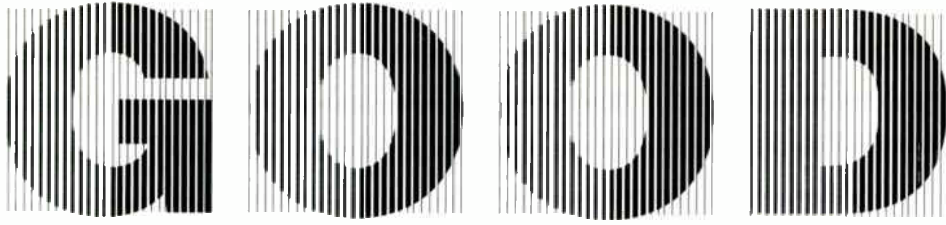
They carry out all the really difficult design work, doubtless in pretty advanced laboratories. It saves so much time and brainache to use the resulting chips, they have been pressed into service by everyone, with predictable results: modern tuners sound much the same.

In case you are interested, the same chips are available over the counter to the public from any electronics store with a good stock of semiconductors. For example, Cricklewood Electronics (081-452-0161) can supply a stereo decoder for around £12.

Please don't think this sort of thing is ideal for rainy weekends; you need a fair bit of knowledge to get it working well, although manufacturers' application sheets are generally very helpful and speed things along.

I haven't a clue as to how Tim will make a stereo decoder with just four double triode valves ("I'll use the sum and difference principle," he confidently tells me). We thought it would take a wardrobe full of the things and look like something from the Quatermass Experiment. But it does sound like a nice idea.

We're all laying bets on the announcement from Huntingdon (Tim territory) of an all-valve Bitstream decoder. That'll have us rolling around the office all week ●



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

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World Radio History



When I was at college, a friend of mine owned a Michell GyroDec. What a wonderful, extravagant flourish of design these machines represent. Although it has a conventional platter, the record appears to be supported on top of half-a-dozen whirling weights. The eye can hardly fail to be enchanted by gyrating chrome whilst the ears are delighted by the music from the record.

As if this display was not enough, my friend's listening was preceded by a precisely observed ritual because he had discovered hi-fi during the period when playing records wet was in vogue. Once a record has been played wet, due to the wet dust-sludge forming a kind of emery paper in the groove when dry, the record must always afterwards be played wet unless it is very carefully cleaned. My friend, unable to afford having all his records cleaned, continued to play them wet.

So, before an LP was played, a few drops of distilled water were dropped from a pipette onto the surface. Due to the rotation of the record, they formed a neat spiral of menisci and a modified "Dust-Bug" brush swept the surface of the disc breaking up the little droplets of water to form a surface film.

It was as fascinating and intricate a ritual as a Japanese tea ceremony. He owned the best hi-fi that I had heard but there was more to it than that. The method and protocol, the pageant of the extravagant and hypnotic design of the record deck, all added to the occasion and - where music is concerned - occasion is the key word.

"Some 300 years ago," wrote Arthur Jacobs at the end of his *A Short History of Western Music*, "music was composed for the specific musical occasion; now the musical occasion is ubiquitous, wherever there is a record player radio or jukebox... It is a situation of both peril and promise." The perils seem more acute today than they have ever been before.

One is due to digital audio's very indestructibility. This was brought home to me recently when I overheard a comment two friends talking in *Our Price* and one turned to the other and said, "The great thing

about CD is, because they don't wear out, you don't feel guilty if you leave the room when they're playing." Is it good for music - good for us - that we own hours of untaintable, immutable music? Does it not encourage us to not bother to listen to it properly? In the good old days of records, the sound - in a sadly literal sense - was torn from the groove. As you played them, they wore out. But far from detracting from my listening pleasure, I believe in a curious, subconscious way it may have enhanced it. It made listening an occasion,



Maybe because it wasn't good enough - but I doubt it. It's because music is about communication. And not in the dry engineering sense - people communication. Whether it's Hendrix, Du Pre, Lennon or Glenn Gould at one end of the recording chain, if we're moved to anger, laughter or sadness at the other, more has travelled in the wires and semiconductor junctions and is contained in the grooves or CD bits than just signals; as much as a great work of literature is more than a pint of ink on a few hundred sheets of paper. But the comparison with a work of

# recorded message

Left by Richard Brice

special in the way that every instant of great music is special because it is transient and fleeting.

An LP record is not inorganic. An LP scratches and wounds; treat it badly and it dies. Old, worn records are like old friends, maddening but ultimately more lovable for their faults. Moreover LP's benefited from one's own kindness. The more attention you lavished upon them, the more pleasure they returned. By comparison CD's are not just the ever-young Peter Pans of my music collection. They remind me more of the little boy in the film "The Tin Drum" who wilfully and infuriatingly refuses to grow up.

Another peril is the result of the characteristic complexity of digital audio. People have "lost connection" with the designers. Writing before the dawn of CD, Evan Eisenburg, the music columnist of the American magazine, *The Nation* wrote about the special nature of music on records:

"Instruments which are bitches to play, from which drawing a single clean note is like pulling a tooth, afford the keenest joy of all when played well; every note of the oboe, violin and French Horn seems to recall the ordeal of its production and rejoice in its escape. When such hard-won beauty runs the further obstacle course of vinyl and diamond and reaches our ears

in one piece, our delight is that much greater."

Eisenburg argued that because, like a musician, a record player wngs beauty from an uncooperative medium, "the art of 'phonography' is music multiplied by itself." Music produced from arcane, drab digital integrated circuits can never tangibly reveal the "ordeal of its production". Clever digital audio may be, but the artifice is beyond drawing-room comprehension. Consequently, the digital age has deprived us of the age of whimsy and of delightful design for its own sake.

It's a depressing characteristic of the new digital age that it will ultimately deprive hi-fi buffs of the domestic listening occasion as we knew it, the special hi-fi pageant. An occasion that was, in its way, as special as going to a concert. And yet I am optimistic. Recorded music, though it pales in comparison with computers, antibiotics and atomic energy, is one of the Wonders of the Twentieth Century. It touches most people's lives everyday and probably for the better. In Arthur Jacobs' terms, the promise of recorded music in our century has far outweighed the perils and I believe it will continue to do so. Eighty years ago musicians feared recorded music would drive people from the concert halls. It didn't.

literature reveals what I believe to be the overriding peril of our digital age: a belief that we do not have time. Whether or not we fall prey to this peril is entirely up to us. Music fares badly in our hurried lives because it is so easy for it to fade to a background accompaniment to other more pressing tasks. At least the written word forces your attention. For instance, you can't, unless you have a brain very different from mine, decide to read *Martin Chuzzlewit* and make a meal or a telephone call at the same time.

The anger of Hendrix and Beethoven, the wry humour of Haydn and Dylan, the cool headed precision of Bach and Reich all sit in my CD cabinet, waiting for me to listen to them. I can choose to pay them the attention they deserve or I can leave the room and - like the couple in *Our Price* - feel no guilt.

Thinking back to my college days and listening to records on my friend's wonderful system complete with record-cleaning ceremony, the lesson I have learned is that the more ubiquitous hi-fi sound becomes, the more rather than less we must use our ears and minds to appreciate it. The more convenient it becomes to store and play recorded music, the more careful we must be not to undervalue it ●

**I**t's the name I love the most. I only wish the Kremlin tuner had had a few domes at either end and a red Linn emblem placed somewhere in the centre. The architectural lines of Musical Fidelity's Odysseus valve amplifier would have served as a suitable example. Then I could have looked at this tuner as a reminder of a vast social endeavour that lost its way and eventually collapsed, as well as a delightful play on words, of course.

As our pictures should show, the Kremlin in fact makes no stylistic allusions to any building of State. Sadly, it is little more than a black box, cast in the mould of Linn electronic products in general, which I find are pretty self-effacing in appearance. That's not to say they are anything other than well built and finished. But with such imaginative names, I would love to have seen some equally imaginative styling.

The Kremlin is Linn's first tuner - and an expensive one too. It costs £1645. Their approach to the problem of producing a world class VHF/FM tuner is the same bold one adopted by Naim; that is, to design and build most of the circuitry in-house for control over its execution.

Whilst the promise of this approach is great, the difficulties and dangers are greater. It is not for no reason that most manufacturers now buy in basic tuner building blocks, available from numerous specialist suppliers. These are bolted together to get a final product that, these days, should - and usually does - have an excellent basic performance. The DIY approach demands deep theoretical and practical knowledge in a notoriously difficult area of electronics, plus access to equivalently advanced and, therefore, expensive test equipment. Linn have taken years to develop this product - and it hardly surprises me.

Perhaps spurred by the competitive



# *Kremlin misses its marx*

Linn's new Kremlin tuner just falls short of the mark. Noel Keywood finds limitations in a new tuner aimed at the top of the market.

example of Naim, the only other company I know who insist on building even the front end themselves (and who also have RF test equipment of a class that makes my eyes light up) Linn have taken a similar high road. The Kremlin is a VHF/FM only tuner that operates by remote control and is meant to offer the highest possible level of sound quality. Unlike the Naim tuners though, this one is a synthesiser type with no fewer than eighty presets.

I was a bit surprised to learn there are no user selectable options designed to simplify (as it were) the circuitry, should it not need to be complicated. Linn do not include switched RF (radio frequency) gain, to remove a gain stage, when the aerial is supplying a strong signal. Nor do they offer selectable IF (intermediate frequency) bandwidth. These facilities offer users a choice of best RF performance or best sound quality, according to reception condi-

tions and personal requirements. They are a way of offering effective results under difficult conditions, such as when working from a poor aerial in the middle of an RF infested city, or under good conditions, like living on the Isle of Wight with Rowridge chucking out 250kW just a few miles away. Whilst for high quality sound, tuners must be fed a strong, clean signal from a good aerial, I am still surprised that at the price owners don't have some options on the





performance at their disposal.

The ergonomics of the Kremlin were flawed in places. The single, green digital display shows frequency or memory number, but not both consecutively. When manually scanning the presets, listening to stations, only the preset number is shown, not the station frequency, nor any way of identifying the station; to get frequency, the Tune button must be pressed. Although this action is meant to make manual tuning available, it also switches the display to show frequency. To return to preset scanning, the Preset button has to be pressed to reactivate this mode. So to get a station frequency readout when going through the memories, the tuner has to be constantly switched between Preset and Tune, something I found more than a little inconvenient. With eighty available presets, this is where RDS (Radio Data System) would have been a boon, giving a read-out of the station name as well.

The tuner itself has only Up and Down buttons for preset scanning, instead of the more usual 1-10 keypad

with a shift key. Most owners will use the remote control though, which is supplied with the Kaim pre-amp or, separately, costing £95.00. This will enter station frequency or Preset number directly from a keypad, or it will step up or down.

The Kremlin tunes very slowly in manual mode, moving in fine steps of 10kHz. These give very fine tuning resolution and potentially allow a high degree of tune accuracy to be obtained. However, whilst the on-tune indicator, which changes its intensity, does show differences between individual steps, it does not necessarily glow brightest at the precise station frequency. I transmitted at precisely 90MHz; it showed 90.01MHz as the best tune point. Similarly, optimum tune for Radio 3 appeared to be 91.31MHz, when it should have been 91.30MHz. This is purely a matter of inaccuracy of the tune indicator; when tuning automatically in Scan mode the Kremlin hit the exact station frequency every time and it gave its best measured performance when set to the correct frequency,

rather than by the tune indicator. I suspect owners might be perplexed by this ambiguity, all the same; I certainly was.

A convenience known as Autostore is provided, where the tuner scans and stores stations as it finds them. The noise muting and detection threshold is set to 25dB but can be varied from 3dB to 80dB to match reception conditions. There is an optional Mono button, but automatic channel blending up to full mono is provided, keeping noise down even on weak transmissions.

I was pleased to see that Linn have, like Hitachi and Sony, fitted a digital readout signal strength meter. These things have massive range and resolution. Linn's runs from 0dB (1µV) up to 120dB (1 volt) in 1dB steps, clearly showing what strength of signal is reaching the tuner from the aerial and, therefore, whether enough signal is available for best results (see Measured Performance section).

The display automatically switches off after a short time, but there are various user programmable functions and



keeping the display on is one of them. The tuner will work under external control in a multi-room system and it will also switch between two aerial inputs, so cable as well as terrestrial transmissions can be received. The station memories store aerial input and all user settings, so station changing can be made to automatically swap aerials too.

The Kremlin was easy enough to use from the remote control and completely free of operating quirks.

### SOUND QUALITY

The Kremlin was pitched into a sea of tuners for the purposes of comparison. It served as a yardstick against which the five budget tuners could be compared, as did the Kenwood KT-7020 and our own Leak Troughline. As always, the problem with using tuners as 'references' in this fashion is that no absolute standard can be established. The 'nicest' sound could be down to personal preference or even an ability to gloss over transmission faults.

To assess the Kremlin more critically, in terms of its ability to reproduce a programme, I also transmitted a stereo signal, using a Denon DCD-2560 Compact Disc player connected to one of our VHF/FM signal generators. Although the signal chain is long and complex, it is still lucid enough to reveal the quality of the CD player. This shows just how revealing of basic programme quality a good tuner can be these days.

The area in which the Kremlin proved strongest was its ability to

differentiate and generally reproduce high frequency information clearly. Tuners commonly have a peculiar colouration in this area; they soften transients and generally smother high frequency information, making for what is best described as a lacklustre sound devoid of real clarity and liveliness. The Kremlin sounded relatively clear across the upper mid-range and treble regions, at least, when compared to run-of-the-mill tuners. The extra clarity and improved transient reproduction produces better definition of singers and instruments, giving them a harder etched outline. It makes for a more solid and dimensional presentation.

In contrast to the Kenwood KT-7020, the Kremlin sounded better balanced tonally, for it lacked the brightness of the Kenwood. It had more body as well, giving greater weight to singers. Where this tuner displayed no advantage was in freedom from muddle and strength of insight, revealing a limitation in its subjective performance. This was more rudely exposed when I turned to our Leak Troughline. Listening to the New Year's Day concert from the Vienna Philharmonic on these two tuners showed that the Leak displayed considerably more delicacy and insight into the performance. Violins sounded superbly natural and clear on the Leak; they were delicate and airy. Bells rang out with sweetness and sonority; there was a good sense of space around the groups of instruments.

In contrast to this tuner, if not to run-of-the-mill designs, the Kremlin both

compressed and thickened the performance, making for a less natural and plausible presentation. The orchestra was re-assembled into a flatter perspective, with weakened contrasts. Strings sounded heavy, indelicate and a bit blurred. I could less well discern the presence of individual instruments and there was little sense of real space around the orchestra.

Later, with a recital of Schubert's 'Far from the great city' I changed from the Leak to the Kremlin again. The beautiful resonance of the violin's body and the rich but delicate sound of its strings were quite noticeably suppressed or erased by the Kremlin. In contrast, it made the violin sound dull, indelicate and leaden. This comparison actually embarrassed the Kremlin, I felt. Whilst it is better than budget and run-of-the-mill tuners, it does not show an unequivocal advantage over designs like the Kenwood and it is not in the same league as a Leak Troughline.

Working off-air I was generally happy about the dry bass of the Kremlin. Aware of its early bass roll-off though, I compared it with the other tuners and found that a form of bass lightness could be heard. The Denon TU-260L has fulsome bass and against this it was quite clear that the lean control of the Kremlin was gained at the expense of power in bass fundamentals. Swopping from the Denon to the Kremlin whilst listening to Dylan singing "I want you" showed that notes of the simple bass line backing were being placed precisely, but they had little resonance or power.

### Measured Performance

High standards of performance from modern tuners makes the task of designing a unit of clearly superior performance very difficult. Linn have cannily secured a good RF engineer and have invested in appropriately advanced (and expensive) test equipment to produce the Kremlin. It uses their own front-end and IF strip, with ceramic filters being avoided due to input impedance variation and resultant non-linearity, Linn told me. A phase locked loop detector was designed in-house too, with low noise and distortion claimed, something borne out by measurement. On the test bench it was surprisingly stable and 'normal' in its behaviour. Subsequent use showed that it worked normally in use, in every respect. There wasn't one small chirp or squeak to suggest this was a substantially new design, from aerial input to audio output.

Rather than use the usual 'constant k, M derived' off-the-shelf filter that puts notches at 19kHz and 38kHz to suppress pilot tone and sub-carrier, Linn have designed their own seventh order low pass filter. As they correctly point out, this better suppresses all the other unwanted signals that exist above 20kHz, many being due to intermodulation. The drawback is simply complexity; a lot of active stages are needed for a seventh order filter, usually built around integrated circuits. Whether this is a good idea is open to question; many would think there is more to be lost than gained.

Filter performance and termination affect frequency response. The accuracy of

Linn's filter can be judged from the response plot; the Kremlin has a flat frequency response from 60Hz-15.6kHz (-1dB). A roll off exists at low frequencies, something Linn were quick to defend on the grounds of 'improved sound quality', even though no reason was given as to why this should be so. It was an implausible suggestion, I felt, if not an uncommon one. However, the flatness of the basic response should - and did - produce a good sense of correct basic tonal balance, with neither high nor low frequencies being emphasised.

### Separation

Channel separation on stereo was extremely high, hitting -66dB in the mid-band - the best figures I have ever recorded. Performance at high frequencies was little worse, at -43dB. Because the crosstalk signal in a stereo VHF/FM transmission is usually heavily distorted low crosstalk (due to high channel separation) effectively reduces distortion, so the high channel separation of the Kremlin bodes well in unexpected areas.

Linn's own phase locked loop discriminator produces little distortion. I measured 0.18% of second harmonic (seen in the analysis) on left and right channel signals, and 0.12% on a centre (mono) image signal, at 50% modulation. These are low values, but not as low as that of the best Japanese tuners, as comparison with the budget Pioneer FT-229L in our group report will show. The differences are minor though, made even less important by the fact that the distortion residual is predominantly second harmonic only. It is an especially benign

sounding form of distortion that, in large quantities, alters timbre; it does not produce any nasty gritty or grating sounds.

The greatest benefit Linn have reaped from designing and building their own circuits is in the impressive lack of hiss at full quieting. Before eagle eyed readers write in to remind me, Kenwood's KT-7020 reviewed in our February 1992 issue managed as well, but only when switched to be insensitive. Some expensive Japanese tuners do reach the quietness of the Linn but to date, not so many. The Kremlin, when given a signal of 2mV or more, achieves a hiss level of -79dB. Anything better than -70dB is good enough to avoid obvious hiss on Radio 3, the Kremlin's performance being good enough to make hiss inaudible under all conditions. As Radio 3 listeners well know, as often as not broadcast noise in the form of hiss and hum - the hiss often coming from taped programmes - usually overwhelms tuner hiss. But some live transmissions from Radio 3 studios can be remarkably hiss free.

### Quieting

The full quieting threshold of 2mV is high, demanding use of a good aerial capable of supplying a strong signal. You have to bear in mind here that if 2mV is to be a minimum signal from the major stations, then around 5mV might be the average and 7mV the maximum. The relative strength of the individual stations depends upon the tuning and polarisation of the aerial, and its location. With such low noise, some degradation will be barely noticeable. With just 1mV from the aerial, hiss measured -74dB, which is still



So it was with U2's "God's country", the backing bass line becoming a little less prominent. If anything, the transmitted low frequency content from FM radio often seems weak; making it weaker is not desirable.

Even though a tuner like this should not be used with an unsatisfactory aerial, I worked it from an indoor dipole to check RF performance. It picked up weak stations very well and didn't ever get fiercely noisy on stereo, due to automatic channel blending. This made it seem more civilised and capable than usual.

## CONCLUSION

There's no doubt that the Kremlin is a fine tuner in every respect. However, it doesn't scale the heights in terms of sound quality and my suspicion is that no tuner is likely to do so when configured for an advanced RF performance; too many gain and signal processing stages have to be used. In other words, the Kremlin is too good for its own good. It attempts to be all things to all men and probably gets as close as possible with the compromises necessary. Since the tuner measures all but perfectly in its audio performance, that compromises exist is open to the usual subjective/objective argument though. From the example set by the simpler Naim tuners and our own very simple Leak Troughline, better sound quality is possible - and from a simpler tuner. Ultimately, whilst I have to admire the engineering in the Kremlin, it is very expensive for the results offered.



Personally, I hope Linn build on their knowledge to offer a simpler, less expensive version in the future ●

The question everybody here asked was: how does the Kremlin compare

to the Naim 01 tuner? We couldn't resist making this comparison, since the Naim is also a highly specialised design known for excellent sound quality. You can read the outcome of our comparison on page 63.

The remote control is an optional extra but necessary for direct entry of frequency or memory number. A 0-9 keypad and tuner functions are at bottom right. Behind it is the screening case enclosing Linn's own tuner head. To its right are eight screening cans containing the IF coils. The secondary board, removed in this picture, contains a Philips stereo decoder and the seventh order MPX filter and audio output stage.

a low value, so the Kremlin benefits generally from its good quieting performance.

The RF gain of this tuner was quite high, full limiting being reached at around  $0.5\mu\text{V}$ . Linn use Automatic Gain Control (AGC) around the RF front-end to avoid overload with strong signals. The mono sensitivity was very high, just  $1.3\mu\text{V}$  being needed for a  $-50\text{dB}$  hiss level to be reached. The Kremlin wasn't especially sensitive in stereo and its true performance is disguised by progressive channel blending below  $100\mu\text{V}$ , a mechanism used to prevent noise becoming intrusive. However,  $-24\text{dB}$  of channel separation, enough for a stereo stage to be portrayed, was available at  $40\mu\text{V}$ , where noise also hit  $-50\text{dB}$ , meaning this is the effective stereo sensitivity. In truth, it is slightly worse, because blending (and therefore hiss suppression) is occurring at this level, but the matter is academic. From the point of view of receiving, or being able to receive weak signals, the Kremlin is up with the best.

The skill with which Linn have designed, built and aligned the IF strip is reflected in high but balanced selectivity figures of exactly  $80\text{dB}$  rejection of signal above and below the tune frequency, at an alternate channel spacing of  $0.4\text{MHz}$ . This is a very high value, although it is being matched by even budget tuners nowadays. However, in practice it means a tuner can reject a station ten thousand times stronger than the one being received when it is incredibly close. In practice, a situation like this rarely occurs. The only point I would make here is that such high selectivity is rarely required in the UK, which is why a 'wide IF' option might

have been beneficial. High sensitivity isn't necessary with a good aerial either, an argument for switching more stages out I believe; AGC is not an alternative.

The signal strength meter is digital and calibrated in decibels, relative to  $1\mu\text{V}$ . Although a common practice in the radio world and perfectly logical to tuner engineers, this system is more than a trifle confusing for ordinary mortals, even though Hitachi and now Sony use it as well. Perhaps the easiest way to cope is by remembering certain key values. I would suggest  $50\text{dB}$  ( $316\mu\text{V}$ ) should be taken as the very minimum acceptable signal level, whilst  $60\text{dB}$  ( $1\text{mV}$ ) is the nominal break point between hissy radio reception and hiss free high fidelity. For the Kremlin, another key value is  $66\text{dB}$  ( $2\text{mV}$ ), at or above which full quieting is achieved. So if an owner can get  $66\text{dB}$  or higher up on the green digital readout of signal level, the Kremlin is giving its best. The

maximum reading is  $120\text{dB}$ , or no less than one volt. Anyone getting this from their aerial is probably being slowly micro-waved by the transmitter, it's so close.

The Kremlin measured very well in all areas and was exceptional in some. Linn have been both diligent and thorough in its engineering. Technically, I found it quite impressive.

## Test Results

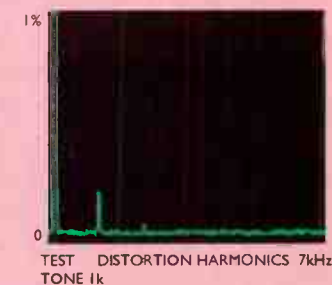
Frequency response	60Hz-15.6kHz
Stereo separation	$-66\text{dB}$
Distortion (50% mod.)	0.12%
Hiss (CCIR)	$-79\text{dB}$
Signal for minimum hiss	$2\text{mV}$
Selectivity	$80\text{dB}$
Sensitivity	
mono	$1.3\mu\text{V}$
stereo	$40\mu\text{V}$
signal strength meter	
digital readout, 0-120dB relative to $1\mu\text{V}$	

## Frequency Response



Flat frequency response with some bass roll off

## Distortion



A small amount of second harmonic distortion



# BIRDS OF A FEATHER TAKE TO THE AIR

**D**eregulation of Britain's airwaves has brought more stations into operation and increased choice, without producing the anarchy that conservative voices thought would prevail. Some of the new stations we can get are laughably amateurish and their technical quality abominable, but they do provide some choice and their metier is often wildly different - like a ten minute Reggae track from a station that gives no name announcements - Wow!

Whether you'd like to tap into pirates like this or the major stations - new and old - the tuners here will do a good job at very low cost. They can pick up weak stations, separate them from strong ones nearby and then convey inherent broadcast quality well. I know this because part of our test routine was to transmit 'in-house' from our own stereo generator; we got a mediocre sound until a decent CD player was used. That's how good budget tuners are nowadays.

The considerable complexity of VHF/FM radio has been overcome through the development of dedicated integrated circuits (aka silicon chips) of high quality. This has the unfortunate effect of making differences cosmetic, at this price level anyway, but at least the uniformity is one of goodness. But what do you need to consider when getting a tuner?





Apart from Radio 4 on long wave, entertainment comes from the medium wave and VHF/FM bands. Only the latter provides high quality stereo sound; it is immeasurably better than AM broadcasts on medium and long wave. The trouble with VHF/FM is that it doesn't travel well, being obstructed and deflected by hills and buildings. Lots of transmitters are needed, but in Britain we've got them. Since well over 90% of the population can receive VHF/FM, we are told, this is the band that is of most interest. Pirates and licensed commercial stations are mostly on VHF/FM as well, so there is more choice to be had. Only Radio 5 and the World Service are exclusive to medium wave.

An intractable problem with VHF/FM, if high quality is to be achieved, is the need for a good aerial. Without it, hiss, distortion and crackling can become quite severe. Except for those within a few miles of a transmitter, this means a loft or an outdoor aerial. Normal indoor aerials are generally inadequate, which rather condemns all those poor souls in blocks of flats. And there's no easy solution to this, since even the world's best tuners don't have greater sensitivity or a lower quieting threshold than the five budget models here, believe it or not. That's why I said earlier they are uniformly 'good'. In truth, they're almost embarrassingly good.

Pulling in stations on VHF/FM, or weak

ones at least, means getting the right aerial. All the major BBC and commercial (IBA) stations should come in well enough with a simple indoor dipole, albeit with hiss and mediocre audio quality. Real hi-fi comes from no VHF/FM tuner - not even the best - until a strong aerial signal is provided, which means an outdoor aerial is usually essential. That rule applies to these tuners as much as expensive ones.

All five tuners are synthesiser types with push-button station selection. They tune in discrete steps and can hit stations very accurately. They also possess very high frequency stability, so drifting off tune is not a problem. This is unlike continuously or mechanically tuned push-button tuners with AFC (Automatic Frequency Control), which drift, suffer tune-error distortion and will jump to strong stations in preference to weak ones, under its influence. Synthesiser tuners don't suffer such problems and these days they possess at least twenty station selector buttons.

Budget tuners forsake facilities for low price. All lack a signal strength meter, switchable IF bandwidth and RF gain. Slightly better sound quality can be had with the latter options, but again only when a strong, clean signal is available from the aerial. Otherwise such facilities are wasted. The tuners here, although inexpensive, represent a sensible upper quality limit for most people - and a high limit it is too.

*Budget tuners are much alike and offer superb results, Noel Keywood finds. ▶▶*

**PIONEER F-229L £99.95**

**SANSUI TU-X111L £99.95**

**TEAC T-X3000 £99.00**

**JVC FX-335L £104.99**

**DENON TU-260L £109.99**





## DENON TU-260L

£109.99

Although little separates these tuners in visual style, the Denon in my estimation is by a small margin the most attractive. The lettering used to distinguish the various buttons is large enough to be legible, but not so large as to be ugly. Minor stylistic details, like a row of push buttons for station selection blending in to be part of a full width ridge running across the fascia, help the TU-260L appear more fluent and cohesive in its style, and less of an ad-hoc collection of functional bits arranged purely by an arrangement of simple symmetries.

Little more than appearance and finish distinguishes this tuner, however; it offers much the same list of functions and facilities as the others. It is a synthesiser tuner with push-button station selection and twenty memories, addressable through ten buttons with an A/B option on each. Three wavebands are provided: VHF/FM, medium wave and long wave. A station on any band can be allocated freely to any memory, although some may find it easier if, for example, VHF stations are put into option 'A' and AM into 'B'.

The Denon will tune automatically or manually, using the normal 50kHz steps on FM and 9kHz steps on AM. The auto/manual button also selects Moro and cuts out noise muting, but strangely the handbook makes no mention of this. In fact, it offers no user guidance at all, operating instructions being only a numbered sequence attached to a diagram. A clear, light blue, fluorescent display shows station frequency, waveband, mono/stereo and selection of A or B option on the station buttons.

The rear panel has a co-axial 75ohm panel mounted plug, so an adaptor is needed for the usual UK co-axial line plug. Denon supply a multi-purpose balun plug however, plus an AM loop aerial.

### SOUND QUALITY

The slight downward response droop of the Denon's VHF/FM section coloured its sound by a small but noticeable degree. I would describe it as warm and full bodied, the warmth - and a sense of smoothness - coming primarily from the gently suppressed treble. Fed a strong aerial signal, the TU-260L was hiss free on Radio 3 and offered a fulsome and ambient portrayal of a Respighi choral work, with choir and soloists well

differentiated. I noticed some slight merging of strings and a little less apparent insight than the Pioneer, for example, but the Denon did convey both scale and atmosphere well - an area some of the tuners censored.

I continually had moments of doubt about the warmth, especially when Sarah Locket reading the news on GLR sounded chesty and almost guttural. Swopping to the Pioneer had her squeaking and lisping like a rabbit - all teeth and enunciation, but without resonance. This was a curious comparison; both tuners were quite obviously flawed; neither was right.

It was Queen's Bohemian Rhapsody on Capital that showed the TU-260L has large and rounded bass, with quite good speed and articulation, but with a bloom that suggests emphasis. However, it imbued this tuner with a sense of weight and fullness to the sound that in general slightly enhanced both Rock and Classical programme, if not Sarah Locket. Some of the tuners sounded mean and constricted - but not the Denon.

Transmissions from our stereo generator confirmed the fact that the Denon had more warmth and body to its sound than the other tuners, but it did not sound overtly dull.

Performance on VHF/FM, when fed a weak signal from our optional indoor dipole, was relatively good. Radio 3 wasn't overwhelmed by hiss, but Radio 1 at the other end of the band was seriously noisy and distorted; it was with the other tuners though.

Reproduction on medium and long wave (AM) was very good, with plenty of bass and quite reasonable treble. Sensitivity was high with the frame aerial supplied; for example French stations came in cleanly on Long Wave whereas they crackled badly on other models. Denon haven't ducked the issue of performance in this area.

### MEASURED PERFORMANCE

Denon fit an effective pilot tone filter to the TU-260L; it reduces it at 19kHz and sub-carrier at 38kHz very well, which ensures Dolby action is not impaired when recording. However, termination of the filter looks a bit suspect, causing some droop in the upper mid-range around 8kHz and a small peak above this frequency - traits shown in the response analysis. The droop will be more audible than the peak, producing some slight warmth to the sound.

Although there is a trade off between selectivity and both channel separation and distortion, Denon manage to get all three in good balance on this tuner. It is highly selective, being well able to reject a strong station whilst receiving a weak one close by. In spite of this, distortion was low on various stereo signals, the average result being just 0.1%, the domain of expensive tuners only a few years ago. The analysis shows that small amounts of second and third harmonic existed, which are unlikely to cause much offence.

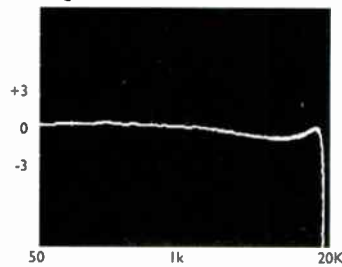
Channel separation on stereo was pretty good as well, especially at high frequencies; this TU-260 maintained constant separation right across the audio band. It is common for separation to deteriorate at high frequencies.

This tuner is very sensitive. It needs just 0.4mV to reach full quieting, the point at which hiss reaches a minimum. Even quite modest aerials can provide this level of signal. With this amount of signal or more, the '260 has a hiss level -71dB down. This is a low-ish figure; just a very slight hiss would be audible on a quiet Radio 3 broadcast for example (tape with Dolby C reaches -76dB).

The TU-260L has a very good all-round measured performance, free of blemishes.

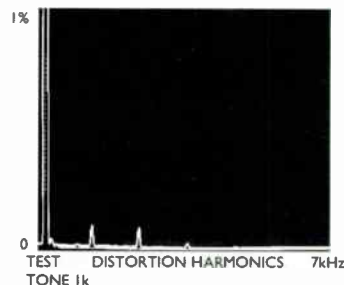
Frequency response (-1dB)	20Hz -16kHz
Stereo separation	-38dB
Distortion (50% mod.)	0.1%
Hiss (CCIR)	-71dB
Signal for minimum hiss	0.4mV
Sensitivity	
mono	1.8µV
stereo	16µV
Selectivity	
alternate channel	-80dB
Signal strength meter	none

### FREQUENCY RESPONSE



Slight upper mid-range droop

### DISTORTION



Very low distortion of 0.1%



## MEASURED PERFORMANCE

The VHF/FM section has a small amount of roll down in its frequency response at the extremes of the audio band, visible in the response analysis picture. However, unlike broader band effects, such as the treble hump of the Pioneer, the deviations from flatness of the JVC were sufficiently narrow in frequency coverage to be difficult to identify in terms of their impact upon sound quality, but they may tinge the JVC's sound.

Upper frequency response extension was to 14kHz, a figure lower than that of the other tuners, but not by any great degree. It was caused by an effective pilot tone filter that suppressed the 19kHz pilot to a low level of -65dB and sub-carrier to -80dB. This was another tuner with low levels of spurious output, an improvement upon the norm of a few years ago when little filtering was common.

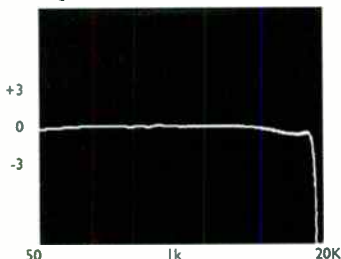
With a signal of 0.6mV or more from the aerial the FX-335L reached full quieting, a condition of minimum hiss. This is quite a low value, showing good basic sensitivity is provided. Alongside the Sansui TU-X111L the JVC showed no obvious disadvantage, even though measurement shows it needs fractionally more signal. Hiss level behind Radio 3 on our indoor dipole was similar to that of the Sansui and Denon in fact.

In spite of being selective, this tuner offers low distortion and wide channel separation on stereo. There is a trade off here, but JVC have balanced the factors against each other well. The distortion analysis shows a small amount of third harmonic was produced, which lightens timbre.

In all areas the JVC FX-335L measured well, but it does have small response deviations that may slightly colour its sound.

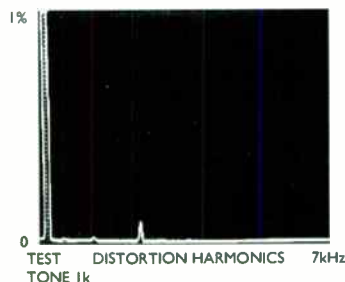
Frequency response (-1dB) 18Hz -14kHz	
Stereo separation	-40dB
Distortion (50% mod.)	0.1%
Hiss (CCIR)	-72dB
Signal for minimum hiss	0.63mV
Sensitivity	
mono	2µV
stereo	25µV
Selectivity	
alternate channel	-82dB
Signal strength meter	none

### FREQUENCY RESPONSE

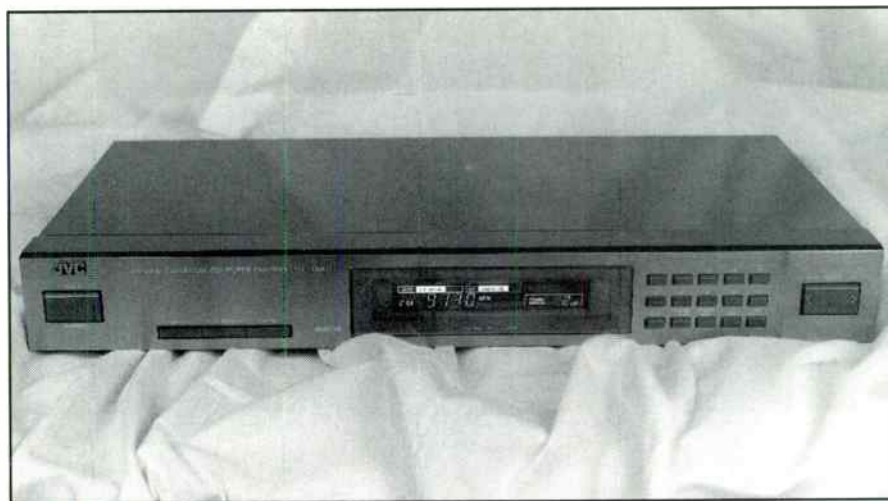


Slight upper mid-range emphasis.

### DISTORTION



A little third harmonic distortion (0.1%)



## JVC FX-335L

£104.99

JVC have found a new bright gunmetal finish for their audio products, one that is less gaudy than 'champagne' but a pleasant change from obligatory black. They retain the attractive orange fluorescent display panel with contrasting red legends, however, first used some time ago and now a part of their 'house style'.

JVC fit the FX-335L with VHF/FM, medium wave and long wave bands, the last being made available in the UK only, it would appear from the handbook. It is a synthesiser tuner, meaning it steps up and down the wavebands at discrete intervals of 50kHz on VHF/FM, 9kHz on medium wave and 1kHz on long wave. JVC offer the option of no fewer than forty preset stations, grouped in multiples of ten, as usual. The ten-button pad on the fascia is supplemented by a +10 group selector which, pressed three times before the 9 button, selects preset 39. This must be more than enough, even for the most ardent radio enthusiasts - so many in fact that JVC provide an automatic scan facility that alights on each station for four seconds to give users a quick listen.

Tuning is manual or automatic, as is memorisation of the stations using auto-memory. The usual protocol of manual tuning opening the noise muting and selecting mono-only is employed. Having found a station the tuner can be switched to stereo. Alternatively, auto-tuning is accompanied by noise muting and stereo operation. It's a sensible system that works well in practice, which is why most tuners now use it. The JVC usefully possesses red 'Stereo' and 'Tuned' legends that more clearly inform a user than an indicator LED against an unlit legend. Generally, I found this tuner easy enough to use and its display panel is very clear.

The rear panel accepts only bared cables (75ohm coaxial, 300ohm ribbon and AM loop), having no co-axial socket for 75 ohm cables, which was a pity.

### SOUND QUALITY

The JVC gave a generally warm and slightly 'enclosed' sounding presentation, albeit with a trifle more insight than some of the tuners. It managed well with Radio 3, various choral works around the Christmas period being presented with a degree of civility and naturalness that was easy to accept. I didn't

find myself questioning the truth of its presentation; soloists took a strong role against the background of the choir and the contribution of individual choristers could often be quite plainly heard. There was a fair degree of insight and reasonable depth perspectives too. There was no sign of hiss or interference.

Andy Kershaw's 'Pick of the Year' (we're talking about 1991 here) on Radio 1, placed at 98.8MHz in our part of the world, sounded beautifully clean and clear after the fairly awful sound of Capital, from which I had fled in disgust after a few minutes of listening to what sounded like a compilation tape of hits. All six tuners had the ability to reveal broadcast quality, the JVC included. Swopping around between the JVC, Sansui, Linn Kremlin and Kenwood 7020 showed the '335 offered a sound with good basic tonal balance, reasonably well defined images, a good sense of insight and solid enough bass. It really doesn't get much wrong, even if it lacks the excellence of some of the more expensive and sophisticated designs.

It was only when listening to music transmitted from our own VHF/FM source that the limitations of the JVC tuner became known. Like so many tuners of its price, it softens and blurs images and introduces some slight sense of muddle, most noticeable when programme material gets complex. The climactic introduction to Carmina Burana was well conveyed in its scale and strength, but there was some slight smudging and muddle that lessened the differentiation and character of the individuals; it was like moving back from the performance to hear a more distant and vague rendition.

I don't want to overstate this effect though, for the JVC still had more insight and focus than many of its rivals. All in all, after throwing everything I could at the VHF/FM tuner section in the way of tests, I found it both balanced and entertaining. The same couldn't be said for the medium/long wave section that sounded mushy and severely muddled on Radio 1 (1053kHz), and had little clarity or bass. I got the impression that the AM section was an afterthought on this tuner.



## PIONEER F-229L

£99.95

Whilst JVC and Denon distinguish tuning from the other controls by making them larger, Pioneer bury the tuning buttons and make them the same in size and style as all the other functions. Worse, there are two 'TUNING' legends, which is even more confusing. I never found this tuner especially easy to use, nor self-evident in operation. The handbook was satisfactory, but it was also necessary. Station memorisation and selection both proved awkward as well.

Sometimes, awkward ergonomics are the price paid for bold styling, as with B&O equipment for example. Not so with the F-229L, whose legends were profuse and none too attractive. Printing thirty six station numbers on the buttons doesn't help here, even though it's a necessity with the system of selection adopted. Each of twelve station selector buttons has three options, giving plenty of storage capacity. It can be allocated randomly and freely to any of the three wavebands fitted: VHF/FM, long wave and medium wave. This means that, for example, a long wave station could be in store 2 and a VHF station in 3.

The Pioneer is a synthesiser tuner that steps up and down the VHF/FM band in 50kHz steps, the medium wave band in 9kHz steps and long wave in 1kHz steps. Just like the others in the group, it will tune either automatically or manually, but the latter process is carried out in mono and without interstation noise muting. Searching for really weak stations must be done manually in mono, which is sensible and it shouldn't be a problem. The blue fluorescent display panel shows frequency, waveband, stereo/mono mode and whether the tuner is accurately on-station (Tuned).

The rear panel carries screw terminals for AM and 300ohm FM aerials, as well as a chassis plug for a coaxial lead socket. In the UK an adaptor will be needed to get plug to mate with plug.

### SOUND QUALITY

Put up against the Denon, with the Leak Troughline and Hitachi FT-5500 II references in the background, the Pioneer proved capable and interesting in some areas, but flawed in others. It sins were not quite as benign as those of the Denon, I found, although the fact that I reached this conclusion almost reluctantly and after a lot of listening and checking, shows that it isn't a tuner easily put down.

Across the mid-band, the VHF/FM section

held a magnifying glass up to a performance. It displayed insight and analysis; individual violins in a section were clearly distinguished in a quite obvious fashion - vocalists came forward, but so did the choir behind them. This was a bit disconcerting, since it compressed depth perspectives, putting any and every performance into a flat-ish plane between the loudspeakers. I won't say 'flat' so much as not deep enough and certainly not plausible enough.

There were two contributory reasons. The general timbral quality of the '229 is light, due to its raised treble. This puts the emphasis on detail and resolution, at the expense of fullness of body and the reproduction of ambient depth cues. Dry or lean sounding bass also helped make the Pioneer sound thin. On Jazz FM the bass line behind Randy Crawford, for example, possessed mainly upper harmonics; it had little real weight. The references and the Denon TU-260L showed that bass fundamentals did exist and there was a good, if not forward, bass line. With more forward and dominant bass playing the Pioneer sounded acceptably dry and controlled, but let the rhythm section move back in the mix and it seemed to fade from view with this tuner.

Speech can be a discriminatory test of a tuner. Just as I was a bit taken aback to hear Sarah Locket sound almost basso profundo on the Denon when reading the news on GLR, so was I surprised to hear her sound high pitched and sibilant on the Pioneer. The presentation was quite markedly different - and neither tuner sounded very convincing. The natural fluency of the Leak Troughline shone through here.

With just a touch of coarseness as well, the F-229L proved a bit limited in its subjective presentation I felt. It is analytical, but it is not especially balanced sounding or convincing in terms of naturalness. Our stereo generator again confirmed what I heard off air, namely that the Pioneer emphasises the upper mid-band, offering a detailed performance, but one lacking real body or firm bass.

Hooked up to our indoor dipole, this tuner proved both sensitive and selective; it captures weak stations well.

Reception on long and medium wave was poor with the aerial supplied. Low sensitivity and little bass resulted in a noisy and somewhat gutless sound. The Denon put the Pioneer to shame in a direct comparison here.

### MEASURED PERFORMANCE

Pioneer have let the F-229L VHF/FM frequency response run unhindered up to 20kHz. Signals above 15kHz or so are not transmitted on FM, to prevent interference with the pilot tone at 19kHz on stereo. The Pioneer's response can be seen in the analysis; note how it doesn't dive down suddenly at right, unlike the others. Another feature of interest and impact is the small amount of treble lift above 2kHz, since this affected the sound. All the same, the overall characteristic is flat enough, which means that the basic tonal balance will be right.

The drawback of not filtering out pilot and other, higher, signals, is that they can block Dolby action when recording onto cassette. Pilot tone at 19kHz from the '229 measured -33dB for example, compared to -60dB or better from the others.

Pioneer tuners have always had an advanced measured performance and the F-229L was no exception. It had very low distortion on stereo, averaging just 0.06% at 50% modulation. Just a small amount of timbre-lightening third harmonic exists.

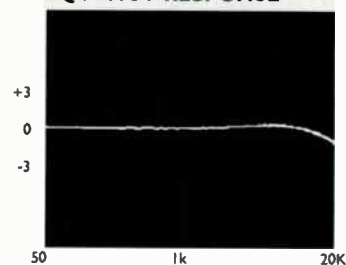
Channel separation on stereo was very high, hitting 50dB in the mid-band, in spite of good separation and low distortion. Selectivity - against which the two must be traded - was reasonably high at 73dB overall. Weak stations can be obtained when strong ones are close by.

Sensitivity was high and hiss sank to a minimum (full quieting) of -73dB with just 0.6mV from an aerial. Loft aerials can often provide this sort of signal. Hiss is just about inaudible at -73dB.

The Pioneer measured well, but it does have peculiarities and some coloured its sound.

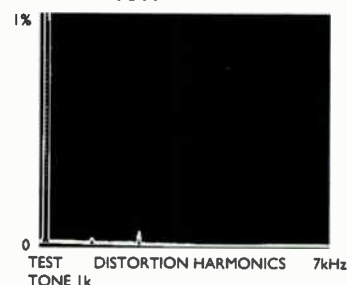
Frequency response (-1dB) 10Hz - 16.2kHz	
Stereo separation	-49dB
Distortion (50% mod.)	0.06%
Hiss (CCIR)	-73dB
Signal for minimum hiss	-0.63mV
Sensitivity	
mono	2µV
stereo	25µV
Selectivity	
alternate channel	-73dB
Signal strength meter	none

### FREQUENCY RESPONSE



Slight treble emphasis; no MPX notch

### DISTORTION



Very low distortion (0.06%)



**MEASURED PERFORMANCE**

Much like the other tuners, the TU-X111L was both sensitive and selective on VHF/FM. It will pick up weak stations off an inadequate aerial relatively well, but all the same, the simple wire dipole aerial supplied is unlikely to be satisfactory, except within a few miles of a transmitter.

The Sansui utilises weak signal well by reaching full quieting - the condition of minimum hiss - at a relatively low signal strength of 0.5mV. At and above this level of signal from an aerial (and it normally takes at least a four-element loft aerial to get 0.5mV minimum) hiss remains at its lowest value of -72dB. It is a figure around which all six tuners hovered, due to the similarity of their circuits. With a selectivity of 76dB this tuner is quite able to capture a weak station when it is close to a strong one.

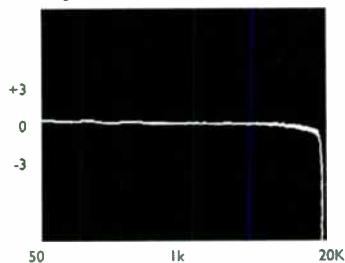
The frequency response characteristic was one of the flattest of the group, as the analysis shows. This should - and did - give fine basic tonal balance, free from obvious errors. Upward extension was to 15.4kHz, a high value, before a steep roll-off caused by a very effective pilot tone (or 'MPX') filter. It all but totally eliminated both pilot and sub-carrier, giving the Sansui a 'clean' output, free from unwanted signals above 18kHz.

Distortion was reasonably low on stereo, comprising second harmonic distortion, which is subjectively innocuous. Channel separation was adequately wide for full stage width to be reproduced, and in use the staging qualities were good.

In all areas, the TU-X111L measured well; it has no obvious or significant weaknesses.

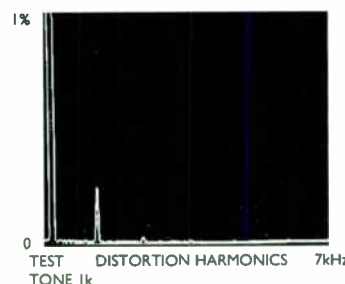
Frequency response (-1dB)	4Hz - 15.4kHz
Stereo separation	-35dB
Distortion (50% mod.)	0.2%
Hiss (CCIR)	-72dB
Signal for minimum hiss	0.5mV
Sensitivity	
mono	2µV
stereo	20µV
Selectivity	
alternate channel	-76dB
Signal strength meter	none

**FREQUENCY RESPONSE**



Flat frequency response to 15.4kHz

**DISTORTION**



Some second harmonic distortion (0.2%)



**SANSUI TU-X111L**

**£99.95**

Updated styling and a neat layout give the Sansui TU-X111L a simple, clean 'look' next only to the Denon for attractiveness in my view. Not for them a full house of legends, like Pioneer. Where Denon use a full width ridge as a styling device to break up what would otherwise be a slab-like uniformity, Sansui use the inverse - a full width recess. Blended in are the main operating buttons, comprising up/down tuning, band selector, memory scan and the usual auto/manual tuning selector. The fluorescent display panel mimics JVC's in colour, if not in appearance. It uses orange numerals with contrasting red channel numbers. Unfortunately, the presence of a stereo transmission, tuning mode and 'tuned' indication were all shown by small LEDs that, at times, I found it was necessary to peer at closely to understand. Their identifying legends were all but invisible in low light.

Even though the TU-X111L is better styled than some of its rivals, it offers an all-but-identical range of facilities. The operating sequences proved simple and logical, helped by a handbook that offers clear instructions. Sansui fit twenty station memories to this synthesiser tuner, addressed through ten buttons on the front panel and a simple toggle button (marked +10) that, when held down simultaneously, makes memories 11-20 available. It tunes manually or automatically and, as usual, the former is done in mono only and with inter-station noise muting inoperative so that really weak stations can be captured. It's a sensible system that has no drawbacks.

Sansui fit three wavebands: VHF/FM, medium wave and long wave. The first is covered in 50kHz steps, the second in 9kHz steps and the third in 1kHz steps. A station on any waveband can be allocated randomly and freely to any memory.

The rear panel carries only spring clip connectors for the aerals, catering for 300 and 75ohm FM feeders and wire AM aerals. An AM loop is provided, plus a folded wire dipole for VHF, as usual. I prefer to see a coaxial socket for VHF.

**SOUND QUALITY**

Working from our outdoor aerial, getting plenty of signal, the Sansui generally offered a fine sense of overall tonal balance, with a lack of coarseness or any form of overt unpleasantness. If I had to characterise it I would say that it sounds just a trifle bland and blurred - a criticism that applies in roughly the same

measure to most budget tuners though. Up against the JVC, it became apparent after cruising around the VHF/FM waveband that the TU-X111L gave a wider sound stage, just a little more bass and warmth and a little less insight. It also sounded extremely smooth tonally, if a little 'boxed-in' at the top end. Richard Thompson's ballad of a biker prepared to die for his Vincent (quite right too!) came over well, for example. Although new to me I could clearly discern the feeling behind the lyrics and the fullness and the body of his strummed guitar was clearly conveyed; I was listening to Andy Kershaw on Radio 1, REM sounded a little muddled on GLR and Lucy Longhurst, making an announcement straight after, sounded fluffy and indistinct. Again, studio speech seemed to be most critical of a tuner's abilities. I swapped to the Kenwood and found that she didn't have a woolly pulled over her head; her enunciation was considerably clearer and more precise; some sibilance became apparent too. This drew attention to the softening and rounding out that was a property of the Sansui, something that rather robbed it of real insight, whilst at the same time keeping everything inoffensive.

Moving to our indoor dipole, with its weak signal, the Sansui showed it could pull in stations with exactly the same ability as the other tuners. It showed neither advantage nor disadvantage in this respect, something that comes from using similar circuit technologies.

Our own VHF/FM stereo generator confirmed what I detected from off-air working, notably that the Sansui has a smooth, full bodied sound somewhat lacking in analysis and a bit soft in terms of bass drive and definition. It is a tuner on which I found I could enjoy music without any need to question what I heard. It offers a good, wide stereo stage as well.

There appears to be a problem with the aerial tuning the input stage of the medium and long wave section. With both core and screen of the loop aerial cable connected, Capital Radio came in at 648kHz, where the World Service should have been, and Radio 1 came in at 198kHz on the Long Wave band! Disconnecting the screen restored normality, including returning the World Service to 648kHz. Reception quality was good, being clear and with adequate bass.



## TEAC T-X3000

£99.00

Teac like size: their products loom larger than those of competitors. So it was with the T-X3000 tuner, a unit marginally but critically larger than its rivals in this group. It looked altogether more substantial, even though actual differences were comparatively minor.

The larger numerals of the fluorescent display were real enough though, a small but useful benefit of increased size. Otherwise, the T-X3000 proved to be all but identical in concept to its peers. It is a synthesiser tuner that steps and down the VHF/FM band in 50kHz steps and the medium wave band in 9kHz steps. Teac don't fit a long wave band; individual buyers can decide whether Radio 4 on long wave is a necessity, bearing in mind it is on VHF/FM as well.

In place of long wave, Teac fit an 'MPX noise canceler'. The so called 'canceler' blends the two stereo channels together at higher frequencies to lessen hiss whilst retaining some channel separation. It can be useful where a wide sound stage is essential but hiss will wreak havoc, most notably in choral works.

Canceler apart, the T-X3000 offers the usual range of facilities, notably manual and automatic tuning, with mono/stereo inter-linked. There are twenty station memories, provided by ten buttons which each toggle to give access to two stations. I found the Teac easy enough to use, but like the Sansui, I found its warning LEDs less easy to interpret because their accompanying legends couldn't be read in low lighting.

Teac provide wire FM and loop AM aerials, together with a coaxial panel plug for FM and spring terminals for AM wire aerials. There is no 300ohm input.

### SOUND QUALITY

The Teac sounded much like the other flat response tuners in the group - basically well balanced tonally, but with minor colourations and blemishes. On our main aerial, feeding it a strong signal, it became quickly apparent that again, clarity was the real loser with the X3000. For example, the piano of Claudio Arrau, playing Chopin's Impromptu Opus 29, seemed a trifle vague and hazy, or 'soft' in definition on Radio 3. It wasn't that the Teac could be labelled 'bad', so much as a trifle soft, imprecise in imaging and bland. In particular, I found later that high frequencies

were being dulled and muddled and transients rounded off.

As always, speech in the form of a news broadcast, this time from Lucy Thorpe on GLR, drew attention to the softening and defocussing problem most cogently; I was very aware straight away that the closeness of the newscaster wasn't really being conveyed well and sibilance that can usually be heard was muted.

The problem became more specific on complex music with fine high frequency events, such a striking bells. On Born to Run from GLR, Springsteen emerged from the overall miasma of sound from the Teac, whilst he had a specific and quite well defined position on the Kenwood, as did the instruments accompanying him. The same problem was heard with Kate Bush trilling about being a Rocket Man (why do I find this incongruous?) on Radio 1. What appears to be a sitar is strummed quickly, the strings vibrating with their characteristic resonance on left and right channels. Teac showed again that, being dulled and muted, this little embellishment all but disappeared.

The Edwin Hawkins Singers were effectively merged into a uniform mass via the Teac, when singing Oh Happy Day. Through the Kenwood the choir was quite clearly composed on individuals and the soloist came right forward, clearly, into the left speaker, in a peculiarly close position, such was its clarity and analysis. The Teac portrayed a soloist, but further back and more as a part of the choir.

Working from an indoor dipole providing a weak signal, the Teac showed itself to be little different to the other tuners. Only on Jazz FM (102.2MHz) did I notice slightly less background interference than the JVC. The Teac had no trouble receiving a weak and unidentified Reggae station at 98.5MHz, just 0.3MHz below Radio 1, so it is usefully selective.

Working from our own VHF/FM generator I found that the X3000 has reasonable bass drive, but in contrast to the Denon in particular, it displays some coarseness.

The medium and long wave section gave mediocre results, suffering more hash and interference than the best, but of fair apparent bandwidth. It was better during the day than at night.

### MEASURED PERFORMANCE

A reasonably wide measured frequency response of 20Hz - 14.3kHz was produced by the T-X3000. The analysis shows that it was pretty flat, much like that of the other tuners, which means that good basic tonal balance is provided. The upper limit (14.3kHz) is a trifle low for open treble, but not low enough to make the tuner sound dull. This limit is set by the pilot tone filter, which was very effective in reducing pilot tone at 19kHz and sub-carrier at 38kHz, necessary to prevent blocking of the Dolby system when recording onto tape.

Channel separation on stereo was satisfactorily wide right across the audio band, the minimum being -30dB at high frequencies. Though less than some of its rivals, it is still enough to allow the apparent reproduction of full stage width.

Most of the tuners in this group have low distortion, a situation much improved from that of a few years ago. The T-X3000 was by a small margin one of the worst of the group, producing an average of 0.25% distortion (50% modulation), which contained both second and third harmonic components, as the analysis shows.

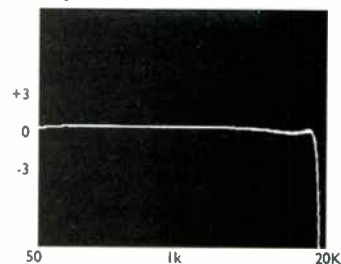
Channel separation and distortion suffer when high selectivity is required - and the T-X3000 did prove selective. Tuned to a weak station, it will reject a powerful one close by with ease.

Sensitivity was up to that of most good tuners, just 30uV being needed to get hissy stereo. Ideally, all tuners need a lot more and the Teac started to work well with 0.8mV, the point past which it reached full quieting. Hiss sank to -72dB, at which level it is barely audible.

The Teac measured well, offering good selectivity rather than low distortion and wide channel separation.

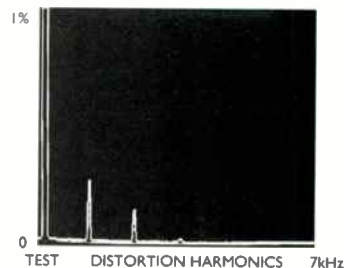
Frequency response (-1dB)20Hz -14.3kHz	
Stereo separation	-35dB
Distortion (50% mod.)	0.25%
Hiss (CCIR)	-72dB
Signal for minimum hiss	0.8mV
Sensitivity	
mono	3µV
stereo	30µV
Selectivity	
alternate channel	-82dB
Signal strength meter	none

### FREQUENCY RESPONSE



Flat response to 14.3kHz

### DISTORTION



Some second and third harmonic distortion (0.25%)



## CONCLUSION

In essence, all five tuners were alike. Their size, operational method and basic layout are similar; their final performance closely matched. Faced with five tuners, all providing uniformly good results, it is easy to get blasé and dismissive about them, suggesting that making a tuner is an easy exercise. In truth, even though today's tuners are usually pieced together from bought-in circuit blocks, the technology within them can be pretty difficult to master. However, the differences I found between all these tuners was surprisingly small, considering what latitude there is for general quirks and poor sound quality to make themselves known in the extensive circuitry of a typical VHF/FM tuner.

There are two basic aspects of VHF/FM hi-fi tuner performance that, although related, are best considered separately. One is the ability to capture stations (known as RF, or Radio Frequency, performance) and the other is the inherent sound quality of the tuner. Inevitably, there is a trade off between the two, but not an especially intractable or degrading one. The five tuners here give you no option on this matter, unlike more expensive devices. They lack the switchable RF/IF (Intermediate Frequency) options that allow users to make a choice between distant stations or better sound quality.

Every tuner on test had an extremely good RF performance; there was little to choose between them. It was assessed on the test bench using standardised (IHF - Institute of High Fidelity) test routines via a FM signal generator, and in practice by carrying out direct comparisons using a simple indoor aluminium dipole aerial, in addition to our six-element VHF aerial on the roof. This indoor aerial was a Maxview, picked up in one of the electronics shops on London's Edgware Road for about £10. It is equivalent in principle to the copper wire dipole aerials that are supplied with each tuner, but being rigid it can be stood in one position, away from walls. In our location, Central London, it gave a good signal from Radio 2 (700µV), but Radios 1 and 3 were weak at 140µV and 63µV respectively.

### INDOOR AERIAL

With this simple and common form of indoor aerial, I simply swapped between the tuners to see how they pulled in various stations right across the band, from Radio 2 (89.1MHz) up to Radio 1 (98.8MHz) and Jazz FM (102.2MHz). The differences were minor and barely significant. There was the same amount of hiss behind Radio 3 and the same tendency to produce severe distortion on Radio 1 (due to multipath interference) - for example, from all five models. I noticed slightly less background twittering on Jazz FM from the Denon and Teac, due to their superior selectivity. Since this was the only difference I could find after much experimenting, a conclusion the performance figures suggest, all five tuners can be considered identical in terms of RF performance, at least for all practical purposes. Moving the aerial just a few inches had a far greater effect on reception than changing between the tuners. So if you live in an area where VHF/FM reception is poor, either

because the local signal is weak or because you have no option but to use an indoor aerial, these tuners really are as good as each other, the Denon and Teac winning by a fine whisker.

So much for RF performance; all five tuners were equally good. Much the same situation existed with the five's audio performance, I found. Just a few years ago, differences in sound quality between most VHF/FM tuners were often quite obvious, primarily due to undulating frequency response characteristics, but often poor MPX (multiplex) filter design and termination were also to blame. Since then, the overall performance of tuners has been tidied up considerably. Just a glance at the individual frequency response plots of these budget tuners clearly shows that they are all pretty flat: a situation that would be near impossible with a similar sample of tuners in the past.

The Denon deviates most from flatness of frequency response, with a slight treble droop that was clearly audible as an obvious softening or warming of the sound. However, it remained lucid and possessed an open sound, staying free of the rather

Both the Sansui and Teac, whilst sounding very flat tonally, had some stodginess in their sound; they were lacklustre. Of all the tuners, these two were the most apparently neutral, yet neither captured my attention in any special way. They placed a heavy hand on the music, something that could easily be verified by listening to the original; a major advantage of using a signal generator in such tests. I don't want to be unkind to these products; they were only subtly below the others in terms of subjective quality and both were actually more balanced and accurate tonally. However, the rounded and thickened nature of their upper mid-ranges did remove some valuable sparkle and insight, making for a warm, but easy sound, quite high on atmosphere but lacking in crispness and analysis. Either could provide a lot of performance and entertainment at a low price. Their manufacturers have done well in fact, but in this group, others display small advantages.

The JVC FX-335L offered a bit more insight into a performance, without suffering undue brightness or thinness. It was one of the most impressive of the group, albeit by a

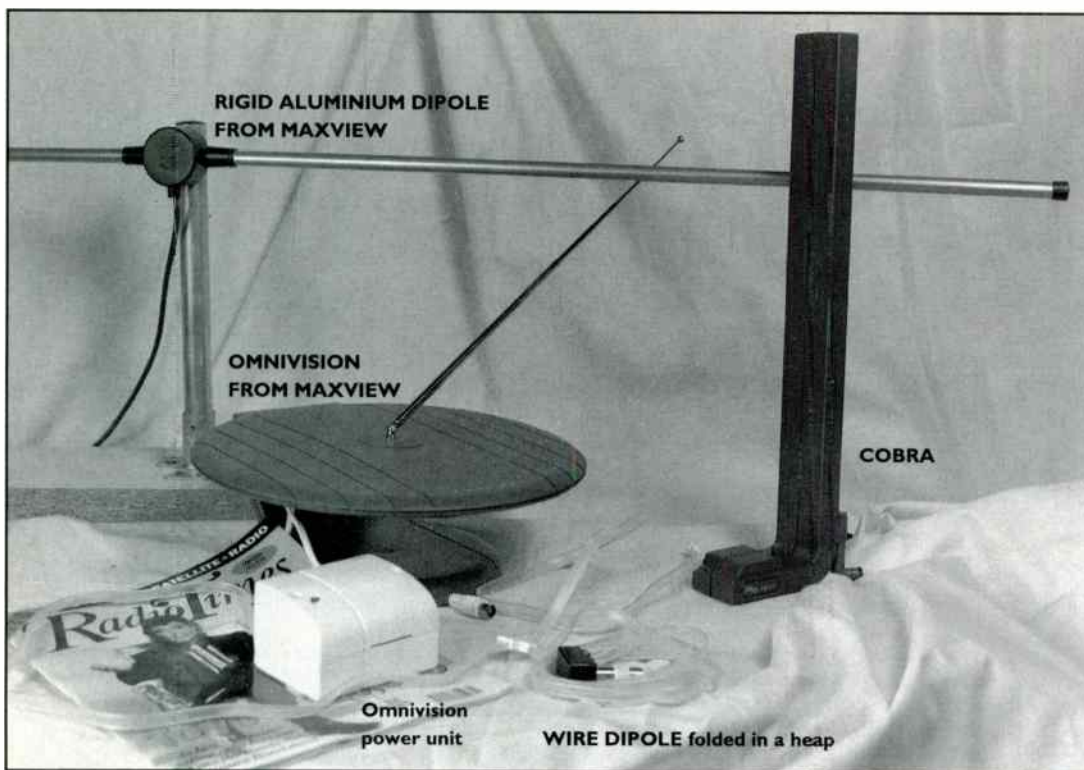


deadened dynamics of the others. I did notice that the Denon had an altogether bigger and warmer bass delivery than the other tuners. I suspect that this was due to its output being a bit euphonically enhanced, adding a useful fullness to its sound. There were times when I had severe doubts about its accuracy, but I did find that in practice, even when working from our own signal source, the TU-260L offered an attractive sound that was both easy and entertaining to listen to.

Whilst the Pioneer F-229L initially showed itself to be finely detailed and insightful, prolonged listening exhibited an emphasis on the upper mid-range, giving a light, gutless sound. Percussion like triangles, cymbals, hand drums and such like, jumped out of the mix with the Pioneer, but its bottom-end delivery was so muted, I would hardly have known that Tracy Chapman's 'She's got her ticket' was a reggae track. The Pioneer's inability to show frequency and memory number simultaneously was also irritating. Every time a station was changed, the memory number would come up first, introducing a pause before the station could be identified by its frequency.

small margin. I also liked its clear and attractive display panel and easy to use controls. Only the AM tuner section let the JVC down; it really wasn't very good. The FX-335L proved a fine budget tuner all the same. Although not perfectly balanced, it does offer good sound quality and all-round performance on VHF/FM.

The popularity of Denon's TU-260L was justified by this group test; it is an excellent all-rounder. I found it easy to operate, very good on AM, stronger than most in its RF performance and fine in terms of sound quality, while at the same time being the least accurate of the group subjectively. This might seem paradoxical, but the TU-260L has strengths that outweigh this particular weakness; the presence of bass power - something on a par with the others - being the most cogent. It gave the tuner a distinct edge subjectively. The Denon had a bigger and fuller sound than the others, but not one that could be termed either 'dull' or 'thick'. In fact, there was, I fancy, a little less congestion around the treble regions than that of the other tuners. Ask me which tuner I would choose of the group and, by a hairs breadth, I would select this one ●



# antennae raised

**No access to the roof, or no head for heights? Noel Keyword examines some indoor aerials.**

Indoor aerials are beginning to look hi-tech these days; they've become space age accessories. Most are for TV, but some manufacturers make sophisticated looking VHF/FM aerials too. With the increasing popularity of this waveband, we get more and more queries about their effectiveness, so here's a test of the most common ones.

Priced at £49.95 in a shop close to us, many people know about the Italian Cobra aerial (as opposed to the American Cobra aerial, which is rare in the UK), because it is widely distributed into hi-fi stores. Supplied by Bandridge (081-543 3633) it comes in a colourful box that is eye catching and appealing. Packaging is very important these days, as is styling and overall presentation. Gone are the days when bits of bent aluminium were acceptable. The modern indoor

aerial has to look the part and make a statement in the home.

Nicknamed 'the flying saucer' immediately by us, the Omnivision from Maxview also looks sophisticated. It comes attractively packaged and is available in B&Q, Wickes and many other large outlets, Maxview told us. We first spotted an Omnivision in the Maplin Electronics catalogue and it was from Maplin (Tel: 0702 552911) that ours came, by return of post. They charge £39.95. Maxview said the recommended retail price is £47.95, but around £45 might be common.

As a reference we also used a simple rigid aluminium dipole, mounted on a one-foot square lump of chipboard (kitchen work top) that acts as a base. This unit is also from Maxview and is something I picked up for a tenner a few years ago. Apparently, it is pretty uncommon these days; Maxview told us there was little call for it, although the price has stayed much the same. That's a pity, because painted white (it comes in bare aluminium) it will sit unobtrusively on top of a wardrobe in an upstairs bedroom, which is an ideal place for an indoor aerial. Being 147cms wide, it can be awkward to position, but there are places where a dipole like this fits perfectly. Ours resides on top of a 7ft tall bookcase, where it is very effective.

The Maxview aluminium dipole is in principle a rigid version of the folded wire dipole aenals that are supplied with tuners. To give you some idea of what sort of improvement, if any, you can expect by buying an indoor aerial to replace one of these, we used one in the test for the purposes of comparison. Wire

aerials are often strung up against a wall, which is not ideal; the wall weakens the signal and in many cases will not be at right angles to the transmitter, as it needs to be, since dipoles are directional and must face the transmitter side-on, as it were. This is one of the biggest drawbacks of using a wire dipole. A rigid aluminium dipole usually manages better, since it is self-supporting and not constrained to run along a wall.

A late but interesting arrival was the Parsec WaveCatcher from America, distributed by Path Group (021-776 7616). This tiny but stylish unpowered aerial sells for £19.99. It offers AM reception as well as VHF/FM, the only aerial in our group to do so.

The Cobra and Omnivision aerials are

powered and must be connected directly (Cobra) or indirectly (Omnivision) to the mains. Powered aerials have an amplifier in them that increases signal strength. Trouble is, the amplifier also increases noise by the same amount, so there is - in simple theory at least - no benefit. In fact we found that sometimes hiss did lessen by a limited amount as gain was increased, something that can be done on both the Cobra and Omnivision, so there was a small improvement to be had.

## COBRA FM405

The Cobra is a tall (43cms), slim unit with a small footprint 12cms deep by just 6cms wide. It can be stood almost anywhere and in this respect is a convenient design. The vertical part of the aerial is 5cms wide. It is mains powered but the mains and signal leads were too short - at roughly 1.4 metres long - to give much flexibility of placement. In most cases the best place for an aerial is up as high as possible, but with the tuner at bench height, like one might be in practice, ours couldn't be positioned close to the ceiling. Mains and signal extension leads would be needed, which rather defeats this aerial's convenience factor.

The Cobra is a VHF/FM aerial only and provides up to -10dB of attenuation, as well as +19dB of gain, the specifications say. Attenuation would be used in areas of high signal strength. A column of LEDs is fitted, but they don't show signal strength. The lower green one shows power and the rest merely light in accordance with gain control position, something we felt was deceptive.



## MAXVIEW OMNIVISION

The Omnivision is a grey plastic circular disc, 30cms in diameter, on a base that makes the unit stand 12cms high overall. It has an ancillary vertical rod aerial that, if used, improves signal strength, but then the overall height becomes 92cms. The signal lead is 4.7 metres long and coils neatly within the circular base. It allows the aerial to be moved to a high position, and this is the most effective way of maximising signal strength. A six-turn gain control is included, which gives from +2dB up to +26dB of gain over a bandwidth of 40MHz up to 890MHz, wide enough to cover VHF/FM up to UHF TV. There is no form of frequency division, so the hi-fi tuner must be able to reject TV signals. Whilst we found this no problem, people close to TV transmitters might, since the TV signal could overload a tuner before the VHF signal was strong enough.

The aerial plugs into a mains power unit, which has a short flylead that plugs into the tuner. Maxview told us that inside the disc are four folded dipoles in a patented arrangement and that the unit is truly non-directional.

## PARSEC WAVECATCHER

Used to aerials of dimensions related to wavelength (3 metres at 100MHz), I had doubts about the tiny Wavecatcher. Happily, they were unfounded. It is just 19cms high and 8cms deep, easy to place anywhere. However, in practice a short download of 1.7 metres limits the positions that can be found for it. The lead splits at the end into AM and FM connections.

### Tests

The aerials were placed at the same height and moved laterally for best signal. Signal strength was measured and assessed for quality with a Hitachi FT-5500 MkII tuner.

Our first finding was that the two small aerials, the Cobra and Parsec, were more position sensitive than the large ones and there was a greater variation in signal strength between stations with them. In some positions, certain stations would almost disappear. When the best spot had been found both these aerials proved slightly worse than the dipoles. However, they still have some advantages.

The Parsec is so small, and unpowered to boot, that I didn't believe it would work. That it does,

and well, is almost magic. Its short lead hampered placement and Radio 1 was weak when the other stations were strong, or vice versa, as the figures show. Being small and unpowered it can be moved easily. I fitted an extension lead and managed to find a position where all stations measured between 36dB (63µV) and 40dB (100µV), at which point the Hitachi FT-5500 MkII was sounding quite good. This aerial is for those who want something small and unobtrusive. It doesn't bring in the strongest signal, but it is small, simple and inexpensive. These are its benefits.

The Cobra was about equal to the Parsec in basic reception efficiency but if gain was increased it did make some stations quieter and less prone to rasping crackle. I'm afraid there was variation in all the aerials though and, on balance, the Cobra with gain managed a little less well than the dipoles, as the figures suggest. It is best seen as good for a compact aerial, again being for those who want something small and unobtrusive. The Cobra is expensive though.

The thing that everyone despises - the wire dipole - starts to look good in this test. It actually offers slightly better results than the Parsec and Cobra. However, the aluminium dipole is easier to position and, if there is a good place for it high up, then at £10 or so it is excellent value. But only if it can be got high and aligned correctly will this aerial offer improvement over a wire dipole and the powered aerials. Nevertheless, this simple aerial has the most potential and is the best value.

The Maxview Omnivision with the telescopic aerial fully extended vertically gave the best all-round results. It can easily be put in a high place which is a further benefit. However, the simple truth is that if you are expecting significantly better results than those from a wire dipole, then even this unit might be a disappointment. We found it gave a little less hiss and crackling from most stations, but not all, and raising gain with the user adjustable control often did not help. On Radio 1 it gave obviously more hiss than the rigid dipole for example. Nevertheless, the Omnivision offers the best balance between ease of positioning, cost and performance. We found it sounded reasonably quiet and crackle free on the greatest number of stations.

### Conclusion

Perhaps the most surprising conclusion as far as most people are concerned is that specialised indoor aerials actually offer a slightly worse performance than simple dipoles, including the bits of wire (folded dipoles) that come with every VHF/



The Parsec Wavecatcher with CD for size comparison

FM tuner. Their main advantage is small size and domestic acceptability. However, if small size itself allows placement in a high position, higher than a wire dipole for example, signal strength is likely to be strengthened. The Parsec is fine in this role, except that it needs an extension lead.

Highest performance is offered by the Maxview Omnivision, but only by a small margin. Again, there is no substitute to placement in a high position for maximum signal strength ●

	RADIO 2 89.1MHz	RADIO 3 91.3MHz	GLR 94.9MHz	CAPITAL 95.8MHz	RADIO 1 98.8MHz
wire dipole	40	37	48	43	38
rigid dipole	40	42	45	45	42
Cobra	29	33	46	37	34
Omnivision	43	46	50	46	42
Parsec (higher)	36 (36)	34 (38)	34 (40)	37 (36)	20 (38)

Here are the signal strengths (dB) the aerials gave across the band. The wire was strung up properly, away from a wall and facing the transmitters, like the rigid dipole. The Cobra and Omnivision figures are those of the aerials without gain. The Parsec gave the results in brackets (higher) with an extension lead that allowed better placement.  
20dB = 10µV      30dB = 31µV      40dB = 100µV  
50dB = 316µV

The evening that the Sequel amplifier arrived at my home couldn't have been more appropriate: I had spent the afternoon before listening to a Creek CAS4140 Series 2 which had been, in the not too dim and distant past, one of designer Mike Creek's babies. However, the Creek Audio name is now owned by the TGI (Tannoy Goodmans International) group, and Mike, who left the conglomerate's employ to pursue a freelance career, has had to come up with a new banner under which he can release his designs. His new business trades as EMF Audio, the abbreviation being apt and instantly recognisable to anyone who remembers schoolboy physics - Electro Motive Force. Production is based at the original Creek premises, his family's factory North of London.

The second part of the EMF Sequel's name will seem equally appropriate to anyone comparing the amplifier with one of Mike's previous designs: the familial

The proportions of the case-work are similar to those of the CAS4000 series amps but the Sequel's all-metal case is a wee bit larger and encloses the rear-mounted heatsink. Unlike the CAS amps, which looked individual and distinctive, the new amplifier appears to me rather anonymous and unremarkable. There's nothing actually "wrong" with it but I can't visualise many purchasers beaming with pride whilst showing it off to their friends.

The new amplifier is fully contemporary - in mass market terms - in its intent, being primarily designed to cater for line-level sources, Compact Disc in particular. A phono input is provided but it can be easily removed to make way for a line-voltage source. Creek insists, however, that the Sequel should not be regarded as a switching unit which also amplifies; he'd rather it be regarded as a quality power amplifier with a volume control and modest control facilities. If you want more - and the

Creek CAS4140S2 I'd previously been reviewing and the results had been favourable. Despite the fact that the speaker's price made it seem inappropriate - and it does give a better performance with a better amplifier - its open-sounding character allowed the amplifier's presentation to be easily and fully scrutinised.

What became apparent the minute that I began listening to the Sequel was the 'complete' nature of its tonal balance: there was none of the low frequency paucity which commonly marks out inexpensive

There was no hint of exaggeration, the presentation having proper integration and cogency, yet with the benefit of a lively, natural 'bounce' and vibrancy

# the story continues...

**Mike Creek returns to the amplifier scene with his new EMF Sequel. Malcolm Steward tells the tale.**

resemblance is readily discernible. That isn't to say that the old and the new are indistinguishable one from another. . . but let's not get ahead of ourselves. Before revealing whether it was the butler who did it, we ought, at least, to familiarise ourselves with the story's leading character.

The Sequel is a strictly minimalist, integrated design, offering the barest of necessities: controls for power on/off, input selection, volume control, tape monitoring, and a headphone socket are all that grace its fascia. The rear-panel layout echoes Mike's previous designs: RCA phono sockets - rather closely spaced - for inputs, and two sets of 4mm sockets for loudspeakers, the first pair of which is marked 'direct' and is permanently connected to the amplifier's output stage, while the second is switched such that the feed to the speakers is muted when a plug is inserted into the headphone jack.

amplifier doesn't even include any line stages (see Noel's technical comments regarding its input sensitivity) - the designer suggests that you purchase a dedicated pre-amplifier to provide them. This tempts me into the semantics arena where I'll ask why did he not dispense with all the switching and control functions and call the unit a power amplifier? The CD-only user, envisaged as the prime customer, could then use a passive pre-amp instead. If we're talking about a modular approach why not go all the way?

As it stands, however, the Sequel has these minimal pre-amp features and in this form Mike said it would cost £299. I used it with my Naim CDS as the main source component. Various speakers were employed but for the most part I ran a pair of £1099 DynAudio Contour 1.3's wired to the amplifier with Sonic Link 'Care' cable. I had used the same set up with the

amplifiers, nor any lack of body or depth in the midrange or treble regions. The result was that instruments and voices appeared substantial and solid, not bleached or artificial. Mary Black's latest CD, *Babes In The Wood*, sounded particularly fine in this respect: the rich harmonic content of piano and acoustic bass was well maintained and the singer's voice appeared finely detailed but not at all contrived. There was no hint of exaggeration, the presentation having proper integration and cogency, yet with the benefit of a lively, natural 'bounce' and vibrancy. Dynamic contrasts were similarly handled in an instinctive manner, affording the music a readily believable perspective. "Bright Blue Rose", for instance, opened by a lightly picked acoustic guitar behind Mary's voice, with the bass making its barely perceptible entry half way through the first verse, sounded perfectly judged. When Pat Crowley's accordion and Declan Sinnott's Dobro interjected their entry was wholly in accord and sympathy with the song's progression, fitting and effective.

The Black Rock Coalition CD





"The History Of Our Future" demonstrated the Sequel's acuity with matters temporal, which seemed on a par with Creek's eponymous designs. The drummer's backbeat which gives dadahdoo-dahda's "Son Talkin" its effusive character demonstrated both the overall similarity and the slight difference between each amplifier's presentation: this musical device's toe-tantalising push had leapt to prominence on the CAS4140S2 whilst on the Sequel its presence was still felt but less acutely accented. The track retained its inevitable groove but with the displaced beat not announcing its position in the lyrical metre quite so pointedly, the music's drive was ever-so-slightly diminished. Regard this, however, as a particularly subjective feeling: rhythmic subtleties don't affect all listeners in the same way.

Blue Print's "M.L.K. . . . Check!", from the same CD, showed that the Sequel was no waffler when bass ventured into the wicked zone. The Chapman Stick bass used on this number comes - subjectively, it seems - perilously close to DC at times. These floor-board threatening excursions didn't disturb the amplifier's composure in the slightest. Its grip seemed unrelenting, the bass retaining its tunefulness, note shape and speed all the way down. The searing sax on the next track, J. J. Jumpers' "Workout", showed that the amp's sobriety extended throughout its bandwidth, the instrument's ear-splitting upper partials still intimating the imminent

Each vocalist's voice was clearly and unambiguously presented across the soundstage, finely detailed and delineated during harmony sections.

destruction of the listener's hearing apparatus but the threat never being realised. Too many amplifiers let go during this song's intro and before you've reached the first verse the temptation to skip the track - and miss a really good number - becomes irresistible. The Sequel lost none of the music's attack or razor-edged dynamic but kept excess well out of the picture. The sweet, measured treble of the DynAudio I.3 played a useful role here: a speaker with a ragged top end would yield at high replay levels with such extreme provocation. So take note when auditioning this amplifier: its top end doesn't shut down early to make it sound nice'n'cosy with fifty-pence tweeters.

Londonbeat's "9am (The Comfort Zone)" showed another facet of the Sequel's orderly,

controlled personality. Each vocalist's voice was clearly and unambiguously presented across the soundstage, finely detailed and delineated during harmony sections. The amplifier also brought out the unusually dry 'acoustic' into which the voices had been engineered, such that the decay on some passages made it seem as though they had been gated. Reference back to the CAS4140S2 showed that this amplifier actually made the effect more dramatic, but the Sequel was still preferred for its more confident presentation: the 'older' - and less expensive - Creek design couldn't match its security when voices soared towards the rafters. Not that the Sequel is inordinately powerful but its few extra watts paid dividends when climaxes happened along.

Overall it seems that Mike Creek has achieved what he set out to do designing the Sequel. A preamplifier intended to partner it - or future power amplifier designs - which will provide more sophisticated switching and phono facilities is planned. It will be interesting to hear this and to monitor EMF's progress. When the Creek CAS4040 was first released, many years ago, it quickly established itself as the amplifier for others to beat. Times have changed since then, amplifiers have progressed significantly, and I don't think that the Sequel will cause quite the same kind of shake up. It is, nonetheless, a capable and honest design and a worthy addition to the lower middle-class ranks.



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## Measured Performance

With long experience in designing and marketing minimalist amplifiers cast in the classic UK mould, Mike Creek has the ability to produce an amplifier that is stable and predictable. The Sequel contained no surprises in its measured performance, just as I expected. It produces 50 watts of power per channel, a figure that increased healthily to 72 watts into a low load. The increase isn't especially great; the ideal is a doubling of power (i.e. to 100 watts).

Fifty watts is enough to give quite high volumes in a normal room, but not enough to go very loud. The Sequel, like all fifty watt amplifiers of course, is meant to drive budget or mid-priced speakers of normal sensitivity to a 'sensible' level, rather than extremely loud.

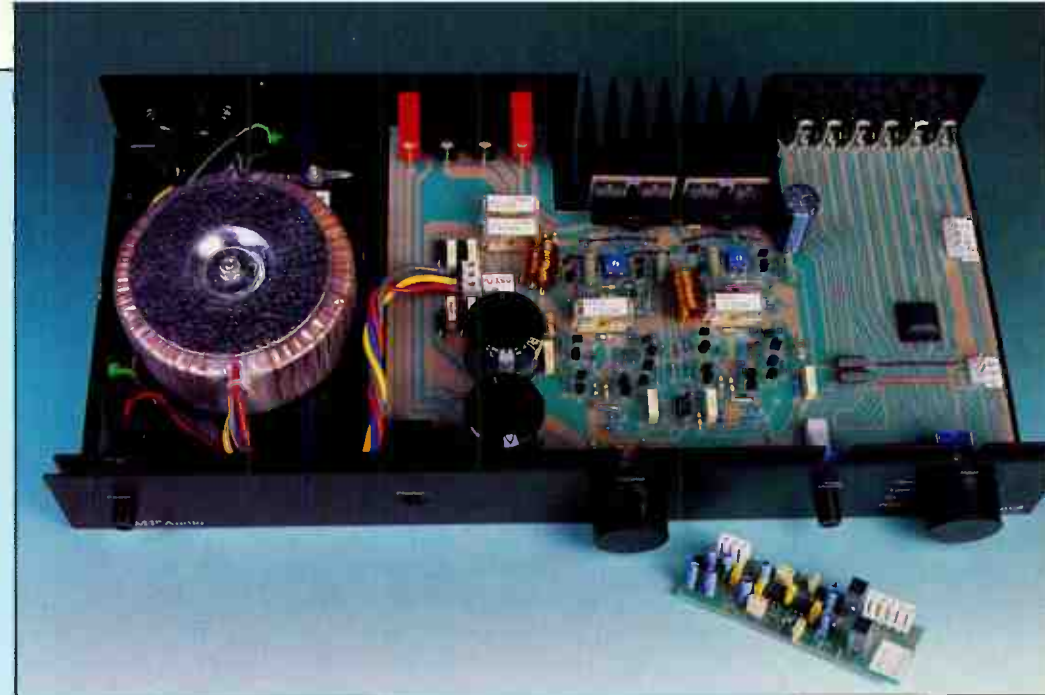
The Sequel is about average in terms of its power increase into a low load, which suggests it has a respectably low output impedance and will control loudspeakers satisfactorily. Even though our loudspeaker measurements show that most speakers have a very high nominal impedance and draw little current, there does still appear to be a good correlation between bass quality and regulation. I would expect the Sequel to sound well controlled in its bass, although it would be unlikely to exhibit the apparent control of amplifiers with stronger power supplies giving better regulation - but these cost a lot more.

## Disc Option

The amplifier is sold as standard without a disc stage, for those who have deserted LP. Jumper wires configure the phono sockets to act as an ordinary line input, like CD, tuner, etc. In this form, there are four ordinary switched inputs that run straight into the volume control, as usual, plus a tape monitor input, all of 420mV sensitivity. This is a trifle low; some modern Pioneer cassette decks (e.g. CT-737 MkII, CT-900S & CT-93) produce 350mV output, not enough to drive the Sequel to full volume with the volume control wound right around to maximum.

It is common for amplifiers to have a line input sensitivity of around 250mV to cope with the odd piece of equipment of low output. The CD inputs are sometimes desensitised by the use of an attenuating resistor to keep volume control position roughly the same. In this amplifier all inputs are really of CD sensitivity, which means volume has to be wound up with sources having a low output.

I noticed some slight DC bounce when turning the volume control, but at 40mV maximum it was barely noticeable in the loudspeakers, producing some slight cone movement but no noise. The DC servo circuits allowed this, but otherwise held the output to less than 1mV of DC output offset, which is a very good performance. More disturbing was the level of switch-on thump with phono selected and volume up: it hit 10-15volts, according to volume control position. The duration of the pulse is long enough to throw loudspeaker cones into violent fits, I found, a performance which is unacceptable. However, the disc stage has not been finalised and this will surely be cured. With any of the line inputs selected, just a slight click came from the loudspeakers, even at full volume, so the



'thumps' will only be a problem for LP users.

Distortion was negligible at low frequencies and in the mid-band, but rose slightly at high frequencies, measuring 0.01% at 10kHz for example. This is still a low value however, making the Creek a low distortion amplifier. The distortion analysis shows the presence of second, third and fourth harmonics on a high frequency test signal and I did find that the amplifier has an extended harmonic structure at high frequencies, but luckily the overall level of the components remained safely low even up to full output. I would expect no real influence upon sound quality from this area.

## CD Input

Frequency response of the CD input (and, therefore, tuner, aux, etc) was 4Hz-43kHz, which is just about ideal. A lot of amplifiers still cut off at 20kHz, when they should go lower for CD. The Sequel reaches down low enough to complement CD in the rare instances that it may be expected to do so with speakers that can go low as well. There's little point in going much above 22kHz, since this only serves to reproduce distortion or unwanted signals, both from tuners and from digital systems. But ensuring a flat response to 20kHz means rolling off one octave above, or around 40kHz, like the Sequel.

The disc stage was bandwidth limited at both ends of the frequency range, meaning there is a warp filter, which rolls gain off below 30Hz. However, the disc stage is contained on its own plug in board and Mike Creek was pondering on whether to include a sub-sonic warp filter or not. He prefers the sound without a filter (like me) but acknowledges the fact that the filter is enshrined in a European IEC specification for disc equalisation and had merits in certain awkward circumstances, where the cartridge is too compliant for the arm. The with/without option may be made available to buyers. A moving coil disc option is also likely to become available.

Noise from the disc stage was low. There was no hum and little hiss. Although the hiss level measured -73dB by the usual method of measurement, high sensitivity affects the result. An equivalent input noise value of 0.55µV is

the only useful guide to hiss level in use and this is satisfactorily low. The fact that an NE5532 low noise/distortion integrated circuit is used (about the most popular choice today for audio circuits) is almost enough to guarantee good results. The input overload threshold was adequate if not exceptional at 46mV. Even the highest output cartridges rarely give more than 30mV on musical peaks, I have found from measurement. Input capacitance measured 220pF and impedance 50kohms, both correct values.

As with any new amplifier of good pedigree and, therefore, of great interest to buyers (and dealers), I tested this amplifier thoroughly. There are some minor blemishes that should be eliminated, but otherwise it is exactly the sort of carefully and knowledgeably engineered product that I expected, given Mike Creek's successful past in amplifier design; it measures well. **NK**

## Test Results

Power	50watts
CD/tuner/aux.	
Frequency response	4Hz-43kHz
Separation	-83dB
Noise	-108dB
Distortion	0.004%
Sensitivity	420mV
dc offset	0mV
Disc	
Frequency response	30Hz-44kHz
Separation	-74dB
Noise	-73dB
Distortion	0.006%
Sensitivity	2.2mV
Overload	46mV

## Distortion



The phono stage comes as an optional extra. It is shown here sitting in front of the amplifier and if wanted simply plugs in at right. There are four protection fuses picked out here by white labels. The large toroidal mains transformer can be seen at left.

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# microdac at a mini price

**Alan Sircom listens to Micromega's new Microdac, a CD convertor with a price to match its size.**

Micromega's latest product, the £299 Microdac is one of the cheapest digital-to-analogue converters (DACs) on the market. Only the Arcam Black Box 1 and Kelvin Labs' convertor are cheaper. The other two currently available, relatively low price, converters are the Audio Alchemy Digital Decoding Engine and the Deltac Little Bit, at seventy to a hundred pounds more. This marks Micromega's move into a lower price sector. Their Logic and Leader Compact Disc players are more expensive than the Philips players they are based on, whilst the Duo digital-to-analogue converter is up in the same realm as the Meridian 203. The Micromega Microdac is the first of a couple of basic building blocks; a matching budget transport, the top-lauding Microdrive, will follow this year.

Last month's conclusion to our group test of DACs, transports and integrated

players was not too favourable as far as cheaper DACs were concerned, with the more expensive player likely to be as satisfying as a low cost transport and DAC combination. For those wishing to upgrade a cheaper player, a £400 DAC may not prove as successful as a good £400 player. At £299, the Microdac offers a serious alternative, due to its lower price alone.

The Microdac, as is typical of digital to analogue convertors, is minimalist in the extreme. It is a box with a light on the front. If that sounds too simple, it's a small box with a light on the front which glows in traffic light colours: red for warm-up and green for go. If the light is amber, it means that the Microdac cannot lock onto the digital signal correctly.

The Microdac omits some of the switching circuitry of the Duo, such as the phase inversion switch and the

optical/co-axial switch. This last is selected internally, although the selection process is a bit sticky. It essentially works by defaulting to the input selected when switched on. If one should wish to swap inputs, but not switch the device off, the input needs to be plugged in to 'offer itself up.' It is then removed and replugged. If not, nasty bursts of white noise occur as the Microdac fails to 'see' it. As Micromega only supply a coaxial lead, I believe that they expect most people to use the coax and indeed, it seemed to sound slightly more solid than via the optical link.

This highlights most of the controls at the rear of the Microdac. At the extreme right of the rear panel are the two gold-plated phono outputs, followed by the 'opto' optical and 'coax' coaxial inputs, an IEC mains socket and a voltage selector that is reassuringly difficult to change to the wrong voltage. The box itself is basically a perspex sandwich - two sheets of black perspex top and bottom, with a powder-coated middle wrap. It is roughly the same size as a small hardback book, at 220mm wide, 60mm high and 155mm deep, and it weighs 1.5 kg sitting on its four rubberised feet.

Micromega recommend that all their DACs need a healthy run-in period, and the Microdac is no exception to this rule, needing a good couple of days before settling down. It is also a good idea to leave the DAC, as well as most solid state hi-fi products, powered constantly; as its power consumption is only five watts, it will not cause a major hiccup in the 'leccy bill. To assess its vices and virtues, I used the Microdac with both a Teac P-500 transport and a Philips CD 850 player, with both optical and digital inputs. As mentioned before, I compared the Microdac against the Audio Alchemy DAC in every case. The digital source was connected, via Audio Note Silver and Audioplan Music Cable Super X-Wire to an Audio Innovations Series 200 preamplifier. Power amplifiers used were the Audio Innovations First Audio and Audio Note Neuro triode designs, both of which pump out a massive seven and a half watts, while the loudspeakers were Audio Note AN-Ks on Huygens stands.

## Family Sound

Micromega products seem to have a 'family' sound that the listener will either love or hate - the Microdac sounds very similar to the Duo DAC that I found so endearing a few months ago. From memory, I would find it very difficult to tell the two DACs apart. At £500 or so, the Duo has its followers who feel, as I do, that it is difficult to better. At £299, the Microdac effectively lays the competition waste.

At this low price (for a DAC, at least), most converters sound as if they have been compromised in some way. The Microdac, on the other hand, hides its low cost beneath a patina of quality. Sitting atop the Philips player, the Microdac greatly improved its perform-



ance, adding refinement, subtlety and a lightness when compared to the machine on its own. It was as if the Microdac made the Philips play music in the way that it always wanted to. Most noticeable in the list of improvements was a wonderful sense of stereo, with excellent image placement and expansive soundstaging. This was most apparent when playing Bach's Magnificat, as each soloist was clearly defined within his or her own space in the staging; Emma Kirkby's voice rising from out of the digital darkness clearly and brightly.

All areas of the performance were improved, however, but the imaging was immeasurably better. The measured performance suggested that there should be some difficulty in resolving low level information, but I felt that if there were any problems then they were so near inaudibility that I could not hear them above the already low noise floor of the triode amplifiers. Even if these problems are audible to those with quieter amplifiers than my own, people will be swayed by the musicality of the performance the Microdac presents, regardless of musical programme.

I was loaned a copy of the BBC's Hitchhiker's Guide To The Galaxy during the test. From this, it was clear that the Microdac's portrayal of vocals was every bit as lucid. The voices of the Book, Arthur Dent, Ford Prefect,

Zaphod Beeblebrox and the others had all the life and articulation that I remembered from the original series; better, in fact, as at the time of the broadcast I listened to the production on a cheap transistor radio.

The Microdac is not perfect, however, but its weaknesses are only apparent when compared to a more expensive DAC well implemented and partnered with a complementary transport. Whilst its well balanced nature is endearing, those who like the almost clinical nature of some very detailed DACs will find it lacking. It is very clean and clear, but it lacks the final cutting edge of detail that comes from DACs like the Bigger Bit. As I find this detail almost too incisive at times, especially with badly recorded discs, the slight softening that the Microdac gives comes as a welcome relief.

**Funkier**

When set against the Audio Alchemy Digital Decoding Engine, which I hitherto considered to be the finest of the lower priced DACs, the Microdac confidently out-performed it. A less recessed and splashy sound was produced than that of the Alchemy, in the process giving a greater body to vocals that was considerably more credible. Both had a similar tonal character, probably due to their use of the 7323 chips, but I still found myself

finding the Microdac the more alive and 'funkier' of the two DACs.

Ultimately, when compared to leading edge transport/DAC combinations the little Microdac begins to show its patchiness, like a loveable mongrel at a pedigree dog show, but I would find it difficult to suggest a DAC available under £600 that betters the little Microdac. At best, other DACs can only match its overall performance. When one considers that usually these are more expensive, it puts the Microdac's worth into perspective.

With the Teac P-500 transport, value for money was not in question. At a combined cost of around £900, competition from the single box players is fierce, but the Teac/Micromega combination had a lot to offer.

I feel that the off-board DAC is an excellent way of upgrading a tiring CD player. The choice of DAC is of primary importance, however, as too accurate a DAC will show up more problems than benefits. A lesser DAC, on the other hand, offers little in the way of improvements and is ultimately limiting when time comes to improve the transport. The Microdac, in my opinion, offers the right balance, improving the performance of the player, but still having much in reserve when a transport is added at a later date. There are few bargains in hi-fi, but the world-class Microdac represents excellent value for money ●

**Measured Performance**

The Microdac is a budget Bitstream convertor that uses Philips' SAA-7323 convertor chip. Bitstream from Philips runs at a higher data rate than the Japanese systems, because it is a true one-bit system. As a result, layout and screening difficulties are more severe, problems more common. The Microdac had its fair share of them.

Although Bitstream was exploited because it promised very low distortion, when unwanted circuit interactions come into play, distortion can and often does appear. Micromega suffer from this problem with the Microdac, probably due to its small size. They are not alone - so do many other DACs we test. The distortion analysis picture clearly shows distortion components as spikes. These are odd-order harmonics, third, fifth, seventh, etc., commonly considered to add a sharpening and coarsening tinge to the sound. In its favour, overall level was reasonably low, so I wouldn't expect the sound to be very obviously affected; it might be very slightly coarsened, at worst.

Arguably worse was the fact that both channels fail to resolve signals below -80dB; tones at -85dB and -90dB were just not reproduced at all, hence the peculiar distortion figures greater than 100%! In practice, an inability to resolve low levels will erase ambient information and fine cues the ear relies upon to interpret the situation in which the recording took place. However, this phenomenon won't always be heard. Many - but certainly not all - Rock recordings don't have a lot of low level information in them, or it is masked by the generally high music levels that are maintained. Classical recordings may, superficially, seem to be more a victim to this problem, but only when the recordings themselves are fully

dithered and very linear, which currently applies mostly to the latest recordings made by the best equipped and most informed engineers. Nevertheless, even though the Microdac's performance limitations are unlikely to make themselves known except under particularly revealing circumstances, ideally they should not exist.

Frequency response has an interesting and not unique tilt downward toward high frequencies. This is used to give a 'warm' sound from CD, more akin to that from vinyl.

There was a 4dB difference in noise between the channels, but at -92dB worst case this is academic, since at these levels noise is inaudible.

Some unwanted spurious outputs existed above 21kHz, but the latter were not too strong. Whether these will 'fold down' into the audio band to affect sound is open to conjecture, but it certainly is a possibility. Again, it is better if such things don't exist, but this is a budget DAC.

Channel separation was good at all frequencies and output fairly normal at 2.36V.

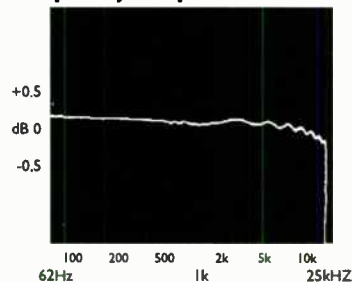
The dynamic range figure is poor because of the distortion generated at -60dB, this being a measure of such distortion, weighted to favour audible mid-band components. Again, there's nothing especially impressive here.

Micromega's Microdac has quite a few measured weaknesses and it is tweaked to give a warm sound. **NK**

**Test Results**

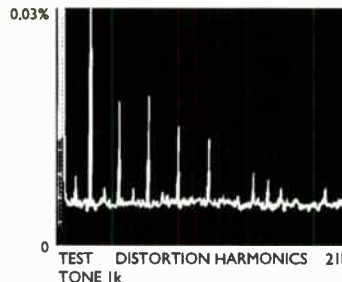
Frequency response	4Hz-20.6kHz	
Distortion		
-6dB	0.008	0.004
-30dB	0.039	0.05
-60dB	1.6	2.1
-90	361	377
-90dB dithered	168	168
Separation	left	right
1kHz	-105	-104
10kHz	-92	-91
Noise	-96dB av.	
with emphasis	-100dB av.	
Dynamic range	95dB av.	
Output	2.36V	

**Frequency Response**



Down tilt in frequency response gives warm sound

**Distortion**



More distortion (0.054%) than usual from Bitstream at ordinary music level



## MANA MINI-TABLE

Paul Hartley, our cover photographer (only hi-fi nuts work for us!), describes yet more changes and improvements to his system brought about by Mana tables.

When I finally shuffle off this mortal coil, scatter my ashes over the nearest Homebase car park or bury me beneath the anaglypta aisle at B&Q.

My latest stab at DIY has resulted, after a lot of swearing and gnashing of teeth, in some new and (though I say so myself) better shelving to house what seems to be an ever burgeoning hi-fi system. I do seem to have acquired rather a lot of different boxes recently; you know, power supplies and DACs and that sort of thing. Now this is all very well, but they do need to be put somewhere and I'm not the sort of person who's particularly keen on shoddy so-called hi-fi furniture with festoons of wire hanging out the back.

So my equipment resides in a sort of alcove on wooden shelves and this looks just fine, especially with the turntable resting on the top shelf perched on a Mana Sound Frame. With a bit more space now available, the plan was to substitute the Sound Frame for a Mini Table which in theory will allow me to slide the Pink Link power supply underneath - heat huh!

The Mana Mini Table is essentially the top bit from a Reference table and

is constructed from the usual welded 'L' section steel, spiked above and below and supporting a nicely finished smoked glass shelf. The Mini Table not only looks a damn sight better than the Sound Frame but scores over it when it comes to rigidity, being far stiffer and less prone to flexing or twisting. Setting up is not particularly tricky; you don't need engineering qualifications, just an Allen key, spanner, a good spirit level and an ability to read the instructions supplied.

So, armed with the confidence of the ignorant, I soon had the table assembled, all locking nuts nice'n'tight and the glass dead level. Sharp raps with my knuckles on the glass over each spike confirmed everything was tickety-boo so I gingerly placed the Linn on it, slid the Pink Link underneath and hooked it all into the rest of my system, which consists of a Naim 72 pre-amp plus Hi-Cap power supply and NAP 250 power amplifier driving a pair of Snell Type Ks on Pirate K4 stands.

Ry Cooder's Bop Til You Drop is one of those favourite records which has remained a favourite despite being trotted out at umpteen dealer demonstrations over the years. So it seemed an appropriate first choice with which to explore the effects of the Mini Table.

From the first opening bars of music there was that expansive depth and clarity that only Mana tables seem to extract. As with the Sound Frame, the music seemed to flow and breathe. Each musician had his own space yet they all played as a whole - good stuff this! But I wasn't surprised. It was only what I had come to expect from a Mana product. What I didn't expect though was the improvement at the lower end of the scale. The bass not only seemed deeper but there was far more detail to each note. They stopped and started with an agility I'd never heard in my system before. It was as if an obscuring layer of mush had been wiped away to reveal the genuine article beneath but not, I hasten to add, at the expense of quantity.

It often seems to me that in Hi-Fi speak, articulate bass means lean bass - not this time!

The Snell Ks are fine and revealing speakers but not exactly famous for curdling your intestines. Now, however, they were delivering bass insight and quite respectable levels of boogie.

We're not talking an extra octave or anything silly here, nor are we talking the night and day improvement I noticed when I changed from a Torlyte board to the Sound Frame. What I am saying is that the Mini Table is a damned fine turntable support that significantly improves the sound of a turntable and, what's more, improves on the already enviable performance of the

Sound Frame.

I can't think of another way of spending the £125, which is the Mana's asking price, that would yield such big improvements to just about any system. Indeed I tried placing the old Sound Frame beneath my ageing Marantz CD-85 Compact Disc player which feeds into a Deltec Little Bit converter.

The results were encouraging. Whilst not making a silk purse out of a sow's ear, it definitely improved the sense of space and soundstaging, at the same time softening that steely glare that CD's exhibit.

The next project for an idle afternoon is to investigate the effect when the Mini Table is placed under the amplifiers... Hmmm! - but then I'd need to make the shelves deeper and remake them - Oh rats!

## AUDIOPLAN MUSICABLE

Alan Sircom becomes entangled in pythonesque coils of cable from Germany and Scotland.

This month, I have uncovered one of the hi-fi industry's 'secrets'. At hi-fi shows throughout the land, many companies use thick cables that look like silver water hose. A few years ago, when the American magazine 'The Absolute Sound' got their hands on this cable - although in an earlier guise - they deemed it to be the best around at the time. Doyens of this stuff are often seen towards the end of the shows, draping their loudspeaker cable over their shoulders, looking like mountaineers. MusiCable, as it's called - by Audio Plan of Germany - is not cheap, but the results are almost second to none.



Cables often fall short when it comes to perceived value. While months of sourcing, listening and development take place, the finished product rarely looks the part. Often people look disbelieving when the cost is mentioned, especially when what is visible is only a thin piece of wire.

You get plenty of value for money with MusiCable cables, however. Dressed in a plastic coated silver braid, they are thick and solid looking. The interconnect cables are tagged for directionality, using white arrows on blue stickers. The loudspeaker cable goes even further - with the two thick hosepipes braided around each other. Even the thinnest of their loudspeaker cables has the appearance of plastic coated rope, while the largest in the range looks as though it could easily tow a supertanker.

Looks ain't everything, however. Beneath the plastic exterior there beats a heart of pure silver plated copper. The insulation itself is of prime importance. On the larger interconnects, the cheapest AF Mk4 cable, at £90 for a metre pair, has four shields and a Teflon insulation. The next in the range, the £130 Super AF sports six shields and a microphonic shielding, together with Teflon insulation. This shielding is made from a mystery material, but its yellow fibrous appearance suggests that it is some form of Kevlar.

The smaller X-Wire is designed for low level signals, such as turntable, tuner, tape or digital source. Once again, the shielding and insulation plays a part in the quality of the cable. Standard X-Wire costs £100 per stereo metre, while the Super X-Wire costs £66 more. These can be supplied with any permutation of connector, such as phono, BNC, XLR or even a turntable arm plug. Finally, the loudspeaker cable comes in three varieties: LS3.5 at £8.50 per mono metre, LS6 at £20 per mono metre and the £40 per mono metre LS12.

Every cable is supplied terminated, as one would need an arc welding torch instead of a soldering iron to put plugs on the bigger interconnects. On the smaller Super X-Wire, high quality

Tiffany phonos are used, while the other cables in the range have gold phono plugs to fit. The loudspeaker cables are fitted with a unique banana plug, to allow bi and tri-wiring. Made from silver-plated copper, this has a 4mm hole to accept other 4mm plugs in a 'piggy-back' arrangement.

While this is a good idea in theory, as bi-wiring this cable would otherwise be virtually impossible, it does have a couple of drawbacks. First, I am not convinced that this creates a perfect contact area, although this is a minor reservation. More importantly, bits of bare loudspeaker plug are exposed, which can touch together to cause a short circuit in the amplifier. I did this once by mistake, causing untold damage. In fairness, it must be said that bi-wired cables that are not soldered together are often connected at the amplifier terminals and they often suffer the same fate.

As I have discovered with high quality cables, all the MusiCable cables needed to 'bed-in' for a few days before their true worth becomes apparent. Over this run-in period, the cable develops a deeper bass and a wider and better controlled soundstage. Once fully run in, I found the MusiCable cables, especially the Super X-Wire, to be truly world class performers. When the Super X-Wire was used to connect Compact Disc to amplifier, it gave life to the sound like the first spring morning after a long, hard winter.

The most obvious improvement is in stereo separation and imagery, although the more one listens to components through the cable, the better the cable becomes. To begin with, one first notices how precise the soundstage has become. Instrumentation is clear and detailed, with a good sense of space around individual instruments. As one listens further, the most subtle details begin to appear from the depths of the recording as if the CD is directly coupled to the amplifier.

One should look at the cables as a complete package. Each adds to the sound quality, although certain cables are best suited for certain needs. Super X-Wire works best connecting source



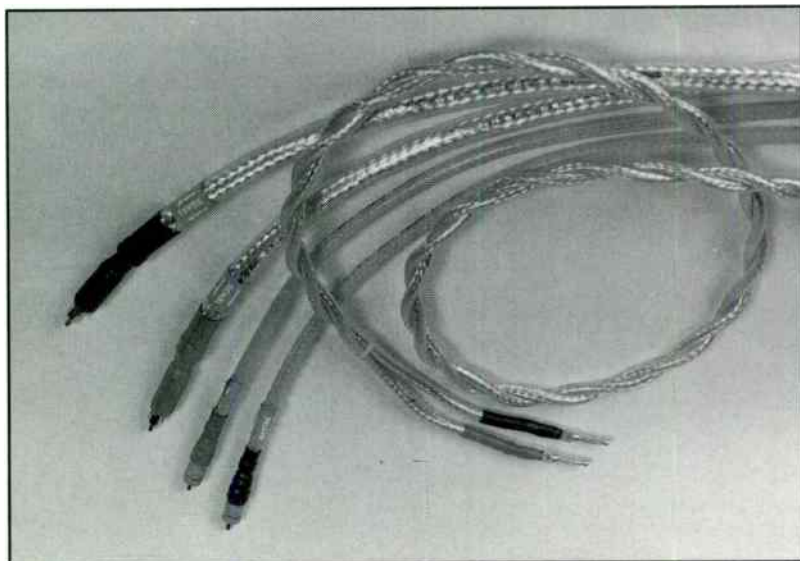
## tweaky corner

to amplifier, while Super AF works best between pre and power amplifier. The loudspeaker cables can also be tailored to suit both loudspeaker and budget, with many people using LS3.5 for the treble unit and the larger LS6 Mk2, or even the hefty LS12 Mk2 for the bass. I would suggest using MusiCable throughout the entire system, but if this is not possible, start with the source and then work through the system.

I have only been able to evaluate the Super X-Wire and Super AF interconnects, together with two lengths of the LS6 loudspeaker cable. I have been able to use it in a number of systems, however. While the loudspeaker cable will not shine with amplifiers like Linn, Naim, Exposure and NVA who design their amplifiers around specific cables, the quality of the MusiCable cables appears to shine through almost any system.

In this respect, it behaves in a similar manner to the Furukawa cable tested recently. In comparing the two, the Furukawa has the edge when it comes to bass detail, but the MusiCable cable appears to delve deeper into the music making the system a more vibrant, crisp and musical performer. The MusiCable is twice the cost of the Furukawa, however.

With hi-fi being turned upside down and sideways by giant-killing products such as the Pioneer A-400 amplifier and Rotel's CD player, cabling has become more important than ever. Given such a system, the addition of MusiCables could readily turn a good system into a superb system. As with the Furukawa before it and cables from Audio Note and Moth, the Audioplan has become a part of my reviewing arsenal ●



# tower of strength

**The floorstanding Castle Chester loudspeakers, tested by Hi-Fi World's court jester, Eric Braithwaite.**

Way back, I remember, I once had a pair of Castle Richmonds, one of the first loudspeakers they put on the market; I never stopped admiring the quality of the veneer. Castle's new £599 Chester maintains the Yorkshire company's reputation for woodworking skills. Its unusual finish provoked some admiring glances. None of your boring black ash (though this is one of eight options); our review samples were in an eggshell-finished Yew which wouldn't shame an antique. Like Rosewood, it is not cheap so an extra twenty per cent goes on the price for these veneers.

Though floorstanding and quite lofty at 94cm high, the Chester won't intrude on the best of an interior decorator's fancy. Its footprint is relatively small for the speaker's height, but in consequence the floorboards need to be even. I live in a Victorian flat whose builders apparently couldn't afford either a set-square or a spirit level, and I had some difficulty planting the Castles firmly on their spikes. For all that, I was pleased to note some solid brass bushes in the base to screw them into.

The Chester is something of a departure for a company which has produced a number of two-way designs, and has stuck to its own ferro-fluid tweeter and doped paper cone drivers through thick and thin. This is still a two way design, with the metal dome tweeter placed below the main (paper) drive unit, so the seated listener will still be on the line of its axis.

What is even more intriguing is hidden inside the cabinet and only hinted at by an oblong foam grille down at the bottom near floor level. It looks

at first sight as though this might be a transmission-line speaker a la TDL, which, in its slim and upright, squared-off shape it somewhat resembles, but it isn't. Nor is it a rectangular reflex port. This is a speaker which uses something called quarter-wave loading, now almost forgotten, but once associated with the name of Paul Voigt, a pioneer in loudspeaker design back in the thirties.

"Fundamentally," said Castle Director Vic Sapsford, "it looks very simple, but the dimensions of the cabinet have to be exactly right. There had to be a mixture of three different materials for the damping, and a new driver had to be designed for it." So why pick on it at all? "I've been a fan of that type of loading since I heard it in the Fifties," was the answer. "In our view" - and here he included design consultant Colin Walker, who built the Walkerdeck turntable back in the Seventies - "you can achieve remarkable clarity and detail in the mid-range. You can't get from any other loading because the box resonances get in the way."

## A Column and a Horn

Loosely speaking, and trying to keep it intelligible, quarter wave loading is a cross between a column and a horn. Without any refinement, a straight column, while allowing a drive unit to shift a lot of air with a relatively small cone movement, would resonate at its fundamental frequency and probably sound objectionable. Tapering the column - where the quarter-wave pipe begins to resemble a horn - damps these objectionable resonances.

Colin Walker told me that one of the difficulties in designing a quarter-wave horn is that if the drive unit is placed at the top of the "pipe" then there are some nasty third harmonics resulting. Placing the drive unit one third of the way down and tapering the pipe practically eliminates them, and the mid-range opens up with increased clarity compared to a reflex design, he said. Mind you, the theoretical pipe is then about seven feet high, so for manageable dimensions domestically it's folded. "The top of the pipe is actually at the bottom, if you see what I mean," said Colin. Just a moment's thought, and I did. "It's a very old design," added Colin, "but it gives a life to a loudspeaker that few seem to have these days."

Life is not something I'd argue with. Warming them up, I'd left Jazz FM going through them for the day, and coming home I was greeted with a tenor sax solo that had a big sound to it that I've seldom heard before. It was closer to the live sound of the saxophonist who plays in a trio in my local. I sat down in front of them and stayed enthralled for the rest of the evening. There were some curious aspects to the sound; no-one could describe the Chesters as neutral, but no-one could deny their sheer joy as bassists, clarinetists, trumpeters, horn players and acoustical instruments generally blossomed and bounded out of them as large as life and at least twice as natural. Ella Fitzgerald

for once sounded her true weight, for example.

Now, larger groups, and multi-tracked recordings fared less well. Despite a fairly complex crossover, the metal dome tweeter does have a metallic tinge to it. On multi-miked drum kits, cymbals and triangles separated themselves from the rest, once disconcertingly appearing to be below the drummer. Lateral imagery could have been more precise, too, if

‘Miles Davis’ trumpet was so brassy and real, his sidemen so on the ball and vigorous, I decided to forget I was an image freak and wallow in it.

we are going to be faddy about it. Soloists and vocalists were rather difficult to pin down and allocate a precise shape to. Yet Miles Davis' trumpet was so brassy and real, his sidemen so on the ball and vigorous, I decided to forget I was an image freak and wallow in it.

While string tone, and instrumental colour was often more than acceptable, indeed very pleasant and engaging, there were occasional anomalies. Harp was quite credible and piano realistic, though missing some weight at the bottom and some definition above Middle C. A harpsichord above that part of the stave, however, suddenly turned into something markedly metallic and brazen, a cross between a Church carillon and a xylophone, which was something of a shock.

There is no denying that the Castle Chesters are eminently listenable through a fairly broad swathe of musical tastes, especially if the recording is live, and simply miked. The more multi-miked a recording, the more of the patchwork quilt becomes irritatingly obvious, squashed into one or other of the boxes. Paradoxically, and it shows that there is a remarkable clarity possible out of this quarter-wave loading notion, acoustic ambience, a violinist's breathing and sniffing, a slip of a finger, all come over loud and clear. But this insight, alas, doesn't extend over the whole frequency range - or absolutely evenly - up and down; it is a mid-band phenomenon.

I ended up with mixed feelings. Some of the jazz horns I heard I'd kill for, as I would for vocal timbre and the sheer realism of acoustic instruments



generally. A loudspeaker that doesn't come out squeaky clean and colourless (in both senses of the word) in a way I can't help but have an affection for: there has to be life in live music, and the Chesters offer it. They aren't cleverly, minutely analytical; they don't have serious bass - no more than a bookshelf design, but then it's the mid-range they were concentrating on.

The bass is warm without pretensions, and the combination of this with the clarity of the mid-range must have a lot to do with the Chester's talent for starting and stopping at the edges of notes: there are no problems distinguishing a quaver from a semi quaver. They won't shock you out of your seat, nor reach out and stun you into dazed admiration. They present a kind of cosy Constable landscape rather than a Cubist abstract, something which allows an enormous amount of sane listening pleasure, if not one of the ultimate great loudspeaker experiences ●

### Measured Performance

I was pretty surprised to see the frequency response of this loudspeaker appear on screen; it is unusually flat. Large loudspeakers usually have a bumpier response than small ones, although the Chester is in fact more a small loudspeaker in a large box, having just two modest drive units.

Castle make their own drive units and they seem to have learnt a few things over the years, since it is rare to see a multi-driver loudspeaker exhibit a frequency response like this one. It means that the Chester should offer a good sense of basic tonal balance, with low and high frequencies in the right proportion to each other. Dispersion was good over the usual forward listening angle, the response changing relatively little over a normal range of listening heights.

It's always interesting to try and correlate measured performance with subjective impressions. In this instance I had listened to the Chester beforehand and I thought it sounded fundamentally well balanced, but with a tinge of 'glassy' brightness. By this I mean that there was no sharpness of the sort that comes from a peaky tweeter, but there was an emphasis in the treble that pushed high frequencies forward, making the sound slightly hard and brittle. Close inspection of the response characteristic shows that there is in fact a small lift in output at 1.5kHz and it continues upward to 5kHz. This, I believe, is audible and responsible for the brightness. All the same, the Chester struck me as offering a basically 'correct' sound, free from missing or emphasised frequency bands, so its flat response is of merit in subjective terms. The slight plateau lift throws information forward a bit as well, making for an apparently lucid and revealing presentation.

I also felt the bass was dry and heavily damped. There is some slow roll-off in output below 300Hz that contributes to or is indicative of the mechanism that produces this.

The Chester proved similar to Celestion's 700 loudspeaker, tested in this issue, in terms of its impedance characteristic. A minimum impedance of 6.6ohms is reached below 10Hz, which is acceptable. This won't load an amplifier. Above this frequency two

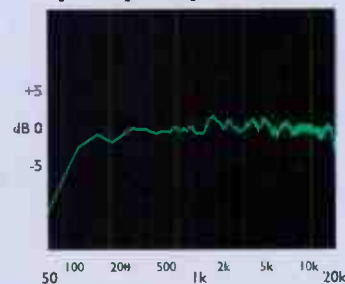


peaks push overall impedance up to 12ohms, which is a high value. It makes the Chester an easy load, but it also compromises sensitivity and amplifier utilisation. Like the Celestion 700, the Chester will only draw 30watts from a 50watt amplifier. However, because of better efficiency, although the impedance is high, sensitivity remains normal at 86dB sound pressure level for one nominal watt (2.8V) of input. Whilst this is not high, it means that the Chester will go as loud as many loudspeakers at any particular volume control position.

Manufacturers commonly like to put a real watt into their loudspeakers for the sensitivity figure, I am discovering, even though this gives efficiency rather than sensitivity - a parameter of little practical consequence to owners. The Chester managed 88dB SPL with such an input, a figure I include for the purposes of comparison.

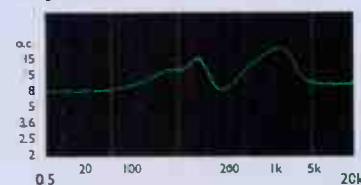
Castle have produced not just a fine looking, but a well engineered loudspeaker in the Chester. It has one of the flattest frequency responses I have ever measured and good dispersion. It is an easy load and it is sensitive. **NK**

### Frequency Response



Flat frequency response with a small upper mid-range plateau

### Impedance



Twin peaks keep overall impedance high

We describe the power zoom system of the Pentax Z-10 in our literature as being intelligent.

But that's a bit of an understatement.

Because, with two 8-bit computers on board (about as much hardware as a state-of-the-art CD player) the Z-10 is the brainiest Pentax we've built so far.

And yet, paradoxically, it's one of the simplest to use.

Its power zoom lens has three speeds (as well as a manual override).

It will focus for you (and even beep to tell you when it's done it).

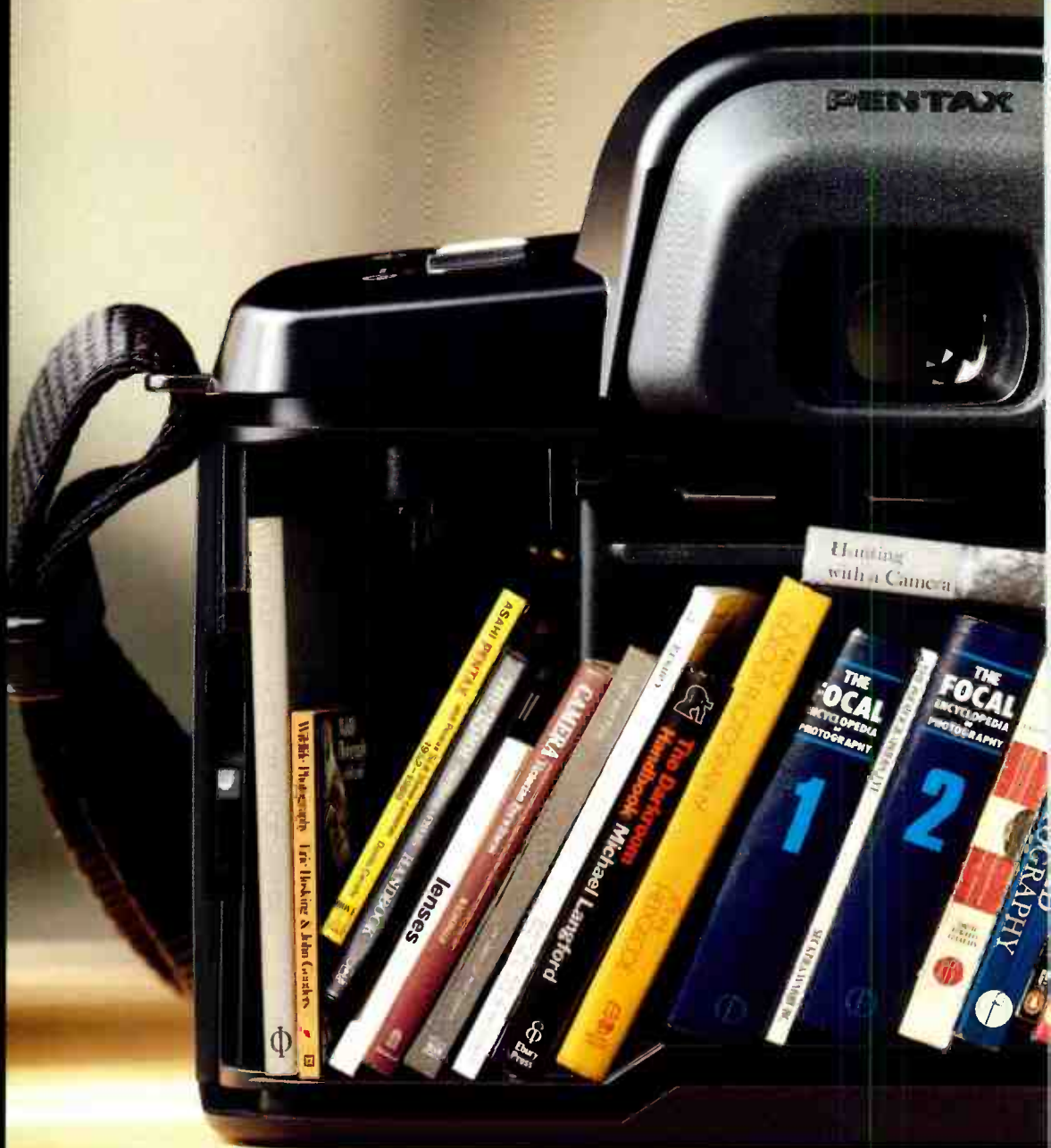
The autofocus system is the fastest yet. And its operation is 'predictive'.

This means that when an object (such as a race horse) is hurtling towards you, the lens is able to compute how fast the object is moving and will focus on the point where it will be when the picture is actually taken.

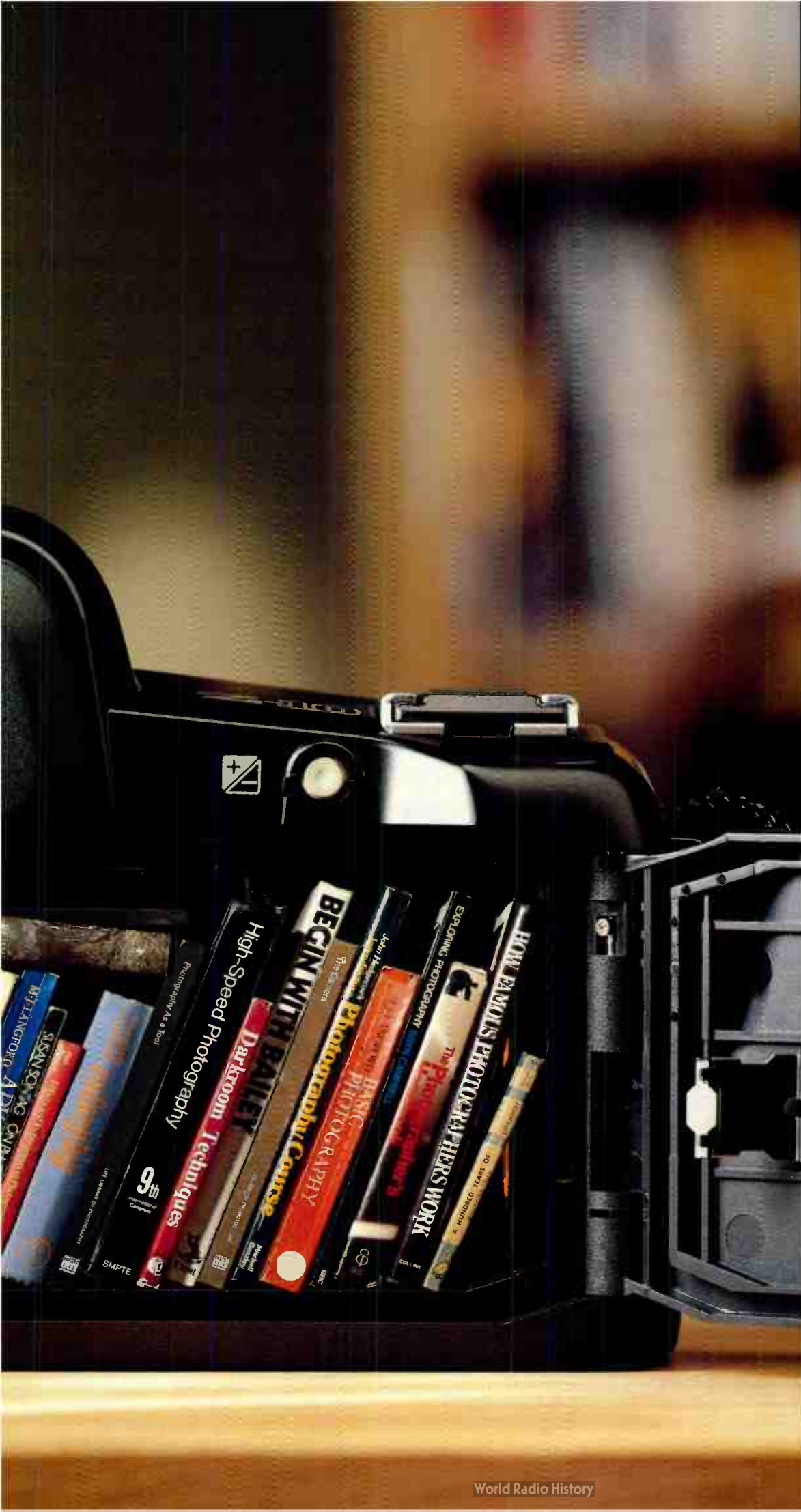
The Z-10 has 'multi-segment-metering' which automatically reads the light from six areas of the frame to expose completely and correctly for you, even in the most difficult conditions.

(By the same token, you can concentrate on just one area if it needs a greater or lesser exposure. We call it 'spot-metering'.)

**TO BE AN EXPERT PHOTOGRAPHER,  
YOU ONCE HAD TO BUY BOOKS.  
NOW YOU NEED ONLY BUY A CAMERA.**







The system also has an Image Size Tracking mode. So that someone walking towards or away from you can be photographed again and again while staying the same size in shot.



You can even zoom on one subject, log it in the camera's memory, then zoom on another.

The camera will return to your first setting automatically when you return to your first subject. We call this the 'Zoom Clip Mode'.

And speaking of modes, there are more.

The Z-10 has a programmed AE mode. A Bulb mode. A Flash mode (it has its own built-in flash). A metered manual mode. And even a Hyper Manual mode.

In all honesty, we could go on and on and fill a whole library with the wonderful things the Z-10 is capable of.

And how it can put very sophisticated photography in very easy reach.

But all we're going to say is that a trip to the camera shop is an absolute must.

Because just one look at the Z-10 will speak volumes.

You don't need luck, you need a

**PENTAX**

PENTAX UK LTD., SOUTH HILL AVENUE,  
SOUTH HARROW, MIDDLESEX HA2 0LT.

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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# SYSTEM, SYNERGY AND SIRCOM

A complete system for under a thousand pounds  
put together by Alan Sircom.

**T**his system, complete from source to speaker and assembled for both vinyl and Compact Disc users, is based around the best of the various items which we've had on test over the last year. The target price is a maximum of £1 000. For those who have abandoned vinyl and only use CD, the cost comes down to midi-system levels at just £599.69. Vinyl junkies who use CDs solely as beer mats would need to pay £794.70.

Compact Disc reproduction is provided by the Philips CD618 which we looked at in October 1991; amplification is the Arcam Alpha 3, also reviewed in that issue; speakers are the new Mission 761i's on their own stands. The LP source is the Systemdek IIX-900 reviewed in August 1991, but fitted here with a Goldring 1012.

Why include a turntable at this late stage in the LP's career? First, if you own even twenty-five LPs, the cost of replacing them with CDs is actually greater than the cost of this record deck itself, assuming that the average CD is now around £14 for a full price disc. Replacing a substantial collection of LPs, assuming that every recording was available on CD, would still be uneconomic. It is more cost effective to buy a turntable. Secondly, many people still believe that the LP still sounds better, but this is not the best place to get into such a discussion.

Three of the four components in this hi-fi system have been recommended over the last twelve months, with at least two of them (the Systemdek and the Arcam amplifier) gaining industry awards last year. Only the Mission loudspeaker, by

virtue of it being just launched, has not received much critical acclaim. Previous loudspeakers in the cheaper Mission family have been extremely popular and I have no reason not to expect the same reaction to the 761i's.

The Systemdek IIX-900 turntable needs no introduction. It has remained as one of the low-priced vinyl champions, along with the Rega and Revolver turntables. They have all become the standard which other turntables at the price aim to beat. Unlike many rivals, the Systemdek has a suspension, akin to more expensive turntables like the Linn Sondek, Pink Triangle and the Voyd.

Recently, the Systemdek has been revamped, with the addition of an aluminium arm board, hence the '-900' part of the name. Another option, ▶

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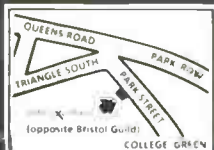
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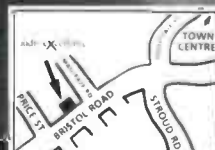
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although until recently not one supplied by Systemdek themselves, is to change the platter to acrylic, a la Pink and Voyd. Opinions are divided as to its worth; it seems that those who like the Linn/Roksan type sound like the Systemdek as it stands, while the Pink/Voyd enthusiasts tend to like the acrylic plattered version.

The Moth tonearm which we had fitted to the Systemdek is also a hardy perennial, an OEM model indistinguishable from the Rega RB250. Both it and its more expensive RB-300 brother are difficult to better at the price, although the newer, but still more expensive Roksan Tabriz is another high-quality, low-cost success. Where the RB-250 scores over these tonearms is in its simplicity. It's a one piece arm tube, with only the barest essentials in terms of adjustment. Vertical tracking angle (VTA), for example, can only be altered by a series of spacers at the arm-base. Although ultimately bass-light (unlike the RB-300), the RB-250 is rarely put to shame, even when used with cartridges costing more than the arm itself.

### Even Natured

The Goldring 1012 cartridge is considered to be one of the most even-natured moving magnet designs at the price. Along with many moving-magnet cartridge designs, like the Arcam 77 range, the Ortofon 500 series and the two Roksan Corus models, the 1012 is upgradeable by replacing the stylus with a more expensive alternative. As with the Rega arm, this cartridge can be a giant killer, putting a great many more expensive cartridges to shame.

Philips' CD618 Compact Disc player, along with the Marantz CD-52, dominated our group test in last October's issue. It was a close run race sonically, but the Philips player just pipped the post against the rather too analytical Marantz. It was only after the listening test had ended we discovered the Philips was the cheapest of the group at £169.99. This made us change our conclusion from 'winner' to 'outright winner', and a bargain to boot.

This player, being in a fast-moving market, is destined to stay competitive or so Philips' strategy suggests. They have lowered the price of the CD618 by £20, to only £149.99 which makes the '618 virtually unassailable.

Arcam's Alpha 3 amplifier is a similar product, in that it pulls far ahead of the competition and even shows up many amplifiers that are more expensive. The Alpha 2 it replaced was a good, but an ageing design. In the wake of the huge commercial success of the Pioneer A-400, the Arcam amplifier had a great deal of ground to make up. The improvements made to the Alpha 3 surprised many people, making it the one to beat at the £200 price point overnight.

It is still a very new design, barely six months old. In those six months, however, it has come to be the British answer to the A-400, and a very coherent answer at that. To its credit, the Arcam has received

praise without any of the hype that surrounded the Pioneer on its launch. As with the LP vs CD debate, this is not the place for a discussion on the relative merits of the two. Both have their merits, both have their failings.

Finally, the Mission 761i loudspeakers are very new, having only been reviewed last month. They are part of the new wave of Mission products, following their near-disastrous factory fire last year. One of the areas that was totally destroyed was their research and development department. Older R&D departments have a tendency to collect superfluous and outmoded test equipment, too expensive to replace with newer devices; Mission were forced to scrap all their older equipment as it had been roasted. This has meant that Mission's new R&D department sports the latest test equipment, optimised to suit their needs.

‘enjoyment is fine, but when it turns Mahler into Scott Joplin, or Leonard Cohen into Half Man, Half Biscuit, then something is amiss

One such piece of equipment, used in designing the 761i, is an anechoic chamber computer simulator. This works by recording the acoustic of a room, cancelling its influence within the computer and then giving the plot of the loudspeaker itself. As no chamber is completely anechoic, this very expensive system is said to get closer to theoretical anechoic conditions than a real anechoic chamber. Mission's 761i loudspeakers are an example of this design work, following in the footsteps of their earlier successes, including the 761 which they will, ultimately, replace.

In a system such as this, areas like cables and tables make major differences. My normal recommendations here, Audio Plan Music Link or Furukawa cables and Mana tables may seem a little OTT for such budget equipment, as they would add several hundred pounds to the price of the system, but I still feel that their use would transform this kind of system. To keep prices down to a realistic level, a more conventional Sound Organisation table was used, although a Mana Sound Frame was used for the turntable. The interconnect cable used between the CD and the amplifier was as supplied with the player, while the loudspeaker cable was a good quality, but very inexpensive cable. There are distinct benefits to be had with more expensive options, such as Music Link or Furukawa cables and even the odd

Mana table or so, and as such these 'accessories' should not be ignored.

As we had a collection of diverse, but successful products, we wondered what the reaction would be when they were all combined together. Would they integrate successfully or be a mis-match? Would the Great God 'Synergy' rear its head, or does this system belong to the tribe of the Glaring System Fault instead? In many cases, it is very difficult to predict how the elements combine together; one expects great things from a system, only to have hopes dashed by a poor overall performance.

In fact, there was little to fear. The turntable, CD, amplifier and loudspeakers combined together well, without displaying the flaws that so often manifest themselves in a low-cost system. There was a jump in quality between the turntable and CD, however, but this is only to be expected given the price differential between the two. While the Systemdek was smooth and refined, the Philips player was more rough-edged. If one were looking toward a quality single source system, I would prefer a more refined CD player, such as Arcam's own Alpha player instead. The CD player in this system still does not disgrace itself, but is ultimately compromised by its low cost.

### Over Keen

That aside, the system was lively and tuneful, if a little over-keen at times. The Mission 761i's have a tendency to make all music fun and enjoyable, without colouring the music played; enjoyment is fine, but when it turns Mahler into Scott Joplin, or Leonard Cohen into Half Man, Half Biscuit, then something is amiss. Normally, I find low-cost systems generally fall short in the imagery stakes. The system did not shine in this area; it offers width and depth, but it doesn't project an image too well. It does perform better than many not-quite-stereo systems that cost far more.

There is a slight, but distinct, bass-heaviness to the overall sound, not enough to cause offence; many people will find it particularly attractive, as it gives decent solidity to instruments like bass drums and timpani.

As a complete system, our jigsaw of recommended components pieces together nicely. Each component represents the best value at the price; to better any one involves raising the ante considerably. Combining the best of breed, therefore, should give us the best system at the price, in theory at least. While, as I have suggested, it is not perfect, the flaws are comparatively minor. It difficult to find a better sounding system, without going over the budget of £1000. There are many other alternatives to this system at the price; none are better, merely different. If I were looking for a £1000 turntable and CD based system, I would feel that I had got my money's worth from these components ●

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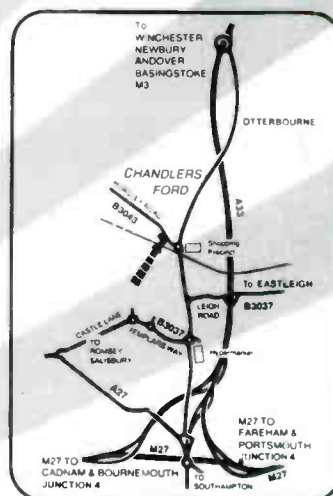
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# Chrome Cary

**The shiny CAD2A3 amplifier catches the eye  
of the Magpie - like Alan Sircom.**

Cary Audio Design's £1295 CAD2A3 valve power amplifier evokes strong reactions even before it makes music. A shiny chromium-plated chassis, exposed output valves that glow indescend blue and orange like a neon-lit car bonnet on a rainy night and contrasting black output transformer covers that loom large against them make this amplifier a visual feast.

An awkward peculiarity that I came across immediately was independently powered pre-driver valves (6SL7), run from a separate twelve-volt heater supply comprising an external mains transformer with a plug-in connection to the rear. When powering up, the pre-drivers must be switched on before the rest of the amplifier; they light like blue touchpaper before the other valves begin to glow, something that happens after the main power switch has been activated. This combination of power supplies I have reservations about, since switching the pre-drivers on or off at the wrong time can send strong thumps through to the loudspeakers. It seems to be an ad hoc arrangement unnecessary in other valve amplifiers and, I can't help feeling, used expediently in place of a more workable solution in this case.

Running along the centre of the amplifier chassis are a pair of 5V4G rectifier valves; a solid state supply is not used. Behind these is a laminated core mains transformer with top cover, flanked by two Cary-designed output transformers in their own sealed boxes. User options are two switches for introducing eight percent of feedback into the system, or running it as a zero-feedback amplifier. The rationale for this pair of switches, proof positive that this is a dual-mono design, is that some people are said to prefer the sound of the amplifier without feedback, even though feedbackless amplifiers are rare.

For those who missed last month's article about the larger 211 triode, the 2A3 follows in its footsteps. These old power triodes are undergoing a renaissance, with many people discovering the delights of early amplification devices. The 2A3, 211, 845 and the 300B, provide today's listener with a taste of the strengths of these old designs. Aesthetically, although brought up to date by the presence of modern switches, terminals and graphics the Cary looks like an older amplifier. As with the Art Audio and the Audio Innovations products, the exposed valves do create an attractive, if slightly exposed, look.

The manual supplied with the CAD2A3 is lucid, concise and readable, but looks either as though it was written round a pre-production model - or the U.S. version is slightly different. It omits, for example, any mention of the feedback switches and the separate filament supply for the 6SL7 valves, except for a diagram of the latter.

As I have come to expect from a no-feedback triode design, the CAD2A3 produced a sound that was open and revealing. This was offset, however, by fizzing, popping and a sound not unlike surf breaking on a stony beach, indicative of a problem in our review sample, possibly with the valves. Unfortunately, it does throw a bad light on the triode valve amplifier as a species. This level of buzzing and humming can be forgiven in a prototype, like the Grove Nephthys in last month's issue, but not in a production model.

Buzzing aside, the CAD2A3 presented

mid-band information with clarity and lucidity. This becomes especially noticeable with vocals; it became easy to follow the lyrics of singers like Morrissey, Bob Mould and the Reid boys (that's the Jesus and Mary Chain Reids - not the Proclaimers) no matter how dark and depressed they get.

The CAD2A3 performs the task of amplification well. It presents mid-band information with clarity and lucidity. This becomes especially noticeable with vocals; it was easy to follow the lyrics of singers like Morrissey, Bob Mould and the Reid boys (that's the Jesus and Mary Chain Reids - not the Proclaimers) no matter how dark and depressed they get.

## Imagery and Air

There was a good sense of imagery, although a distinct lack of air around instruments worsened when feedback was introduced. The CAD2A3 also sounded bass light, due to a lack of authority in the lower regions rather than an overstatement of the high frequencies. Some instruments became a little more mobile than I would expect.

The soundstage produced was well wide of the loudspeakers, with a good sense of depth and even some image height. Simply recorded passages, like Decca's early stereo recordings of The Pirates of Penzance, lacked that layering effect that separates musicians in the orchestra pit.

The rhythmic qualities of a triode amplifier are usually every bit as good as their transistorised cousins, as opposed to pentode devices which often seem to be indistinct and ponderous. The CAD2A3 does have this triode quality, with even the most difficult rhythms dealt with precisely and without difficulty. There was a slight blurring

of timing changes when switched into feedback, as the amplifier took on a less refined and more 'grunty' sound quality. This 'gruntness' did little to improve the bass light character of the CAD2A3. Seal's 'Crazy' lost some of the taut definition to the bass that the track is blessed with. It seemed to lose focus, somehow, becoming muddled and confused.

The CAD2A3's level of detail, given its bass light nature, was good. The most subtle details were masked by the grumbings of the valves themselves, but one could still detect finger noises and fret buzzes struggling to break free of the background hum. Where the CAD2A3 scored highly, along with all the triode amplifiers, was in the two areas of dynamic range and coherence. Given well recorded passages of music, with a powerful, dramatic air, the CAD2A3 rang the dynamic changes with ease, combining well with a balanced sense of the performance taking place.

I wanted to like the Cary CAD2A3. It's relatively inexpensive as valve amplifiers go, looks the part, and is one of few designs using these triode valves. Though its sound quality is compromised by the surfing noises, it was open and pleasant all the same. If the design problems could be sorted out, it might become as clearly defined and forthright as its rival from the Audio Innovations stable ●

*N.B. I contacted the importer, Reference Imports, with regard to the noise problem. They suggested that the level of noise I encountered with the Cary is uncommon. Unfortunately, a second CAD2A3 was not available at the time of writing, to test this.*

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

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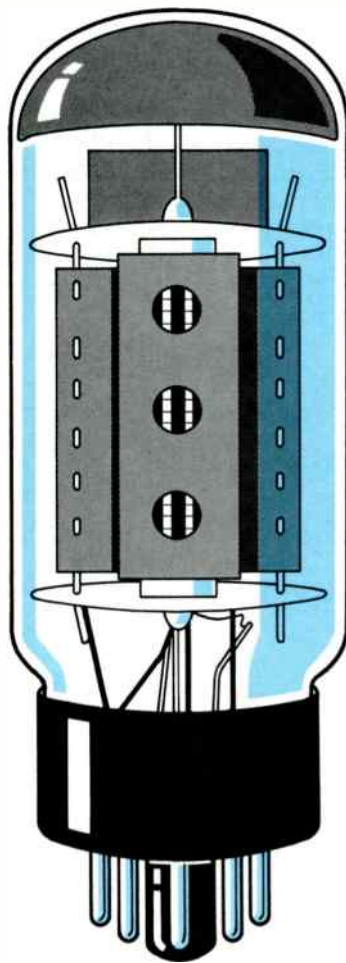
But after listening to them (perhaps with eyes closed), he called them awesome and says he was gobsmacked. "I had little idea quite how much sheer gut-thumping power such a beast can deliver. Believe me, it's frightening..."

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

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

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The site of the recording session: St John the Evangelist church in Smith Square, Westminster, London.

# Classical Quads

Hi-Fi World's monitor loudspeakers comprise Quad ESL-63 electrostatic loudspeakers combined with Celestion SL-6000 sub-woofers, using a special crossover. Rumour had it that somewhere in the depths of the giant Philips organisation the same combination was used for professional purposes. We recently discovered it was Philips Classics, the recording label - and they were bringing them to London to record

Rossini's *Messa di Gloria* with Sir Neville Marriner conducting the Academy of St Martin's in the Fields. The setting for this recording was the Eighteenth Century church of St John the Evangelist in Smith Square, Westminster, London - known to radio listeners from the lunchtime live concerts broadcast regularly on Radio 3. We had to go and look. Eric Braithwaite was interested in the music; Noel Keywood in the monitors.

## THE MUSIC

Philips were recording this work as part of the celebrations for the two-hundredth anniversary of Rossini's death. It has rarely been performed or recorded; the last recording (also Philips: LP 6500 612) was made in the seventies and deleted in the mid-eighties.

Why had Erdo Groot, the Balance Engineer (who is responsible for the technicalities of the recording) and Erik Smith, the Producer (responsible for seeing the recording through from the day the artists are contacted to the day the Compact Disc booklet is printed) chosen St. John's?

"I've recorded here for fourteen years. It's an excellent acoustic for choral and orchestral works, with even reflections in the

reverberation," said Erdo. "There's a high ceiling; the orchestra has a beautiful warm quality; the strings can really shine in this sort of acoustic and the bass end has a very full and bloomy sound, though the hall itself has a tendency to brightness."

I noticed that the stone floor was covered in sheets of wood where the orchestra sat. "We bring it with us in pallets: there's a thousand kilos in weight. Otherwise reflections from the floor would harden the sound; sometimes you don't want it to sound like an empty church. It can give good results from chamber music groups almost up to large symphony orchestras. I wouldn't do a Mahler symphony in here, but Beethoven symphonies are excellent for the acoustical size, and for opera it's also very good, specifically because it's so good on the vocals."

At the back of the church, behind the imported wooden staging for the chorus,

there are two large curtains. Later on in the session I noticed these were open for the choral takes and closed for the tenor solo. "When the chorus has left it changes the reverberation - like the difference between a hall full of an audience and an empty one."

Recorded ambience was important then? He was not happy with artificial added reverberation, often used to 'round out' an otherwise dry sound: "I like to hear the acoustic of the place where the recording is made."

This year, Erdo will spend a hundred days on location: he was leaving for Philips Classical's headquarters in Baarn the following afternoon, thence to Paris and on to St Petersburg (Leningrad, for those who haven't caught up with current events yet) to record *Swan Lake* at the Kirov Theatre. Back in London at the end of February, he would be returning to the Kirov afterward to record





Tchaikovsky's Pique Dame. "It's a superb acoustic, the Kirov."

That reminded him of something. "We don't always use this many microphones," he said, gesturing to the array of booms. "I've recently recorded Romeo and Juliet at the Kirov" (with Valery Gerghev conducting) "which we did with only four microphones. We recorded Mussorgsky's Khovanshina there as a live performance using only ten mics." (That is for a fairly sizeable orchestra, soloists and chorus covering a big stage.) The company knew the score, so they could act and move around as though it was live. For that we used a tube (valve) mixing console built by a Dutchman, Jaap de Jong, mixed down to two track digital. "I think the sound is spectacular; I think you will, too." The recording will be issued on the Philips label later this year.

I sat in on the last session while the Philips team (Erik Smith, Erdo Groot and recording engineers Roger de Schot, Jan Wesselink and Nico de Koning) retired to the control room. As always, the professionalism of a London orchestra like the Academy of St. Martin's is fascinating. Like filming, recording sessions are short bursts of furious activity interspersed with spells of boredom, while, say the chorus is instructed by the conductor or Chorus Master. There was a difficulty: some individual voices among the basses in the chorus stood out too much, and had to be asked to project less. At one point, Erdo's voice came over the "talkback" in the hall, asking Sir Neville "Could we have a little more from the strings?" "Yes, we are being a little discreet," was the reply. A third take went flawlessly, with the opportunity to chat for a few minutes while Sir Neville dashed back to the control room to listen to the recording.

There was another problem too; there were a series of mis-takes in the first attempts at recording the Gloria. It seemed that it would never get up and run beyond the first few bars. There is a prominent part for the cor anglais, and the principal was unwell. The developing tension was lightened by the string section suddenly playing the theme to Desert Island Discs - complete with amazingly authentic squeaking seagulls - while tenor and cor anglais took a breather.

As Sir Neville lifted his baton the fun was over - absolute silence fell and the take went into the bag perfectly.

At ten o'clock on the dot, the session ended. "I think we've achieved what we wanted," said Sir Neville, as musicians and technicians began packing instruments and music stands. Though Erdo believes in long takes, rather than constructing a recording almost bar-by-bar, a three-hour session results in only a few minutes of what will be used in the final master. Erdo stood watching as the cable - Van den Hul, I suddenly noticed - was reeled up. "It's made to our specification; it's all high-end, here," he grinned.

#### Rossini: Messa di Gloria

**Soloists:** Sumi Jo, Ann Murray, Francisco Araiza, Raoul Gimenez.

**Academy of St Martin's in the Fields,**  
**conductor:** Neville Marriner.

**To be released by Philips Classics later in 1992.**

## THE MONITORS

**NK** Where did the idea for combining the Celestions and Quads come from? It's a rather unusual combination.

**EG** Philips Classical in Holland had a past history of using the original Quad electrostatics, and the new one came along at almost the same time as the B&W 801 which was chosen by the other two companies in the group - Decca in England and Deutsche Grammophon in Germany. We went our own way a bit with the Quads; I think the electrostatic principle, if applied correctly, gives results that no moving-coil loudspeaker can easily achieve. We were already experimenting with several subwoofer types and crossover filters, and as soon as we heard about the Celestion 6000 we asked for a pair to try and went on from there. We found it gives us the best results to date.

**NK** Do you feel the Celestion is satisfactory, or would you rather it was a bit faster sounding?

**EG** No, I'd agree with that; on certain material I feel it's not damped enough; that is something that could be improved. This room has always been a problem for monitor sound because it's fairly narrow, and you have terrible standing waves at very low frequencies. If there's a noisy truck standing outside, they all build up in here.

We need to get all our equipment in, so we're a bit limited in positioning our loudspeakers. It is possible because it's a figure-of-eight system; with an omnidirectional bass system it doesn't matter how you position it, with this one the angle makes a lot of difference in how you excite the room modes. We can put the Quads where we want them, but change the position of the Celestions. If we used Quads only, the low frequencies would tend to be too much in the corners which excites the room modes too much and you get lumpy bass.

**NK** They always had lumpy bass.

**EG** No, I don't agree. It depends on the room and how you put them in it. We have several listening rooms in Holland; in one of them we have the ESL 63s on the top of Quad stands, about ten centimetres high and angled slightly backwards. In that room - it's a very dry room - we have a flat response to 40Hz.

**NK** You must have to work quite hard setting them up.

**EG** We have to go to different locations and work in totally different rooms; this is a problem for all sorts of loudspeakers as well as these. Of course, level is a limitation. The advantage here, with a system with a separate bass, is that we can drive the Quads louder. We reproduce a sound level here that goes to 96dB at the listening position - but that is 6-12dB lower than a full orchestra in the auditorium.

They're positioned within one centimetre, exactly three metres apart, three metres from the listening position in an equilateral triangle. Knowing a lot about them in practical terms now, we find we can get good results most of the time.

**NK** I put layers of felt at the back on a frame six inches away from the loudspeaker; it makes them pseudo-omnidirectional, and cuts out the rear radiation.

**EG** Which I think is a shame, because you lose the acoustical power of the speaker. The advantage of the dipole is that it can give you the rear radiation in such a way that if it's diffuse enough it adds to the total acoustical power without muddling the clarity. It depends on how the reflections are built up in time. You see in this narrow room we have some felt near them.

**NK** You're doing a similar thing to me but I'm being a bit more total about it.

**EG** In our listening rooms in Baam (Philips Classical's Headquarters in Holland) we try to use as much of the rear radiation as possible but with the right sort of diffusion of the reflections from the back so that it gives the acoustical outlook we need. We have these diffusers here which are specially designed to give a diffused response at a certain frequency range. They use slots at different depths - they work like the sonic equivalent of the colours of oil in a pool of



water: the way you get light light coming in at one angle and out in different directions. This is what it does with the sound: it goes in at one angle, comes out at different angles. So basically it diffuses the sound within a certain frequency range, which helps get back the rear radiation in such a way that it's diffuse enough not to interfere with the first direct sound.

*Our attention turned to the equipment in what had once been the Church's vestry; a large - analogue - mixing desk, two Sony professional DAT recorders and associated processors, and a British A/D converter from Data Conversion Systems.*

**EG** The A/D from Data Conversion Systems is very expensive! It has a Signal-to-Noise ratio, I think, of 110dB - which is over the theoretical limit, but it's a different theory. It uses Bitstream conversion techniques - it's 4-bit - treating the dither, which is very important in any conversion system, in a very clever way which is beyond my technical knowledge, I'm afraid.

**NK** You combine the output of all the microphones in the hall in the mixing desk before you digitize it?

**EG** Yes. There are people now who work with digital mixing desks and treat every microphone with A-D conversion, and then mix it, but the quality of A-D conversion with so many converters is not as good as our upgraded analogue system. This desk is our own design, it's under development all the time. At the moment it's completely DC capacitorless from the input to the output, and the sound quality is better than we can get from a digital desk.

**EB** It sounds as though you're going to stick to analogue mixing. You're not optimistic about improvements in digital desks?

**EG** No, not at all. At the moment, there's nothing in our view to compete - for the way we work - with the analogue circuitry we use before going to the recording medium.

**NK** Which is - DAT?

**EG** This time, yes; and also at the same time it goes onto a 24-track digital machine; I record the two track stereo master on that as well as the other groups of instruments, the soloists and the choir. So if it's at all necessary after the recording to do any re-balancing I can do that in a digital mixer, because its only been digitised once - it's digital to digital. All our recordings, whether they are done multitrack or two track, are digitised once, then they stay in the digital domain till the listener plays them back on the CD in a domestic system, with the quality depending on the D-A convertor.

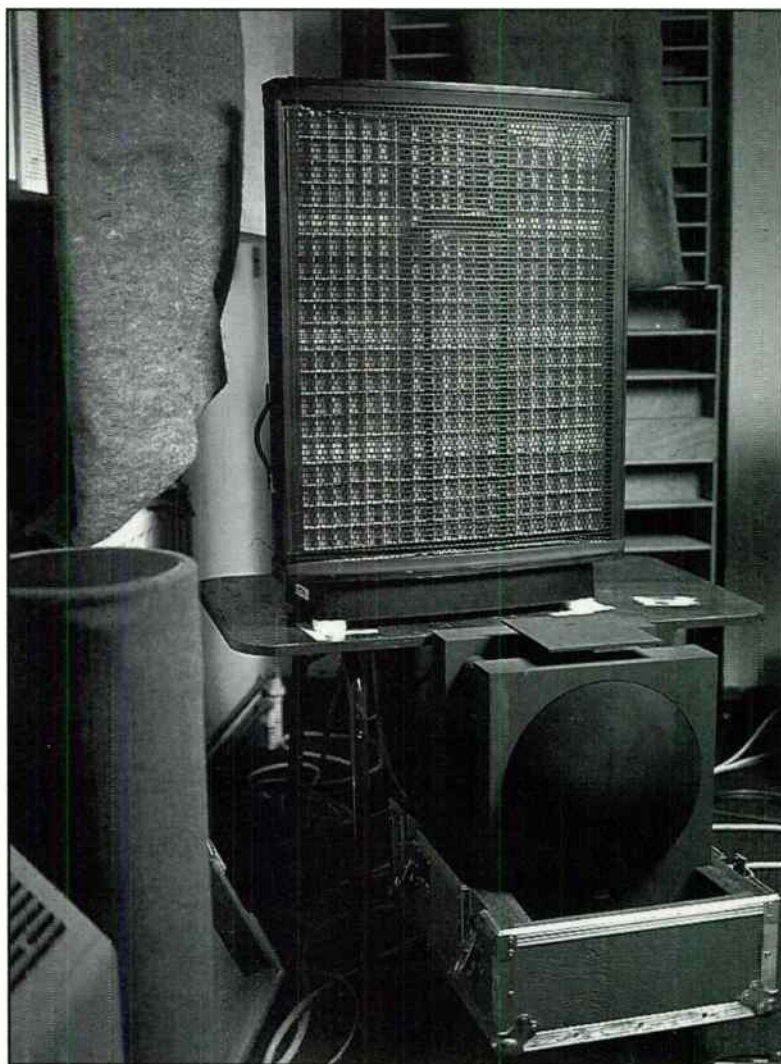
We had trodden carefully around the reels of Van den Hul cable in the auditorium on the way in, and spotted two main pairs of microphones on high stands - one pair in front of the orchestra and another before the soloists' position, four others in front of the chorus's raised platform and several others on booms in amongst the orchestra.

**NK** How are you using the microphones?

**EG** That's a long story in itself. We have a

**Far left: Erdo Groot explains the complexities of the mixing desk. Behind you can see one of the Quads that he faces when balancing. Cameras feed in pictures of the proceedings to monitors between the loudspeakers.**

**Right: The Quad ESL63 Professional without its grilles, used for monitoring. Behind it is a wooden diffusing box and felt damping pads to control reflections. In the foreground is a tube trap to smooth out bass. Below the Quad is the Celestion SL-6000 subwoofer sitting in its carrying case.**



main system using Bruel & Kjaer, with a flat response; we have the special reflective addition on the top of the microphone which boosts the high frequencies a little bit, but in an even way. For the chorus - which is too far away for one system, it wouldn't work - you have to have another main set-up; I use four Schoeps: a very flat, very good microphone. Then you need a few spot mics, sometimes to get a balance problem right, or a better attack.

**NK** How do you choose these microphones for different jobs?

**EG** It's experience; you listen to what a microphone sounds like, and there's the whole process of trying different set-ups with different acoustics to find out what works best. The B&K's - they're the tops, of course - and the Schoeps and Sennheisers we've been using for years, developing the way we work with them.

**NK** One thing I must ask - what sort of picture do you go for when presenting the stereo stage to the listener? You can get such different perspectives on different recordings of an orchestra.

**EG** It depends on the sort of piece you're recording. With the speakers always set up the same way I know exactly what sort of spread I want to achieve and the depth of the perspective. If it's a large symphony orchestra you'll have more depth than if it's a Mozart symphony, which is smaller and will be a more immediate and intimate sound.

If you're recording a harpsichord you

would be relatively close, because you'd sit close to a harpsichord in a large living room or in a very small hall. If it's a grand piano you don't want to be that close, maybe a bit further away; and if it's an opera I think you'd want to be as close as possible, to be able to be involved in the dramatic action; then we really use a lot of the stereo image and the depth to get all the vocal and dramatic effects.

You are making a translation of one medium - reality - into another medium, stereo image. What I like to do is give the illusion of it sounding like the best concert hall position for that sort of piece. I go for the whole spread between the loudspeakers as the stage front, so I don't like a very narrow image in between the loudspeakers. What I like is to take full advantage of all the width. It is of course a matter of taste, depending on how you like to listen to the performance. It's not only up to me, it's also up to the artist; the artist is doing his performance, and as well as deciding how he's going to perform he can also have a say in how he wants it to come over. If he feels he sounds too far away, and I can agree with that, I can change it. Or the other way round.

**NK** It sounds like hard work.

**EG** Sometimes it is very difficult, if you want real perfection, but it's really exciting. It's hard work for the performers! But it's beautiful music, and we have great singers and a great orchestra playing it. I'm sure it will be a wonderful recording when it is completed ●

**I**t is perhaps on time that I introduce the most important Audio Note product; the Audio Note cables.

Without the Audio Note silver wires and cables, none of the qualities of the Audio Note products would be possible, the ONGAKU has several kilometers of 99.99% pure silver wire in its output transformers, the Audio Note IoIIV and IoLtd cartridges have a few centimeters of the same wire, and the wire contribute, in both cases to a great deal of the sonic qualities that both these outstanding products possess, the wire is as integral and proprietary a part of each design, just as silver is central to the total Audio Note philosophy.

Audio Note was the first company in the world to realize and demonstrate that the cable materials and their manufacturing processes affect the sound quality of a hi-fi system. In so doing Audio Note were also the first to see the benefits of pure silver wire (99.99%) and as such are the originators of audio cables as a science.

Audio Note have since then gained a totally unique knowhow in the art and science of making audio cables and wires that perform far above their price range, regardless whether they have silver or copper conductors.

#### AUDIOTE SILVER CABLES.

The first Audio Note audio interconnect cable, the AN-V, was designed in 1974, and offered to audiophiles and music lovers in Japan in 1976. It was produced in very small quantity and only in late 1978 did the AN-V reach Europe. In 1985 the AN-V was joined by the AN-S silver cable, which is basically a downscaled AN-V, its production time, and therefore cost, reduced through the use of less critical materials. The original AN-V remained unchanged until mid 1989, when it was replaced by its current version. The AN-V was replaced at the top of the Audio Note cable range in October this year by the AN-Vx reference, which is the culmination of several years study into all aspects of cable design, suffice to say that all who have heard it agree that it has the most amazingly uncluttered sound they have ever heard.

Audio Note introduced a silver speaker cable in 1979, dubbed the AN-SP. It was unavailable for a considerable time during the 1980's and was reintroduced in 1988 following a substantial order from me.

A fully silver wired system has yet to be assembled here in the UK, although that should happen sometime in 1992, but for every part of the system where copper wire or cable is replaced with Audio Note silver cable or wire the improvement is always immediate, but don't take my word for it, try for yourself, using our no-nonsense 14 day try-before-you-buy offer.

Audio Note silver cables fall in the following price categories,

#### Interconnects.

AN-S 110.00/m terminated  
AN-V 175.00/m terminated

#### Speaker cables

AN-SP 110.00/m per channel  
AN-Vx 485.00/m terminated  
AN-SPx 350.00/m per channel

Termination of speaker cable costs 16.00 per set with either gold 4mm banana plugs or spades.

Using the purest available silver as a conductor, naturally has the same effect on price as it has on sound quality, it is automatically high.

#### AUDIO NOTE COPPER CABLES.

The desire to offer some more affordable cables in the Audio Note range as well as ultimate ones, made Mr. Kondo start an investigation into the use of copper wire in audio cables in 1983.

One problem with copper wire is that when it is produced, it is not normally coated immediately after it is drawn and the wire therefore oxidizes before it is coated. The copper wire therefore develops clusters of copper oxide crystals on its surface, which generate a rectifying effect (this is the reason why so many copper and silver cables sound best in one direction, which is the direction where the rectifying effect is the smallest!). This rectifier effect is present in all copper wires, regardless of whether they are oxygen or hydrogen-free or have single crystal structure or not, unless they have been coated immediately upon leaving the die.

If you try to solder a copper wire where an oxide film has formed the solder will not stick without flux, the oxide layer also has a hardening effect on the wire itself.

Low level electrical signals are not able to pass easily through the oxide film on the surface of the wire and this worsens an already existing problem in copper wire. The cohesion between crystals in copper is quite poor, and if you stretch a copper wire it breaks relatively easy, this lack of flexibility is caused by weak crystal boundaries. This weakness in the contact between the crystals creates a

fairly high "electrical wall" between crystals, which disables small signal transfer between crystals, as the electrons have difficulty passing the "wall".

This is the reason for the continued attempts by many manufacturers of cables and wire to make copper wire with long crystals.

The emergence of oxygen-free coppers like OFC, OFHC, POCC etc., made it possible to design cables around better quality wires provided the wires were manufactured to the right specification.

As a result the first Audio Note audio cable with copper wire, the AN-C (red), was launched in mid 1985, it shared most construction details with the original AN-V silver cable, as it was a twin coax, with symmetrical conductors, in a heavily damped double jacket.

The copper wire used was an OFHC, 99.99% pure copper, drawn in true Audio Note tradition through a diamond die and coated immediately after the die with six coats of polyurethane, to prevent any oxidation forming on the surface.

After six years the AN-C is still available and was joined by the AN-A, yellow, in 1989, both these cables represent exceptional sonic value at a very modest price.

In 1990 the first Audio Note copper speaker cable, the AN-B, arrived. This speaker cable incorporated a number of new ideas, partly to reduce cost without sacrificing sound quality, but also to incorporate reduced RF interference problems~ which is not found in the Audio Note silver speaker cables.

The two main problems in speaker cable are caused by the amount of current passing through the cable, this firstly creates considerable "magnetic distortion" in the wire itself, more so in copper than in silver, regardless of copper type and cable design. "Magnetic distortion" is always accompanied by "wire crying", which is a resonance in the surface mole-

cules, this is caused by a weight change in the molecule itself, as the electrons pass. As copper has higher DC resistance than silver, the electrons affect the molecule mass more, with increased "wire crying" as a result.

Secondly, the low frequency content of the signal always leaves an amount of mechanical energy behind, which "smears" the signal following, mainly concealing the low level content of that signal.

To combat this phenomenon, Mr. Kondo chose to use two thicknesses of wire for the AN-B, with the thinner wires bundled tightly at the center of the cable, surrounded by thicker wire bundles on the outside, all very tightly compounded in a vinyl jacket. This provides an efficient and inexpensive damping system (damping by differential masses), which reduces inter-conductor resonance by more than 80%, because the different gauges of wire will damp each other as they have different resonance frequencies.

The vinyl jacket is surrounded by a screen, which allows AN-B to be used in a pseudo-balanced mode to reduce incoming RF interference.

To further allow the use of Audio Note quality speaker cables in lower priced systems the AN-D was introduced only a month ago, being a derivative of the AN-B it shares the simple and effective damping arrangement of this Audio Note cable, as well as most of its qualities.

So today Audio Note offers the following audio cables with copper wire,

Interconnects	Speaker cables
AN-A 25.00/m terminated	AN-D 6.99/m per channel
AN-C 49.50/m terminated	AN-B 12.50/m per channel

It is strongly recommended to buy the AN-B in terminated sets to achieve the full benefit of the pseudo-balanced configuration. Termination cost per set with high quality gold plated 4 mm banana plugs, 16.00.

Apart from their quite superior sound quality, the AUDIO NOTE cables are very flexible, so if you are tired of the "hosepipe" technology most other manufacturers use, you will be relieved to connect up a set of AUDIO NOTE interconnects or speaker cables, they are flexible and will not pull your speakers off their stand or your amplifier or CD player off its shelf!

Furthermore there are copper or silver wires and cables available for rewiring tone-arms, amplifiers, loudspeakers, most speaker coils, inductors, winding transformers etc., for general systems upgrade and improvement. I should say, however, that these are not available under our try-before-you-buy scheme.

If the above has wet your ears "appetite"! then perhaps you should use our try-before-you-buy, guaranteed money back scheme, which allows you to try any standard length interconnect or speaker cable for 14 days and if not satisfied return it for a full refund, all it will cost you is the postage one way.

*Peter Qvortrup*

AUDIO NOTE Co. BRIGHTON, UK,  
0273 821371, FAX 0273 771808.



One of the most respected loudspeakers in Wharfedale's current range is their successful 505. In its latest incarnation, as the 505.2, it has been around for several years. Being quite elderly, Wharfedale have produced a completely new model, the 515 priced at £249.

A conventional, two-way, sealed box loudspeaker, the 515s are of an in-between size that is a bit large for most bookshelves but too small to stand as a bold statement in the living room.

At the rear of the loudspeaker are two sets of 4mm terminals, designed for easy bi-wiring. These are sturdy and I would strongly urge the listener to use the 515 in bi-wired operation, if only to remove the bits of fuse wire that join the two sets of terminals together. The 515s do benefit greatly from bi-wiring, as does almost every design that has this option.

The Wharfedales proved to be a pleasant loudspeaker. No matter how raucous it was, the 515s still gave an attractive sheen to the music. This was their strongest point; given a bright sounding system, the 515s will help to take the edge off the fierceness. People whose taste in music begins and ends

with Crass, Slayer or Omette Coleman at his most searing, will find little of interest in the 515s. On the other hand, those who like their music refined and laid back would like their presentation.

Ultimately, however, the 515s failed to shine, especially when one considers that they are set against some pretty fierce competition. They had none of the freedom and openness of a JPW AP2 or AP3, none of the sparkle of a Mission 761i or the imagery of the Rogers. On recordings with powerful bass lines, such as 'Bone Machine', from the Pixies Surfer Rosa LP, I noticed that the percussive attack of the bass guitar disappeared entirely, while on baroque pieces, like the Archiv recording of Bach's Third Brandenburg Concerto, the cello lacked the driving force that it gives to the closing passages of the first movement.

Despite their sins, however, the 515s give the impression of a well-balanced loudspeaker. They do not perform strikingly well, yet they are not very poor either.



# Five Fifteen From Leeds

The latest 515 loudspeaker from Wharfedale in Leeds caught by Alan Sircom.

## Measured Performance

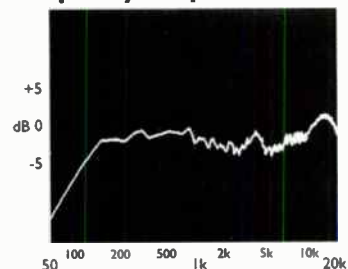
The frequency response of Wharfedale's 515 has a fairly broad dip of around -2dB in it, extending from 1kHz up to 6kHz or so, after which output starts to rise continuously to a peak at 15kHz, produced by the tweeter. Effects of this magnitude, seen quite clearly in our frequency response analysis, will make themselves known subjectively. I would expect some loss of detail and possible warmth or blandness to be produced by the dip, whilst the tweeter peak will make for thin or sharp treble. Unfortunately, there's no escaping these characteristics until the response is flattened; altering matching equipment will do little to help for example.

The 515 has a series input capacitor to block sub-sonic signals, which makes the impedance rise to infinity, shown by the height of the trace at left in the impedance plot. This is usually done to prevent excessive low frequency cone excursions and block possible DC inputs from faulty amplifiers. It effectively decouples the loudspeaker from the damping effect of the amplifier at low frequencies however, so it is of arguable merit. KEF use the technique on some of their budget speakers, to assist bass tuning too. The overall impedance is high over most of the audio band, dropping below 8 ohms above 7kHz. Falling energy levels in music should ensure that not too heavy a current is pushed into the loudspeaker at these frequencies, unless very high levels are used with Rock music.

Sensitivity measured 85.5dB sound pressure level for a nominal watt input (i.e. 2.8V), a relatively low value for a budget speaker that may be partnered with amplifiers of limited output. For high volume without distortion, a reasonably powerful amplifier of at least 50watts per channel is best used.

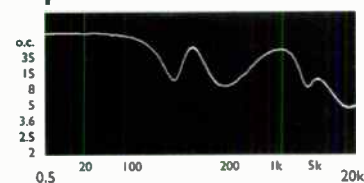
With its uneven frequency response in particular, I have quite strong reservations about this loudspeaker. Only listening tests can determine whether its measured problems will be subjectively acceptable or not however. **NK**

## Frequency Response



Broad dip around 4kHz

## Impedance



High overall impedance

Wharfedale seem to have tried hard to make their 515s as inoffensive as possible and in so doing, they have squashed some of the enjoyment that existed out of the older 505.2. They do not have any major faults that can be pointed at in their performance; those I have mentioned above are comparatively minor. Unfortunately, apart from their pleasant nature and even temperedness, I can find little that sets the new Wharfedales apart as exceptional.

My recollection of the main fault in the 505.2 was the characteristic spittiness from the metal dome tweeter. So far, few designers have found a way to overcome this spitty sibilance. To its credit, the 515 fares better than most. There is still a trace of sibilance, especially on close-miked rock vocals, but on the whole the tweeter still maintains the speed and clarity of the metal dome, without its problems.

I feel that time has been harsh to Wharfedale. This design, had it been released five years ago, would have been truly world-beating. Today, however, there are many designs in this price range that make its virtues unexceptional. The 515 is in no way a poor loudspeaker; it has failings, but these are relatively minor when set against its overall performance. Unfortunately, there are also many other loudspeakers in this price range that have at least as much and arguably more to offer ●

# NOT CONVERTED YET?

Audiolab's £695 8000DAC Digital-to-Analogue convertor greatly impressed our Eric. Musically, he felt that "the whole performance appeared clearer" and that it "invested orchestral music with subtlety and uncoloured tone." He also found that it was "extremely sweet and delicate", "calmly revealing" and concluded by saying that "the 8000DAC will certainly be a long-term pleasure."

For the winner of this month's competition, there will be extra helpings of pleasure, as their Audiolab 8000DAC will cost about the same as a Mars Bar; 24p in stamps to be exact.

Please send your completed entries, by the 24th April, 1992, to the following address:

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

We will endeavour to publish the results in the July 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 Cambridge Systems Technology, their dealers, and employees of Audio Publishing Ltd. are not eligible. All entries must be on the original forms, photocopied entries cannot be accepted.

## ENTRY FORM

1. What is Audiolab's popular integrated amplifier called?

2. Does the Audiolab 8000DAC use a Bitstream or multi-bit processor?

3. Including the 8000DAC, how many products are in the Audiolab range?

**Tie-breaker:** Describe, in not more than twenty words, how the Audiolab 8000DAC would benefit your system. The more imaginative, the better.

Name: \_\_\_\_\_

Address: \_\_\_\_\_

Postcode: \_\_\_\_\_ Daytime tel no: \_\_\_\_\_

Please send your entry form, completed in block capitals, by the 24th April, to Audiolab Competition, Hi-Fi World Magazine, 64 Castellain Road, Maida Vale, London W9 1EX.

## TANNOY WINNER

The winner of our Tannoy competition, who wins a visit to Tannoy's factory, will listen to the massive Westminster Royals and then bring home a pair of Tannoy 603 loudspeakers, was Colin Berresford, of Wigan in Lancashire. His reply to the tie-breaker "What do you think Alan might have said to Noel when the volcano erupted?" was:

"Hmm. . . . not bad. But in the circumstances I think the Keyword be to turn the horn the right way up!"

We hope to bring you pictures of the visit in the next issue.



# WIN AN AUDIOLAB 8000DAC DIGITAL-TO-ANALOGUE CONVERTOR

competition



The SME IV is the best pick-up arm in the world. Probably. I don't dare repeat SME's slogan without adding a Danish rider. However, I am brave enough to say that this arm is outrageously good at its price.

At £827.67 (inc VAT) it's not cheap but, for many people this is the last tone arm they will ever buy.

Not only does it perform to perfection it is also that rarest of rarities - the beautiful Hi-Fi product. With a silky sheen to the satin chrome finish and smoothly rounded form the SME IV is a piece of very sexy engineering that reaches standards set by Swiss watches.

I couldn't wait to find out whether it sounded as good as it looked and, beauty deserving beauty. I decided to match the SME IV to the equally gorgeous John Michell Girodec.

### Sound Technique

It didn't disappoint. In fact the mid-range clarity, sweetness, detail and subtlety was nothing short of astounding. It gave the Academy of St. Martins' production of Vivaldi's Four Seasons the crispness of CD projecting the strings and Principal Violin with pin-point accuracy, although such precision and lack of vinyl warmth may be a bit off-putting for some tastes.

On the other hand the SME IV gave



# FOURTH DIMENSION

**Added dimensions to vinyl are laid bare by the SME IV tonearm,  
installed by Eric Braithwaite.**

one of Decca's digital remasters, Copland's Fanfare for the Common Man, incredible realism with the brass reverberating around the hall and the great drum thwacks rolling out and over me with perfect clarity and accuracy.

In fact the SME IV's detail and control were so good that when it came to Van Morrison's Moondance I could almost see the baffles around some of the players. So good was it that I began to wonder how detailed the engineer's playback monitor had been. Not good enough to prevent this sort of thing or the soft shoe shuffle of Morrison moving around his microphone.

With the Morch da Capo in the headshell the SME IV demonstrated an almost unnerving propensity for revealing not only the quality of the recording but also the technique of the individual musicians, the engineering even the idiosyncracies of the cartridge.

One thing is certain. There is absolutely no point economising on the cartridge. The IV will not diminish its qualities. It won't disguise or enhance its weakness either.

### Stunning Insights

Nor will it improve on or diminish what has been cut into the groove. So much so that the degree of insight, especially on multi-track recordings and fudges sometimes disconcerts and often simply stuns. Its broad, spacious, extended soundstage can be equally surprising.

Instrumental and vocal tone is drier accurate to a degree that would be easy to criticise as cold and clinical, even antiseptic. This arm is almost a precision measuring instrument and sometimes sounds like it.

First time around the block the bass in particular seemed odd. At best dry, clean and lean, a certain indefinable quality was

sometimes noticeable by its absence. Before I had finally set the bias force exactly I wondered whether there was enough bass.

It is worth mentioning at this point that I found I could change bias force while the LP was spinning without disturbing the tracking one iota.

Twiddling the bias knob disabused me as to bass depth and profundity. But, it also left me with reservations. It goes down as well as CD but, even with a slight bloom on it it stays dry. People devoted to vinyl because of its warmth may not get turned on by this baby.

It won't twist the entrails on heavy rock if there is the slightest bit of artificial equalisation on the recording. Against the SME IV's lean and less imposing portrayal of the opening to U2's Joshua Tree or the Floyd's Dark Side of the Moon my own Koetsu trumped with added zest and forcefulness.





In listening tests constant comparisons between vinyl and CD was distinctly disturbing.

Differences between the two were unexpectedly minute and in the degree of depth and recorded ambience these differences were all too often advantageously on the side of good old-fashioned vinyl.

Care was taken to compare like with like. Rather than an earlier pressing a digital remaster in its remastered form was put on the turntable. Early mint pressing of the 50s and 60s had a frightening master tape quality. All courtesy of the SME IV.

### Superior Function

One of the functional delights of the Girodec I was using with the SME is that the arm-plates are machined to match the weight of the arm they are destined for so no fiddling of suspensions is necessary.

Fitting was simplicity itself. No wooden plinth to drill, no arm-board to measure, no fussing over arm-lead dressing.

As a result I didn't need SME's arm-mounting template but it, and the first two paragraphs of the instruction manual are so straightforward that it shouldn't pose any problems. In fact, I double checked it with a Thorens arm-board to ensure it really worked. It did.

Altogether the instruction book is a paragon of lucid clarity. It has to be. The SME IV is constructed along quite different lines to most other tone-arms, especially when it comes to some of the

methods of adjustment and alignment.

The writers of the manual have employed the slyly clever trick of numbering all the paragraphs from 401, the Series V manual beginning with 501, so there's no possibility of getting the wrong manual in your hands.

A black and white photograph accompanies every stage of the fitting process which is designed as a start-to-finish series. Should you wish to change the arm height later for a different cartridge remember that the base has to be unlocked.

Apart from its finish the SME IV is, at first glance, indistinguishable from its more expensive sibling. However, there are one or two major differences.

On the Series V Vertical Tracking Angle is adjusted on the top and with a little care and a turntable that isn't too bouncy it can be adjusted during play. This facility is a little less accessible on the IV. The damping arrangement on the V has been omitted altogether although one is available for £125.86 (inc VAT).

The arm-tube uses the same magnesium alloy construction with a fixed headshell like the Series V but the bearings are made to lower tolerances - AEBEC 7 rather than AEBEC 3 standard. Even that is well beyond most other arms on the market. Even for a reviewer who is constantly changing cartridges and thus putting bearings under stress this one is extremely hardy and difficult to damage.

In short, if the Series V is incredibly over-engineered the IV is simply over-engineered.

Other differences include the use of OCF internal wiring and arm-lead in the IV as opposed to Silver Litz and Van den Hul arm-lead. Both are available as options which takes the IV's price up by a further £50 or so. If your preference is for black chrome finish instead of standard satin that, too, is available for a further 15% hike.

### Alignment

Setting up is simplicity itself. All the tools are provided. A tiny thumbwheel in front of the low slung counterweight shifts it smoothly back and forth for arm balancing.

Two black lines running along the arm are more than a designer's conceit. They allow alignment fore and aft to a precision of within a quarter of a millimetre. If your eyesight is that good!

There are no weight figures on the arm for setting the tracking force. Instead, one of four letters give a starting point and one revolution then equals 0.5gm tracking weight. Bias is set by a thumbwheel on an outrigger marked in 0.1gm divisions.

The whole process using SME's alignment protractor took less than five minutes. I can't think of an arm more simple to adjust.

All in all, like the Girodec it lived on, the SME IV's sexy chassis combined with its staggering engineering quality and potent performance should earn it a hallowed place in the Design Centre.

The best tone arm in the world? Most probably ●

Some great claims have been made in the past on the subject of cartridge alignment. The right cartridge position, according to some American critics, radically improves sound quality. Others are more reserved about the apparent improvements.

I believe they depend upon the state of the system before it was adjusted.

So, predicting just how large any change might be is impossible. It will vary from system to system. Generally though, it is my experience that a correctly aligned cartridge has a smoother, more confident sound - especially on inner grooves - than one misaligned.

Cartridge alignment reduces what is commonly called

'lateral tracking error distortion'. This effect is produced by the cartridge following a different path to the cutter that made the record in the first place.

The result is an angular error relative to the groove, which is the source of the distortion. The problem is especially bad on inner grooves and because of this it has been common to try and minimise tracking error at this point alone.

The usual solution is to design an alignment gauge (protractor) with one point on it, positioned 58mm from the centre of the platter to correspond with the innermost groove of an LP. It's a simple and reasonably effective device, although some are slightly inaccurate due to misunderstandings about what exactly is required.

Our alignment protractor has been designed to be more precise and informative than the simple ones.

It has the usual 'inner groove' alignment point, but this has been optimally positioned in accordance with a geometric analysis\* of arm behaviour, to lie at a particular point just before the final groove.

This minimises distortion right across the disc, giving a more balanced result from start to finish.

Ordinary protractors that align at the final groove cause more distortion before it is reached and more at the very start of a record. Ours keeps distortion down right across the record.

Another feature of our protractor is the 'outer zero' point. A well designed arm should also line up properly here. The addition of this point on the protractor allows you to check whether this is the case and whether your arm is set to perfection.

If it is, you will be getting the lowest possible distortion from tracking error right across the disc, from start to finish. It will give you the very best sound from your turntable.

\* J.K. Stevenson: *Wireless World*, May 1966



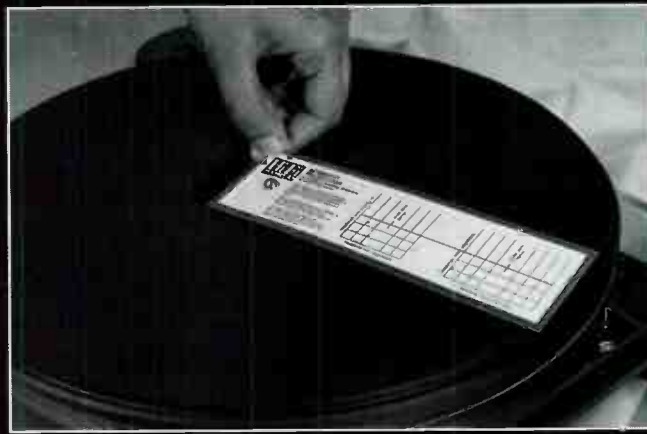
*how to use your  
free alignment  
protractor*

**Cartridge alignment improves the sound by reducing distortion. Our protractor gives the best alignment possible.**

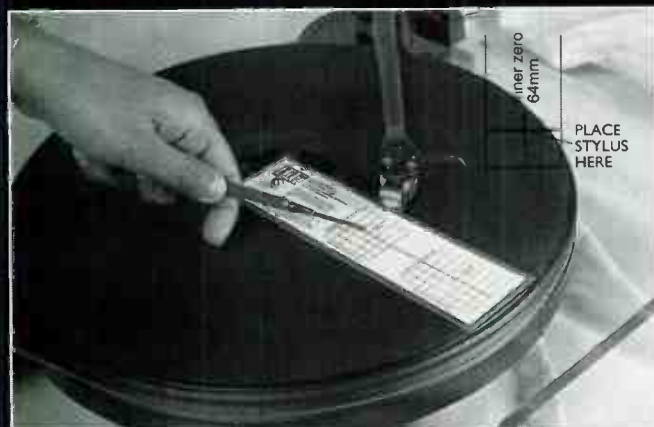




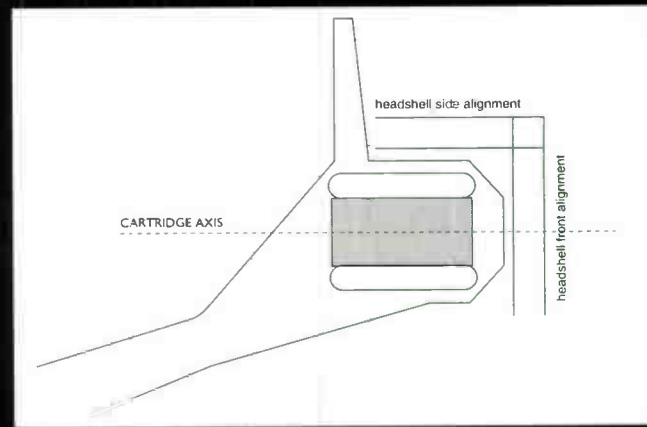
1) Loosen cartridge mounting screws just enough to allow it to slide forward or backward.



2) Place protractor over centre spindle of turntable



3) Place stylus on inner zero point



4) Move cartridge forward or backward until the edge of the headshell that is parallel to the cartridge axis is also parallel to one of the headshell side alignment lines. If neither side is parallel to cartridge axis, use front of headshell.

5) The cartridge is now in the correct position. Make sure it is not skewed, then tighten the screws firmly.



6) You can now check arm geometry by placing stylus on 'outer zero'. The side of the headshell parallel to the cartridge axis should also be parallel to the alignment lines.

### FURTHER ADJUSTMENT

If your arm doesn't line up on the outer zero, after the cartridge has been carefully and correctly set on the inner zero, its geometry is not ideal. It is possible, albeit a bit tricky, to make some fine improvements.

First, after alignment on the inner zero, find the point close to the outer zero where the headshell is parallel to the alignment lines. If it is, say, 6mm closer toward the centre spindle (i.e. at  $120-6 = 114\text{mm}$  radius), halve the 6mm figure (i.e. 3mm) and move the inner zero adjustment point in by this amount. Since our inner zero is 64mm from the platter centre, moving in 3mm will take it to 61mm.

Re-align the cartridge at this new inner zero. Now it should line up closer to our outer zero, lessening distortion on outer grooves in particular ●



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We tested the Linn Kremlin against the Naim NAT-01 using both broadcasts from around the dial, together with broadcasts made from our own generator. Listening to an afternoon play on Radio 4 one could hear a studio, together with people standing behind microphones on the Naim. On the Linn tuner, however, this studio appeared to fall away, pushing the performers forward. There was little sense of depth, and a limited amount of ambience or space around the performers when compared to the Naim. In addition, the Kremlin had a noticeably brighter tonal balance probably due more to its tailored bass, rather than actual brightness; the BBC's beach sound effects were barely noticeable on the Kremlin, but clearly apparent on the Naim.

Changing stations, we noticed that the Linn had far greater pulling power than the Naim. It produced a stereo signal from France Musique, albeit a poor one, where the Naim could not. Moving on to stations closer to home, on Radio 3 the Kremlin's mid-band sounded engaging at first. Further

listening suggested that it is rather two dimensional, muddling spatial details. The Naim produced depth that gave the orchestra perspective; on the Linn there was less delineation between instruments from either a tonal or spatial viewpoint.

Along the dial, on Radio 2, the Linn fared less well. Gloria Hunniford was playing a selection of film tunes; one of which was from Camelot. Here, the Naim accurately portrayed the distinctive light tenor voice of the late Sir Rex Harrison, while on the Kremlin, we were unsure as to who it was singing, but felt that it could have been James Robertson-Justice. Worse still, it was impossible to determine exactly where this baritone voice was coming from, while the image the Naim



## radio rivals

**After testing Linn's new Kremlin (see page 16) we were keen to compare it to its closest rival, the Naim NAT-01. Eric Braithwaite and Alan Sircom spent an afternoon comparing the two tuners.**

produced was firmly located between the loudspeakers.

Finally, we compared tracks from CD through our own stereo VHF/FM signal generator. The Linn spread everything far and wide, making a violin seem especially large, as was Mary Black's mouth. In addition, the Linn's sense of ambience was only so-so. On the Naim, however, it was far nearer the original CDs that we used.

The Linn Kremlin has a distinctive tonal character that may suit Linn-based systems. However, outside of that tight parameter, it does not perform as well as one would expect and hope from so expensive a device. The Naim NAT-01 is also an expensive tuner, designed to fit within a tightly specified system; it is also, however, just as successful outside of a Naim system. This must surely be the test of a good tuner. Unfortunately, by that criterion, the Linn fails to come up to the mark ●

### Comparison of Measured Performance

The tune resolution and accuracy of both tuners was superb, repeatedly giving optimum results in terms of distortion and channel separation I found from tests. Although arguments can be made for either system, differences in this particular case were insignificant.

Both tuners have a flat frequency response, but the Naim reaches down to 5Hz whilst the Linn is limited to 60Hz, something that proved to be audible.

The Linn had better channel separation but Naim's was good at high frequencies and very respectable in the mid-band. Since anything over about -25dB gives a good enough rendition of stage width I would hesitate to make value judgements here.

Both were low distortion tuners, there being little difference between them. The Linn was extremely quiet (-79dB hiss) when given enough signal (2mV), whilst the Naim 01 was satisfactory (i.e. hiss was just about inaudible during Radio 3 silences) with its -73dB figure, given 1.6mV or more.

Both tuners suppressed spurious multiplex signals well, so recording from either should not raise problems.

It was in RF performance that the Kremlin pulled ahead and this I suspect is a mixed blessing. Whilst the extra stages improve sensitivity and selectivity, they probably act to compromise sound quality. This is why I said the Kremlin might benefit from having switchable RF and IF stages. However, it can pull in weak stations and separate weak from strong very well. It also has an excellent signal strength meter.

The Naim 01 has good selectivity at 72dB. Stereo channel blending and loss of amplitude limiting below 10uV conspire to make measurement of sensitivity impossible but the 01 is less sensitive than the Linn and many other tuners. Naim are aware of this. They wisely insist it is used with a high performance aerial, which can easily counteract such weaknesses. The Naim does need and should have a signal strength indicator, even if it is only a green LED that lights when the aerial signal exceeds 1.6mV, something that Arcam once used.

Both Kremlin and 01 are high performance tuners that work very well. Naim put the accent on sound quality, sacrificing RF performance. Linn put the accent on overall sophistication; the Kremlin is highly complex but they pay a price in sound quality I believe.

### Test Results

	LINN KREMLIN	NAIM NAT-01
Frequency response	60Hz-15.6kHz	5Hz-15kHz
Stereo separation	-66dB	-43dB
Distortion (50% mod.)	0.12%	0.1%
Hiss (CCIR)	-79dB	-73dB
Signal for minimum hiss	2mV	1.6mV
Selectivity	80dB	72dB
Sensitivity		
mono	1.3µV	not measurable
stereo	40µV	not measurable
signal strength meter	digital readout, 0-120dB relative to 1uV	none

Denon are one of the few companies not caught up in the onrushing tidal wave of Bitstream. The £560 DCD-2560 is a multi-bit Compact Disc player with a claimed twenty-bit resolution. In outward appearance it is an associate of players like the Marantz CD-94, with the more infrequently used controls tucked away behind a "trapdoor", as the handbook charmingly calls it, covering the lower third of the machine.

# perfect pitch?

**Denon's DCD-2560 Compact Disc player allows the listener to change the pitch of a recording. Eric Braithwaite wonders if it is perfect.**

There is quite a complex array of controls on this CD player. The upper part is all fairly straightforward: Power On to the left of the disc drawer, the normal track search and play controls to the right of the display. Behind the flap (O.K., Denon, "trapdoor" if you must) are the 0-9 track programming buttons with a +10 for the higher numbers. Here also is the dimmer switch for the display, which has three levels of brightness and none whatsoever (i.e. off). Apart from the home taping aids of the Edit controls which allow CDs to be programmed to fit both A and B sides of the tape, the repeat and A-B functions, there are a couple of interesting additional wrinkles. One is a Link button which allows several CDs to be edited down to fit a C90 or a specific time span, the other is one for musicians' - or collectors' - ears. This is one of very few CD players with a pitch control, so that a CD can either be speeded up or slowed down. There is quite a large variation, plus or minus 12% in increments of 0.1%.

## Gimmick

This might at first seem a gimmick, though everyone will probably have a mental list of music they'd like to get through faster. It does, however, serve a more useful purpose. It is not

unknown even for modern recordings to have been recorded slightly fast or slightly slow, and a number of people are sensitive to the consequent change of pitch. If you are a collector of older recordings made on shellac 78s and transferred to CD, many have long parted company with the information about what speed they were recorded at. It could be anything from 76 to 82rpm, and despite trained ears, the end result is not always correct in pitch. The Denon can correct these as an owner thinks fit.

A full-function remote control is provided, and there are both fixed and variable outputs along with coaxial digital and optical connections.

Bright, clear and sharply etched was the first impression as the music came out of the DCD-2560. The power of the player to resolve some tiny details was well up with its peers, and sometimes way ahead, coming close to the £900 Marantz CD-94 MkII examined last month. Do you want to hear a fiddler fidget? There he is, elbow on a creaky music stand. Are you irritated by discovering a clumsy engineering hand on the faders? There is a quick sweep over to the right on track

four. It's best to avoid those classical musicians who hum along and mutter as they play, for the Denon exposes them quite unmercifully. This is not a cold, clinical, fluorescent tube lit player, though. There is plenty of music that comes bounding out of it.

## Bebop

The Denon DCD-2560 is very quick on its feet: Bebop comes over with plenty of bop. It is, sometimes, almost too speedy, and there is an area where its toes become mixed up with its ankles. Somewhere in the upper mid-range it has rather too sharp a way with transients. Listening to Prince's *Diamonds and Pearls*, which is where I noticed, for the first time, a sharp flick of the engineer's wrist on the mixing desk, it suddenly became clear that there was a degree of slurring on the triangle which pinged brightly, but perfunctorily. The drumming too became a little blurred. This was also the case with Miles Davis' *Dingo*. The trumpet shot straight up into the top frequency range, but the lower end of the drumkit had a muddy sound compared to the gleaming brass of the man's instrument, and cymbals sounded soggy against the horn's cleanliness. Both drumkit and backing

## Measured Performance

For this player, Denon have abandoned Burr Brown as the converter chip manufacturer, moving their allegiances to Analogue Devices instead. Inside there are four AD1862 multi-bit chips, arranged differentially. The digital signal is split on each channel and re-combined after conversion through twin chips (one per channel) to cancel distortion and noise. They give 20-bit resolution, using Denon's own Lambda technology.

In their hands they produce a curious measured performance. There are signs of non-linearity and resultant distortion at normal music levels, as our distortion analysis shows, where the 'spikes' are distortion components. What little distortion there is appears analogue-like, in that the harmonic levels are highest close to the fundamental and they progressively decrease with rising frequency. Although the overall level of distortion seen here is actually low, I am still a bit surprised that a Japanese company in particular has let it through on a reasonably expensive and prestigious player. They must have some fairly compelling reasons for doing so.

At low levels, where distortion is often a problem on CD, the DCD-2560 turns out to possess very little distortion, relatively speaking. With a dithered signal in particular, it produced less than 1% of second harmonic at -90dB, which is an exceptional performance. So whilst the DCD-2560 isn't distortionless at normal music levels, like most modern low-bit players, it does have very good low level resolution.

This player's frequency response characteristic is even more unusual than its distortion residual. Presumably due

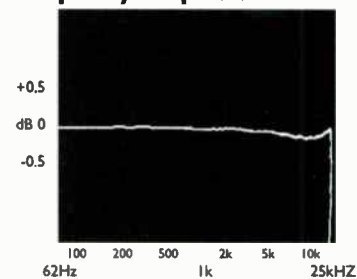
to some interesting new filter variant, possibly digital, the transition from pass to reject, or the corner in the frequency response trace at 20kHz, is incredibly sharp. The phenomenon can be seen at far right in the frequency response analysis. Treble level remains high right up to the upper limit, all but guaranteeing a bright sound. The curious filter form that produced it may well have benefits, or drawbacks. I strongly suspect Denon are grappling with some new technology here.

The measured noise level was incredibly low, but I suspect that muting was being applied at digital zero. There was little output of spurious rubbish above 20kHz as well, which is always a good sign. It is thought (although it remains unproven) that unwanted high frequency signals produced by CD players can and do get 'folded down' into the audio band by intermodulation, with bad affect upon sound quality.

Channel separation was very high and output normal at 2.2V. The measured dynamic range is limited by the fact that distortion at -60dB was higher than usual, a factor which affects the particular Japanese (EIAJ) test I use.

The big Denon measures well, even if it isn't quite a match for current bitstream (or low-bit)

## Frequency Response



Flat frequency response with unusually sharp roll-off (at right)





technology. That doesn't necessarily mean it's any worse off for it, because the measured blemishes were small. Whether they are consequential in their affect upon sound quality only listening tests can tell. I had some reservations about certain features, the way treble level was maintained looked especially injudicious, I would say from past experience. Treble is more commonly rolled off these days. **NK**

### Test Results

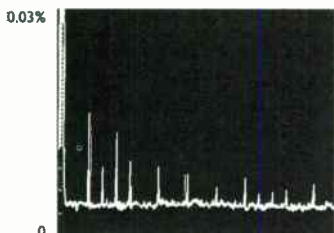
#### Frequency response

4Hz-21kHz

#### Distortion

-6dB	.004	.004
-30dB	.03	.02
-60dB	.55	.6
-90	27	28
-90dB dithered	.8	1
Separation	left	right
1kHz	-118	-122
10kHz	-93	-96
Noise		-119dB
with emphasis		-119dB
Dynamic range		105dB
Output		2.2V

#### Distortion



Some distortion at normal music levels

vocals merged indistinctly with the rest of the band on a flat plateau across the stage. Oh, but that trumpeting - brisk, sharp, lively: for a while, I wondered if I had been unkind thinking it was not first-rate Miles. It was definitely - as far as the solo work went - more of a performance than a recording.

There's the rub, for this is a big, breezy player at its best, one that puts the centre of the stage in front. It doesn't, however, define the edges of the man in the middle very well. Centrally placed vocals and instrumentals have a tendency to spread laterally. At the edges, however, this is fine; it gives an illusion of a stage of considerable width. Orchestral music had similarly splendid real-world life, with good fat brass, the instruments all neatly shined up with Brasso and not a dent in them. Strings were dry and clean, though with less tonal differentiation between the sections than is desirable.

The Denon can be exciting, especially with analogue recordings, which are often softer than digital ones. This is the give-away, for this CD player is something of a hard case: all this life, speed and resolution is in the mid-range. On the way up, vocals and instruments acquire a glassiness that could only be cut by diamond, and the bass, though it's not dull and forgotten, while being full is also a bit fuzzy. It's a different picture if the DCD-2560 is used as a transport.

Piping the coaxial output into a Deltac PDM 1 converter improved matters enormously. Resolution wasn't so glazed over, timbre and tonalities were much more even and smooth. There was a distinct tightening up of focus, and a distinctly longer front-back perspective. The inner depth of the recordings became much more apparent. Even the bass was firmer, and like the overall sound simply more resolute. Here we suddenly had a transport which would have stood up well against the Kenwood, Teac and Arcam of last month's review. The solid building work which Denon have put into the machine pays off here.

The optical output was less successful, less taming. Though the depth perspective was retained, there was less of a defined shape to instruments or vocalists, the whole sounding more laid-back and still with some tonal and timbral muddle - especially in the middle ranges. Perhaps it was the "Lambda" circuitry, the D/A processing which I have my doubts about, or perhaps it was the Analogue Devices convertor chips, for Denon normally use Burr Brown. Whatever, as a player bought with an eye to a prospective upgrade by adding on an outboard converter, this is one to put on the shopping list. As a stand alone machine, preliminary audition in your own system is strongly recommended, or its worst may get the better of its best. ●



# flying high

**Hewn from Aerolam, used in aeroplane building,  
the Celestion 700SE is a top-flight loudspeaker,  
according to Eric Braithwaite.**

Celestion's top-of-the-range 700SE (the SE stands for "Special Edition") is small, grey, and light. It is in fact almost ridiculously featherweight, weighing in at a mere 6.3kgs (14lbs). This is because there isn't a single sliver of tree anywhere about it. Celestion aren't endangering the rain forests with this one, for it's made of Aerolam, a honeycomb alloy used in building aircraft bodies where strength and minimal weight have to go together. The idea is to make the box as acoustically dead as possible, as far as the drive units are concerned. It was used in the original SL700. The sealed-box, two drive unit 700SE, at £1399 with complementary stands, is the latest development.

Be that as it may, perseverance was the order of the day, because the SL700 was to be a no-compromise classic reference loudspeaker designed to fly a prestige flag for the company. It took, I'm told, four years to develop. The sheer rigidity of Aerolam interested Celestion; even though it proved extremely difficult to shape into a rectangular box. But when did you last see a square-shaped aeroplane?

If you have decided on a metal cabinet, then it would be a retrograde step to wrap it in vinyl and pretend it was wood. Consequently, the cabinet (and the matching stands) are finished in grey Nextel. This produced a bit of a mixed reaction; while I loved the dull grey, enlivened by the vertical grooves in the baffle and the column of the stand, a friend was distinctly unimpressed. The fluted columnar stand, however, has some interesting detail. The base has four top-adjustable spikes which sit in round mouldings at each corner, giving the thing a look reminiscent of a Corinthian column. If the whole caboodle came in white, they'd match an Adam fireplace quite well.

## Hollow Columns

The stands are essential. They were designed not only for, but with the 700SE's. The central hollow column can be filled with either sand or lead shot, and then becomes an extraordinarily dead, immovable - and heavy - object. The top plate has three depressions for cones, which sit point upwards, and fit into three hollows in the base of the speaker so it "floats". Not only that, but each is bolted loosely through rubber bushes onto the stand. This not only saves them from being sent flying by a boisterous pet but is part of the design too. However illogical it seems at first, the rubber bushes should not touch the bottom of the box; it is meant to be fairly loose on its moorings. Possible fine tuning which I was told could be advantageous - for this is an extremely transparent loudspeaker - is to remove the rubber bushes or scrape the Nextel away to bare metal where the tops of the cones fit. I couldn't test this for myself, since my pair arrived ready tweaked.

Externally very similar to its predecessor, the 700SE uses the classic Celestion



In aluminium dome tweeter, with horizontal bars across the dome to protect it, since it is fragile, plus a 6 1/2 inch Cobex mid-bass driver. Some revision has taken place, however, internally, to make this loudspeaker, like the 100, a little more amplifier-friendly. The throw of the bass driver has been lengthened and the compliance of the surround has been altered. These changes should result in improved dynamic power handling and greater resolution at high levels, Celestion reckon. Changes in the crossover have been implemented, as in the 100s, to increase the "vertical window", especially useful as the stands come only in one height. Efficiency wasn't at the top of the design brief, so a good 100watts or more is a healthy starting point in the choice of amplification.

Some care is required in positioning the 700SE's, but with the experience gained from using 100s I found their ideal position quite quickly. Users should not be afraid of keeping them unusually wide apart, nor necessarily of toeing them in at acute angles. It all depends on the distance of the listening seat. It is easy - much easier than with the 100s - to recognise when it is right: the music blooms left and right far beyond the boxes, and singers, vocalists and instrumentalists move in true holographic fashion fore and aft. From the first, the definable depth, stretching in front and behind the plane of the loudspeakers was a real surprise. Any cabaret stage, any platform, any auditorium acquired measurable dimensions.

**Smoothest in the Business**

Who said metal domes were spitty? Well, yes, they can be, but Celestion's is the smoothest in the business. It gives the illusion of reaching up and up so you can follow a soprano's high C into the lighting gantry. While I'm thinking about vocals generally, these 700SE's can give an uncanny insight practically right down a singer's throat into the vocal chords. Not "I am a Camera" so much as "I am a Microphone!"

Like the 100s, the 700SE's, though they don't claim low bass extension by any stretch of the imagination, have the knack of convincing the listener it is all really there. There are no wobbles, no uncertainties: bass guitar rolls around, timpani thwacks come over as startlingly sharp and apparently deep. It was intriguing making a mental comparison with the ATC SCM20's. These two are quite different bloodlines broadly comparable in price, although the Celestions' includes the stands. The major difference is in dynamics - here the ATCs are unsurpassed. They hit you with the full force of an orchestra between the ears where it hurts. The Celestions are more neighbour friendly, with an extraordinary degree of intimate analysis and subtle imaging and a thoroughly smooth, gentle tonal quality. The mid-range particularly offers a clear, sweet and delicate balance, which was particularly remarked on listening to drama and spoken word. This was well up in the BBC monitor

scale of standards.

There was no doubt about these speakers' essential transparency. Edits, stray footsteps, the little details that prove sound engineers are human and fallible were all evident without being prominent or distracting. This was a level of analysis I tend to hear very rarely from anything other than Quad ESL 63's. The Celestions proved to have a feel for gently displaying the differences in sources: playing around with several CD players, Bitstream and multi-bit both old and new, reminded me afresh and with unmistakable clarity, precisely what the individual differences between the players were. The 700s are well house-trained, though: it was never impossible to close one's eyes and get on with the music.

**Submission**

Not just the music, any music. These Celestions may have charmed me into submission, but I couldn't find fault. Well, perhaps I could, but since any quibbles are within the design envelope, it wouldn't be entirely fair. If there's a lack, it is - and this is something many small monitors have in common - that compared to the ATCs, large scale productions were somewhat diminished in size. It's the difference between having a life-size performer in front of you and a holograph. Correctly placed, though, the 700SE's presented a perfect miniature. It is something I have no problem in accepting for the sake of the detail and insight, the catches in a vocalist's voice and the sound of an instrumentalist taking one step back - and knowing for sure it was one step and not three.

Ambient information, which contributes so much to the sense of being there, was profound. I listened to a broadcast from St Albans; it's a few years since I was there, but the Celestions painted a vivid acoustic picture of the interior which I had no difficulty in visualising. A friend - a Jazz fanatic - was startled to discover he could tell clearly that a solo trumpeter had obviously been recorded acoustically separated from the drummer. That was the second time round - he was too emotionally involved in the performance the first time.

Celestion's design efforts have really hit a peak with this flagship of theirs. The 700SE's stand well up on the quality pyramid of small monitors. They are credible, analytical, musical, and the fact that they are boxes is forgettable. That's how it should be, and they have very few rivals for what they do.

Only one thing: they need to be well fed, both with power and high quality sources. Even the most eminent budget or mid-price equipment will disappoint them. I just - though there was a sense of strain - achieved moderate listening levels with seventy watts, but they eased markedly with a hundred. They won't paper over any cracks, just tell the truth. They convinced me as much as their honesty would a jury. I plead guilty to falling in love with them, and I even forgot to apologise to my 63's for exiling them to the kitchen for the duration ●

**Measured Performance**

The 700 is a hi-tech mini-monitor. Being from a large loudspeaker company with good research facilities, and who place quite a lot of emphasis on technology, it should have a good basic measured performance.

The frequency response isn't quite as flat as I would have hoped, in comparison to some other monitors I have measured recently, like B&W's impressive 805. The analysis shows that the bass/mid-range unit has slowly falling output with rising frequency, bolstered by a peak at 1.5kHz. Above 3kHz output starts to rise, probably due to the tweeter coming into play. Above 10kHz a sharp notch, probably due to phase cancellation, removes most of the upper treble and I can't help suspecting that this has been used to prevent the tweeter sounding peaky and sharp, as result of its rising response trait.

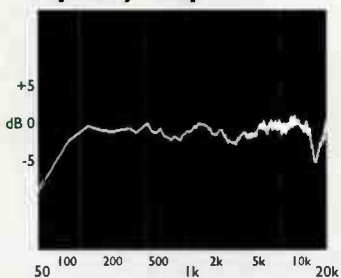
The overall characteristic is reasonably well balanced overall, especially since the response analysis has a high resolution vertical scale, but this is not the smoothest trace I have seen all the same. Whilst with loudspeakers, a ragged or non-flat response doesn't necessarily damn them, a flat response is still prerequisite to real accuracy. The 700 is satisfactory as expensive monitors go, if not exceptional.

Not unexpectedly, sensitivity proved very low. With mini-monitors, it often is in order to generate good bass. Barely 81dB sound pressure level was produced for a nominal watt of input, partly because impedance is a very high 12ohms overall. Most loudspeakers manage 85dB or thereabouts under these circumstances, which is noticeably louder.

Whilst high impedance makes the 700 undemanding as a load, to get much volume from it a powerful amplifier is needed. I'm afraid there's no easy way for me to explain that a powerful amplifier is only needed to swing volts (think of volts as pressure) across the loudspeaker in order to get current to flow. High impedance loudspeakers are common enough, but they under-utilise amplifiers. The 700 would draw only 30watts from a 50watt amplifier, for example. I would suggest a high quality amplifier of at least 100watts per channel would be sensible if reasonably healthy volumes are wanted. The impedance curve shows clearly that the 700 has a minimum impedance of 7 ohms, but it hits 35ohms at 1kHz and more at 60Hz, which helps raise the overall value.

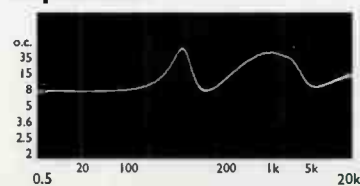
The 700 has some minor difficulties, ones that are not unusual however. They don't preclude good sound quality, but they do show that certain limitations exist. **NK**

**Frequency Response**



Some unevenness in frequency response

**Impedance**



High overall impedance, due to peaks



# seventh heaven

**Deltec's new PDM-1 Series III digital to analogue convertor, with DAC 7 technology, inspires Noel Keywood.**

The PDM-1 Series III digital-to-analogue convertor from Deltec is their third model to possess Philips' latest Bitstream super-chip. In an attempt to gain the best sound possible from Compact Disc at various levels of sophistication, Deltec have positioned it between the technologically extravagant PDM Two costing £2200 and the more accessible Bigger Bit costing £650. PDM I III neatly combines much - but not all - of the complexity of the former with a price that is, perhaps, a bit more affordable at £1195 (well, all things are relative).

Whilst differences between high quality digital convertors couldn't be

described as great, in the same way that loudspeakers differ from each other, I find that they have a lot of effect upon the way I feel about listening to music from CD. It is, I suspect, the peculiar feature of Compact Disc, where the sound can still display elements of unpleasantness that is responsible. For example, a small treble lift in the frequency response of a CD player produces a sharp, incisive quality that spits at your ear and seems almost to want to pierce it.

These days, treble peaks from poor filter design or termination rarely exist, but the example is appropriate. CD can so easily sound unpleasant that an increasing number of manufacturers now introduce small response tweaks to ensure it never strays in this area. Convertor design hovers on the brink too far in one direction and the sound will become intolerable. Too far in the other and it will start to lose its basic CD attributes of clarity and insight. The balancing act is intriguing and the outcome at times exciting.

Deltec's own PDM Two is the most exciting convertor I have heard. It took a firm and obvious step forward within the precariously fine limits of acceptability I have mentioned. It was fascinating to hear how

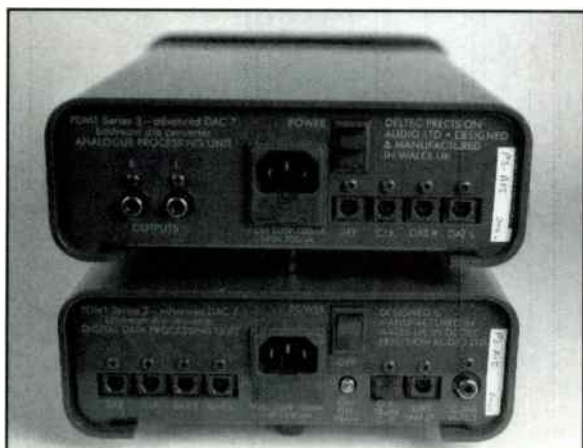
Philips' latest chip-set could improve the sound of Compact Disc, especially since it represented the most complete and successful about-turn in attitude from the inventors of the medium. In a nutshell, PDM Two offered a sound with drama in it. There was a stronger dynamic, a greater sense of precision and control and a much enhanced delivery at spectrum extremes; bass came through with real slam, treble with shattering strength.

I found PDM Two ruthless and bordering on violent. I had expected to be presented with increased refinement. It was there too, in terms of improved insight into a performance. What I hadn't reckoned on was the 'press you back in your seat' type of assault by sound that comes with this new chip set, at least when well applied.

Bigger Bit possesses some of the character and ability of PDM Two, but not a lot of its composure and expansiveness. I was impressed by Bigger Bit, but a little perplexed too. We are still talking about it in the office. Eric independently reached the same conclusions as myself, namely that it has unusual amounts of punch and focus in contrast to other convertors - an attribute of DAC 7 - yet it also has a slight upper mid-range glare that compromises tonal neutrality. In consequence, Bigger Bit has turned out to be something of an enigma to us. There's no equal at the price and you can't ignore its unique and captivating strengths, yet the evenness of nature that some other convertors display isn't there.

Obviously, there's a gap waiting to be filled here and PDM I Series III fills it well. Like PDM Two, it is a two box

The complexity of this convertor is reflected in the banks of rear panel optical inputs and outputs necessary for their interconnection.





unit. The idea is to capitalise upon the basic configuration of the Philips chip-set, in order to best exploit its properties. A lot of manufacturers made mistakes with Philips' latest top quality Bitstream chip, the SAA7350. It is very layout sensitive and, although Philips supply manufacturers with a recommended layout and an advisory service, the success rate for its application has been patchy.

Philips leapfrogged the difficulties with DAC7. It is a peculiar ancillary chip to SAA7350, for it merely houses some of the same circuits, so they can be removed from the heat of the kitchen, as it were. This cuts out problems of mutual interference. Ideally, the division is capitalised upon most effectively by putting the new chip in its own screened metal box, as in PDM Two. Since metalwork these days costs much more than silicon chips, it is also the most expensive option, hence the single-box Bigger Bit.

PDM I Series III uses a two-box arrangement, like PDM Two. What it lacks are the electronic frills. A lot of the highly specialised reference power supplies of the Two are missing and eight-times (oversampling) digital filtering is used, against sixteen-times. In all, mainly because the power supplies are less comprehensive, PDM I III has around one-third the number of components in it than PDM Two, yet all the basic circuit configurations are identical. This even extends to use of specialised output circuits designed exclusively for high quality audio work by Deltec. Where nearly all other manufacturers are content to use silicon chips costing around 40p to handle the audio, Deltec totally reject them at this price level. Instead they use their own thick film hybrid circuit, the DHOA32, seen as vertical 'daughter' cards on the mother board in our picture.

So PDM I III contains much of the essence of PDM Two, including the ability to mate with a Deltec transport (in development) which itself will work from the master clock within the convertor itself.

The digital box connects to a transport via an optical cable or an electrical cable and is itself linked onward to the 'analogue' box through no fewer than four optical cables. This amounts to quite an impressive skein of optical cabling. Two carry the high speed Bitstream digital signal prepared for decoding (left and right), one carries a de-emphasis control signal and one a clock signal. The audio outputs are via phono sockets; there is no method of varying output level. It is fixed at the CD standard of 2V nominal, in this instance measuring 2.3V.

Ideally the two cases of this

convertor should not be placed immediately on top of each other, but they could be racked vertically beside the transport, or even hidden away somewhere. They are best left powered up; the power switch is on the rear.

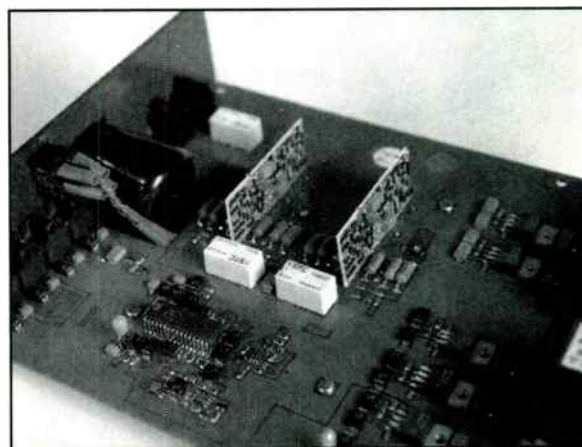
There is very little to say about the general operation of PDM I III. Both units are sturdily built out of aluminium alloy, the front panels being cast. Deltec apply a dark grey gloss paint finish and a single green light glows when power is on. I experienced no unusual problems. Power is supplied through IEC inputs and, ideally, Deltec mains filters should be used in each line.

Sound quality from PDM I III was surprisingly adeptly placed, in subjective terms, between PDM Two and Bigger Bit with, in my opinion, a slight bias toward the former. It possesses all the expansiveness, the ease and strength of bass delivery and the occasional shock of powerful treble, that 'Two displays. However, it is less hard edged and precise in what it does, in both timing and transient definition. This made PDM I III a bit less remorseless and brutal in its delivery, which I found no bad thing. Yet at the same time it retains all the strengths of PDM Two, offering a punchy and dynamic sound from CD, with little of the smoothness and

slightly self effacing presentation that Bitstream has offered to date.

The glare and the slight imprecision of timing and general presentation that Bigger Bit displays in contrast to PDM Two (but not other non-DAC7 convertors) was not evident. I felt that PDM I III was quite a step up from Bigger Bit in fact, offering all the same good points whilst avoiding the minor blemishes.

Together with a transport, PDM I III amounts to a £1800 plus CD player. It strikes me as the sort of unit any enthusiast who wants the best from CD at a reasonable price should consider. It is one of the most advanced convertors currently available ●



The crucial DAC-7 (TDA 1547) one bit convertor chip with its row of connecting pins can be seen in the foreground. Behind it lie two white relays, and immediately behind those, Deltec's own thick film hybrid audio output circuits on vertical boards.

### Measured Performance

As always, Deltec roll down high frequency response to a greater degree than usual, as our response analysis shows, yet PDM I III sounds neither warm nor 'smoothed'. It is something of a conundrum to me. CD players with such a response, of which there are an increasing number, reflect this property in their sound quality, but not the Deltec convertor. I suspect it is due to the design of their output circuits and filters.

There was no measurable distortion, at normal music levels. The spectrum analysis shows only noise from the analyser. This puts distortion harmonics below 0.005% - low enough to be insignificant. At low levels and with dither, the convertor continued to resolve signals extremely well and with little distortion. It was up with the best in this respect.

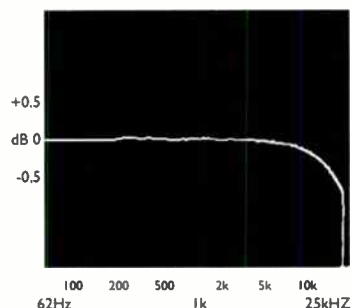
Channel separation was very high, being

not less than 100dB right across the audio band. There were no unwanted outputs above 21kHz and little noise too. In all respects, Deltec's PDM I III measured extremely well. NK

### Test Results

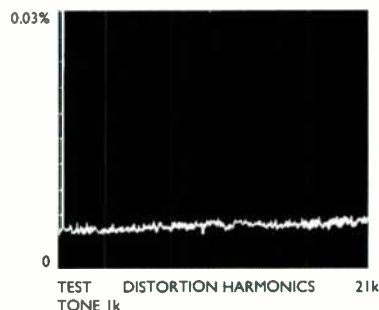
Frequency response	4Hz-21kHz	
Distortion		
-6dB	.005	.005
-30dB	.005	.005
-60dB	0.48	0.48
-90	32	32
-90dB dithered	1.4	2.2
Separation	left	right
1kHz	-121	-121
10kHz	-102	-101
Noise		
with emphasis	-106dB	
Dynamic range	109dB	
Output	2.3V	

### Frequency Response

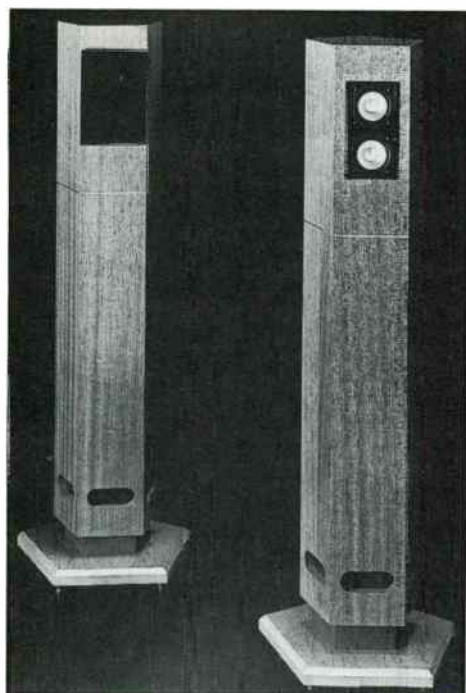


Treble roll off above 5kHz, typical of all Deltec convertors.

### Distortion



No distortion at all from advanced Bitstream circuits.



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*CD Review On Pentachord Speakers, Nov 1991*

The Pentacolumns are among the most revealing speakers I have heard.

*Hi-Fi World, Dec 1991*

I feel that the Art Audio Maestros are among the finest valve amplifiers I have ever heard. I can barely imagine anything more alluring.

*Hi-Fi World June 1991*

The big sound, all seeming to emanate from the miniatures, was quite astonishing.

*Gramophone on Pentachord Speakers July 1991*



*Pentachord*

**We could not have said better ourselves . . .**



*Concordant Excelsior*

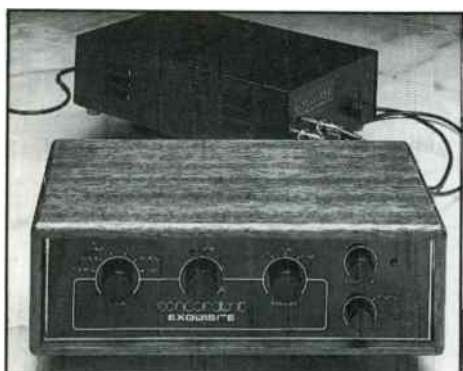
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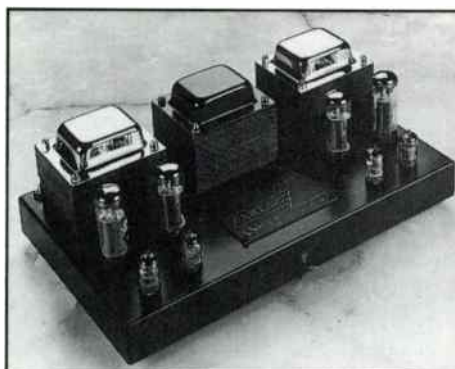
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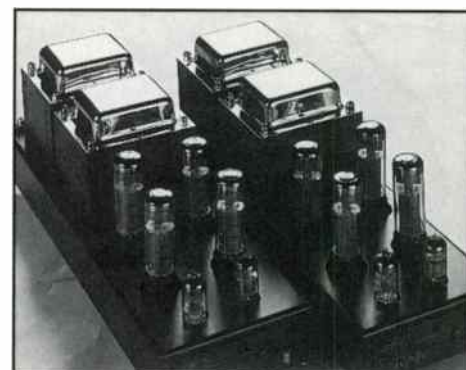
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Although Britain has a reputation for its hi-fi industry, formal education in the subject is uncommon. If you are interested in hi-fi, the nearest you can get is to study 'audio electronics' and find out about the complications and embellishments real hi-fi introduces from the hi-fi magazines, a few books (very few unfortunately) and, for the brave, from the Journal of the Audio Engineering Society, which is heavily research orientated.

Some of our Universities, notably Essex and Southampton, have serious audio research facilities and the North London Polytechnic has a City and Guilds Studio Recording Course as well as Degree courses in Electronics and Communications, which include an advanced audio (hi-fi) option.

Close to the magazine's offices, we were surprised to find that the City of Westminster College (formerly Paddington College) offers audio related courses too. It seems appropriate, because literally around the corner from them lie the hi-fi shops of the Edgware Road, or what's left of them nowadays.

"Our students used to work in local hi-fi shops in Tottenham Court Road or Edgware Road, because they were conversant with the specifications of the equipment and the electronics", said John Mizzi, the Senior Course Organiser.

Celebrating ten years of running Sound Engineering

Courses, the City of Westminster College recently opened a new Music Technology and Audio Visual Suite. It is an extension of their facilities for the Sound Engineers Course which provides a City and Guilds qualification. Whilst this isn't hi-fi specific it does give a good practical and theoretical grounding in audio electronics, from which further interests can be developed. "Much in our sound engineering course relates to hi-fi and audio, since we teach basic engineering," said John Mizzi. "We have a lot of electronics labs in this college, including computers. We use Ferrograph test sets for more specialised audio testing. These back up necessary basic service equipment, like meters and oscilloscopes."

Since the course has been developed with the assistance of the Association of British Theatre Technicians (ABTT) it is primarily aimed at those interested in theatre sound, concert PA sound, recording studios and such like. But with subjects like acoustics, audio electronics, computers and music as part of the syllabus, it also suits audio in the form of hi-fi quite well too. David Mellor, a course lecturer, put an emphasis on the practical. "We want do-ers - people

who want to get their hands dirty, learning soldering, pulling things down and putting them back up. They must be practical. People who are equipment motivated are better than people who are music motivated, because the latter often don't like to record speech. We need to cover everything on this course, including the recording and editing of speech."

Although when we visited the college had broken up for Christmas and was quiet, its size was pretty impressive and I guessed it must normally be hectic during term. And we saw only the main building - there are another seven buildings in the locale. Thinking back to my schooldays and

surprised to learn from John Mizzi that "The main entry qualification is the interview, although we do hope they have GCSE in mathematics or physics, but sometimes we waive this requirement. We like dedicated people who are very keen and we are prepared to give such people extra entry tests to assess them. We are the only college running this course in the UK, subject to inspection by Government inspectors; there may be some private colleges." This is a vocational course I was told; leisure students and hobbyists are not the intended audience.

I asked whether many applicants came with an interest in learning about hi-fi. "Recent interviewees have not had

## academically sound

**The City of Westminster College in London runs courses in audio.**

**Noel Keyword checks their prospectus.**



an interest in hi-fi, but a few years ago many did have," David Mellor told me. "We noticed a move away from objectivity (i.e. measurements) in the hi-fi magazines some years ago and have tended to relate this to the change of apparent attitudes." They even have a part time electronics course they can dust off that has a specific hi-fi content; just ten applicants are needed. Let's hope the City of Westminster College gets even more people wanting to study audio, electronics and hi-fi in the future ●

**Left: John Mizzi, Senior Course Organiser (L) and Lecturer David Mellor.**

how I longed to get into a training establishment to learn electronics (London would have done fine!) the question of accommodation was raised. "We don't have our own hostels, but we can help because there are the old ILEA hostels and we have a list of addresses offering student accommodation," explained John Mizzi. "People come from all over the world to get on this course. This year we have one gentleman from Belgium, last year students from Switzerland, Peru and Sweden and the year before a student from Japan.

"We can help people with jobs too, because there are so many aspects to sound: PA, recording, broadcast sound and theatre. Young people tend to look at the recording studio side but that's only ten percent of it; there are plenty of other places to find jobs." It helps that London houses a music business and the studios that service it, then there are the theatres, music venues, clubs and even a few hi-fi manufacturers. Students studying full time spend one day a week getting work experience and this can lead on to full employment.

Getting onto a course, full time or part time, is not too difficult. I was



○ For details about the Sound Engineers Course (City & Guilds 182, 1 year full time or 3 years part time), or the electronics course, contact:

○ John Mizzi, David Mellor or Bill Philip  
City of Westminster College,  
25 Paddington Green,  
London W2 1NB.  
Tel: 071-723-8826  
Fax: 071-724-4827

○ The academic year runs from September to July. Apply for full time courses as early as possible from January onward. You can visit the college for advice any Tuesday, 5pm-7pm, during term time.

**Above: Revox analogue recorders flank the mixing desk in the Music Technology and Audio Visual Suite at the City of Westminster College.**

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Heybrook's launch of the new £110 Prima loudspeaker, their cheapest yet, shows they haven't forgotten their roots in the budget end of the market. Their last new product was at the higher end of the spectrum, the superb Sextet reviewed by Noel recently.

The Prima is a true bookshelf design. Small and well-built, the reflex loudspeaker is only 290mm high by 195mm wide and 180mm deep and weighs a mere three kilograms. With such small dimensions many will end up on bookshelves, where they will work well, but they benefit greatly from the use of good stands.

Although small and inexpensive, the Prima loudspeakers are well put together, looking solid and robust for the money in their black ash vinyl finish. The front grille is quite thick, but is easy to remove, showing the drivers held beneath. These are a 14mm hard domed treble unit and a fully screened 13cm bass unit.

The screening means that the Prima can be used up against a television without any colour fringing - where the magnet of the driver affects the screen of the television. These are among the few hi-fi loudspeakers that are purpose built for Audio-Visual or NICAM installations, as alternatives to those within the television. The sensitivity of the loudspeaker, however, is not affected; it is a healthy 87dB sound pressure level with 1 watt input. These figures make the Prima a prime match for a budget system with an amplifier up to sixty watts.

Even though the Prima is a budget product, it is internally wired with solid core Heywire and uses audio-ophile grade resistors and polyester capacitors in the crossover. Half the manual, the same supplied with other speakers in the range, is redundant as these speakers are not bi-wirable, but the other half is clear and concise, offering good information for setting up the loudspeakers.

Heybrook's new baby has to face some stiff competition from companies including JPW, Mission, Royd, Wharfedale, Celestion - and Goodmans with their soon to be released Maxim 3 model. I compared the Prima against one of the leaders in this fiercely competitive field, the Wharfedale Diamond IV, both matched with budget equipment.

Usually imagery is a failing of a boundary design. The Primas have surprisingly palpable imaging qualities when compared to other loudspeakers at the price. It is also staggering how much bass can be produced from such a small enclosure. Even with an amplifier like a thirty watt NAD, the Heybrook Primas filled the room with a distinctly impressive warm, bassy sound. After a while, one



# primary school

**Alan Sircom is pleased to announce the birth of Heybrook's new baby loudspeaker, the Prima.**

begins to notice a tubbiness which smears the deepest bass notes together into an indistinct low end sound, even on stands away from a wall. This is aggravated by the treble, which seems to lack force at the extreme top.

The Primas' level of detail was not too great, but at the budget end of the market, where they are most likely to be partnered with relatively screechy Compact Disc players, this may well be a good thing. They never once sounded offensive or brash, instead sounding refined and even polite. They have a Heybrook family sound: drama, life and plenty of bass, but never raucous or nasty.

These budget boxes were good at making sense of the vocals in difficult recordings and there was a good sense of coherence, the drive units working together well, making performances seem natural. From a rhythmic point of view they are quite lively and boppy. I think that they will

find favour with those who find their drive and verve enticing.

In comparison with the next price band up - £150, which includes Heybrook's own Solo - the Prima's sound muddled and hazy. The extra £40 lifts a good deal of fog. However, comparing the Primas to a pair of similarly priced Wharfedale Diamonds is a different matter entirely. The Wharfedale sounds ragged, uneven and brash against the smoothness of the Heybrook loudspeaker. The Diamond appears at first to have a better treble performance - and sounds more "Hi-Fi" - but the Primas give greater priority to the music.

For those on a strict low-expenditure diet where an extra few pounds is impossible to find, I heartily recommend Heybrook's Primas. They have some of the attributes that make the budget Mission and the now-revamped Goodmans designs so popular. They do not disgrace themselves ●

Pitching into a newly discovered slot for cassette decks come Marantz with their new SD-62, priced at £249.90. The slot I am thinking of is an interesting one that should have broad appeal, for it aims to squeeze high-ish standards of reproduction from recorders at medium cost. The formula calls for a single capstan transport of good quality, three heads, variable bias and - now - a high median bias level capable of exploiting premium grade tapes. The outcome, when thoughtfully engineered and well executed in the factory, is a cassette deck capable of fine results, well above those of budget machines. The SD-62 however is up against some very effective cheaper rivals, like Technics' RS-BX606.

Following the formula closely, the '62 has all the features mentioned above. A single capstan transport with DC servo motor is intended to provide good speed stability, which keeps music sounding clean, clear and stable. A single capstan transport is far simpler than a dual capstan type, but also cheaper and, in some cases, as good. There's a lot of variation here though. Unfortunately, I found the transport on our sample to be pretty poor. It ran too fast, which raised the pitch of prerecorded tapes a little. It also suffered from flutter, a form of high rate speed instability that adds the peculiar 'papyery' colouration and

The SD-62 heads have a reasonably high performance I found from tests, but they were hampered by external factors, such as poorly contrived record equalisation that resulted in an undulating frequency response curve. The Monitor switching from off-tape to input signal (Direct) is automatic, with manual override. Without this aid, three-head decks can go bewilderingly silent if the Monitor switch is set to the wrong position.

### Traditional

Whilst many of their rivals are using powered cassette drawers, Marantz stay with the traditional manual arrangement. Pressing the 'open/eject' button at top left causes the door to open swiftly. Pop a tape in and automatic type sensing, a now-common feature, senses whether it's metal, chrome or ferric and sets internal conditions accordingly. A small legend on the vivid blue display panel confirms the setting. User adjustable bias is provided so owners can fine tune the deck to match a wide variety of differing tapes. The SD-62 bias system works only with ferric and chrome tapes though, limiting choice of metals to those that are compatible with it. Tests showed that compatibility was poor. Even normal metals produced too much treble and a bright sound; the problem became worse with premium grades like



# curate's cassette

**The new Marantz SD-62 cassette deck is good - but only in parts, says Noel Keywood.**

coarseness characteristic of cassette. I was disappointed by the SD-62 in this area; it performs below the league at which it is aimed.

The three-head arrangement of the SD-62 consists of the usual collection of an erase head and independent record and replay heads, the latter being siamesed together in a single assembly. Such heads are more complex and expensive than the more common alternative of a single head that does both jobs (i.e records onto tape and replay off it), but they offer higher performance, which is crucial when trying to exploit modern premium grade tapes.

There are other benefits that make the recorder easier to use and exploit; the quality of a recording can be checked whilst it is being made. As the music is being laid down onto tape by the record head, it is being read by the replay head next to it. Switching to this, using the Monitor button that is a feature of all three-head decks, allows sound quality to be checked. It's the most effective way of assessing recording level and getting it right: too high and distortion will roughen and muddle the sound; too low and hiss will become more noticeable.

That's MR-X PRO and TDK MA-X. The deck matched TDK AD ferric tape very well, but not TDK SA chrome. Matching needs some experiment.

Marantz fit awkwardly small operating buttons on a fascia that has ample room for larger ones. Similarly, the record level display was small and difficult to read, as were the legends. In contrast, the tape counter and a digital peak level display had large numerals and were both clearly visible. The tape compartment is unlit and the window so small that the tape inside is all but invisible, making visual assessment of remaining playing time impossible. The ergonomics of this deck are a victim to styling unfortunately. I found the SD-62 difficult to use.

A range of minor facilities, like music search, zero stop, music preview (10 secs of each track) are fitted, plus a headphone output with volume control.

Build quality and finish were reasonable enough. I fancy the deck clanked less than earlier Marantzes; muffled clicks and thuds were the response to control operation. Fast reeling was lackadaisical though and the some of the push buttons felt none too solid.

In terms of the sound quality pro-

vided, this machine was a bit of a curate's egg. At times it was awful, and at other times it was quite surprisingly good. Prerecorded tapes sounded a bit vigorous, because they ran a trifle fast, but there was little to criticise in basic tonal balance. Here, the SD-62 displayed no sign of dullness and quite good apparent insight. I reeled through a variety of Rock tapes and encountered no trouble until Boston's 'Hitch a Ride', which started wowing really badly. The reason the deck refused to cope with this tape, where my Sony DD Quartz Walkman did, remained a mystery, but it strengthened my suspicions about the transport.

### Surprised

I was surprised that Ashkenazy playing Chopin Nocturnes sounded basically speed stable, in that notes held their pitch. However, they were coloured by what can only be described as 'impurity', probably caused by high rate wow and flutter, making the piano sound rather coarse and jittery. With this tape the hum problem started to become irksome too.

Recording up to the indicated level of +10 on the display for metal tape,





using That's MR-X PRO, resulted in a splashy, messy sounding recording obviously suffering from severe treble overload. Pulling recording level back to a more realistic +4 or so resulted in bright sounding but solid recordings with surprisingly good bass. The SD-62 sounded relatively good here, although it wasn't strictly accurate.

TDK SA chrome tape sounded blurred, messy and grumbly in the bass at the indicated peak record level, which again was too high. Pulling level down helped reduce the muddle and lessening bias improved clarity, but the result was never quite right.

Of the ferric tapes tested, TDK AD was the best match and in practice, with some bias reduction it offered very good, if not exceptional results. There was softening of transients and blurring of images, even at low-ish recording levels of +2 or so.

Marantz have rushed after the pack with this one, not spending enough time to think about what they were doing in order to get it right. The SD-62 has too much wrong with it for recommendation. Speed accuracy and stability were both mediocre, recording quality on chrome poor, on ferric and metal quite good, but not exceptional. Slight hum infected both recordings and pre-recorded tapes ●

**Measured Performance**

Frequency response with standard metal tapes like TDK MA displayed rising treble, even though bias was set very high. The response peaked to +3dB at 16kHz, as shown in the analysis, an amount that can clearly be heard to add brightness to the sound (at least). This was down to poorly engineered record equalisation.

There was even more treble lift with That's MR-X PRO, although TDK MA-X and MA-XG weren't as bad as expected. The reason for smaller differences than expected was the very high bias used; MA-XG was giving +8dB record level in the mid-band, a very high figure. However, treble reached only -1dB, the 9dB difference in overload levels (overdrop) being inappropriate for Rock music, if perhaps more suitable for many Classical works. I feel that Marantz have gone over the top here, setting bias too high just to get an amazing mid-band overload figure close to that of Nakamichis, when using top grade metal tape. It is generally thought sensible if bias is set to give a 4dB-6dB difference between mid-band and treble overload margins; Marantz have settled on 9dB, which I feel is excessive.

Bias has been set very high with ferrics and chromes as well, which dramatically alters the usual patterns of compatibility. Even with Dolby HX PRO fitted, treble overload occurs early and at a low level (10dB) with normal tapes, giving a dull sound due to overload and self erasure. Premium grades must be used, TDK AD for example giving a flat frequency response and good overload figures of +4.5dB in the mid-band (i.e. MOL315) and -6dB in the treble (SAT10kHz). High chrome bias overwhelmed TDK SA, which managed only +3dB MOL and -9dB SAT10kHz. TDK SA-

X was a better choice.

Summarising all this, the SD-62 has rising treble and an over bright sound with metal tapes. Nothing can be done to alleviate the problem, since bias is not variable with metals. Only high performance ferrics and chromes match the deck and they can give very good results when tuned in.

Record gain (aka sensitivity) was set fairly well, allowing the Dolby system to work properly. Dolby gave the proper amounts of hiss reduction, but some hum was measured.

Replay frequency response, which affects prerecorded tapes and the compatibility of recordings transferred to other machines, like a car player or personal stereo, was well set. Replay hiss was low, but some hum was observed.

The transport on a deck like this has to perform well, but our sample failed to. With flutter and significant amounts of random wow and drift, seen in the analysis, it didn't offer the sort of speed stability that is expected. The total wow and flutter figure of 0.12% is a measure of this; 0.08% or less is required and now common.

In many areas, the SD-62 displayed weaknesses. Bias is too high, it is not adjust-

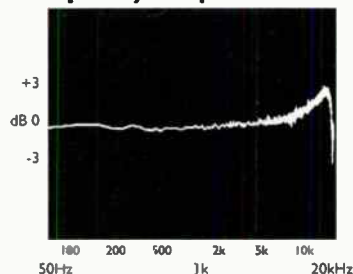
able with metal tape, metal tape compatibility is poor, there is some hum and the transport runs fast and displays poor speed stability. This isn't an impressive catalogue of strengths.

**Test Results**

REPLAY (prerecorded tapes)  
 Frequency response (-2dB) 30Hz-20kHz  
 Speed accuracy +1.6%  
 Hiss (70uS, Dolby out) -61dB

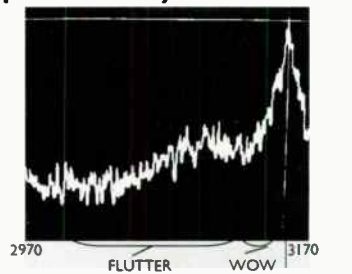
RECORDING (blank tapes)  
 Frequency response (IEC Primary Refs.)  
 ferric (IECI) 11Hz-19kHz  
 chrome (IECII) 11Hz-20kHz  
 metal (IECIV) 11Hz-11kHz  
 Separation (1kHz) -68dB  
 Distortion (31SH) 0.25%  
 Hiss (70uS, Dolby out) -56dB  
 Speed variations (DIN total) 0.12%  
 Flutter energy (3-3.13kHz) -23dB  
 MOL/SAT (IEC Refs) 315/10k  
 IEC I (ferric) +3dB/-10dB  
 IECII (chrome) +3dB/-10dB  
 IECIV (metal) +5dB/-3dB

**Frequency Response**



Rising treble with metal tape

**Speed Stability**



Wow and drift widen peak at right; flutter seen at centre

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Continued from page 11

I suppose most users will not want to have their amplifiers on all the time, but in the case of the MF A1 it seems necessary for it to perform properly.

To be practical I favour Class AB instead of Class A, or near-class A type of amplification. I am now quite happy with the Creek driving a pair of Monitor Audio Monitor 7s, fed from a Revolver and an old-ish Philips CD player.

One little suggestion for your review pages on the CD provided: it would be rather more convenient if the pages can be arranged in such a way that when cut along the dotted lines, folded right down the middle and stapled at places indicated, forms a little booklet which goes into the lid of a standard CD box?

Heard of a record label called 'Hugo'? It is one of those audiophile labels used by many in Hong Kong (where I worked for a while after leaving Britain). I think it is still a one-man-band, ran by a recording engineer who used to be a musician (sounds somewhat like Chesky). I listened to a track during the recording of which a string snapped: scared the life out of me, and I still haven't got the guts to play it again.

Well, must dash. My very best regards and wishing you and Hi-Fi World a very successful New Year.

**Samuel Tang**  
East Roseville, NSW,  
Australia

Most hi-fi components benefit from a good warm-up before listening properly. Try leaving your CD player on constantly, to see what we mean. They don't all have quite the personality change you suggest exists with the A1, however, but this amplifier is uniquely characterful we have found.

The CD sized insert is a good idea and we have been considering this for some time.

I have never heard of the 'Hugo' label, but I once had a cat named 'Nibby' if that's any use. Most of the audiophile recordings that I have heard, stem from Europe and the US. Hopefully, one of our far-flung hi-fi hounds will be able to tell us about Hugo and his problem with strings. **AS**

**GOING INTO REVERSE**

I was very interested in Noel Keyword's article in the December issue, and in particular his description of the Dual Capstan mechanism, but I would

welcome additional information as to how capstans operate with auto-reverse decks in view of their slightly different speeds. I am especially interested in JVC's new model the TD-W805 which additionally uses quick-reverse mechanisms in both decks.

**B. L. Norval,**  
Hove, Sussex

**Auto-reverse decks have two capstans, as you've probably already noticed, but they are not dual capstan decks. The difference is that only one capstan is engaged at a time. The pinch wheel sandwiches tape against the right hand one (looking from the front) when going forward. It disengages and the left one engages when going into reverse, the left capstan turning in the opposite direction. Whilst this is happening the heads, which sit on a rotating platform, whip around, so they read different tracks and the erase head is placed 'ahead' of the record head. It's all very complex mechanically and something the Japanese excel at as a result.**

**A dual capstan deck runs in one direction only (although Akai have made a dual capstan, auto reverse) and both capstans are engaged simultaneously. They also rotate in the same direction, but the back-tension capstan rotates a little more slowly.**

**We haven't tested the JVC deck you talk about I'm afraid to say, so we cannot comment upon its performance. NK.**

**PLUMBERS MATE**

I read with interest your articles on both open-backed speakers and 3 way speakers. I have built my own speakers using those principles and many other tweaks. You may be interested in looking at it for one of your articles on Readers' systems.

The speakers started life as a Technics SB 6000, a large box 700mm x 450mm x 35mm with 12" woofer and a linear-phase, dome tweeter mounted separately on top. The tweeter on top has been replaced by a unit similar to the top of a Meridian 6000. This is in 25mm chipboard with the best SEAS tweeter and midrange I could buy. This is open backed with a felt backing. It is damped with a combination of lead and my own personal tweak (as opposed to borrowed or stolen): masses of 'Plumbers Mate' which is a non setting putty at £5 for 3 kilos. About 2 kilos are used in each top unit, as well as lead.

The speaker chassis are also damped with 'plumbers mate'.

This unit sits on two sheets of glass, damped and joined together with large quantities of 'plumbers mate' and then on cones on the top of the bass unit. The large reflex woofer box has been given large quantities of Bitumastic damping and lots of extra bracing and the drive unit is the original Technics 12" woofer.

The top unit has rounded edges and is completely covered in felt (except the drive units of course) and the front face of the woofer under the grille is covered with felt.

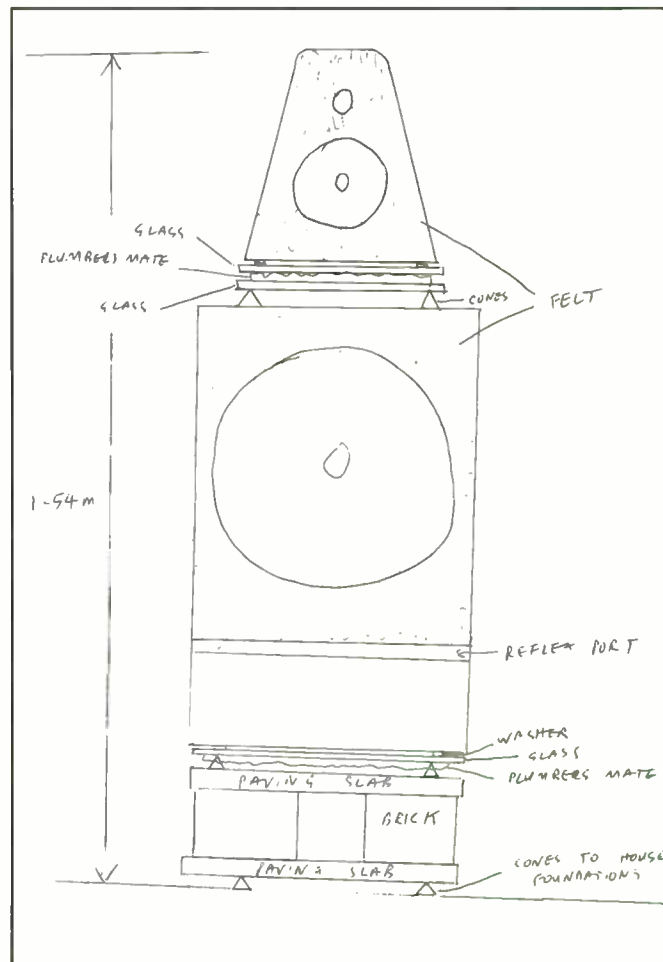
I had problems spiking them to the floor despite screwing many screws into joists etc. I then built stands of 2 paving slabs covered in black carpet. (Very heavy! Very cheap!) On top of this are cones supporting sheets of glass damped with 'plumbers mate' and the speakers sit on this. I recently built up bricks from the foundations to give 4 support areas for cones on which the stands sit. The crossover I built myself with mostly polypropylene capacitors and air-cored inductors which I wound myself, as I couldn't buy any of the right size. This is hand wired throughout and to the three speaker cables per side back to Hi-Fi World banana plugs and a Musical Fidelity A100.

The front-end is Thorens

TD160 and Marantz CD65SE. I did some extremely successful mods to the CD player. I read Paul Messenger's article in Hi-Fi Choice about a bread-boarded CD player whose transport had been mass-loaded with Blu-Tack and which apparently inspired Naim's CD player. I mass loaded the transport with 'plumbers mate', put sorbothane on all microchips and perhaps most effective of all wrapped sorbothane around the drive motor. I also added extra sorbothane "springs" to the subchassis of the transport mechanism. These modifications noticeably increased recorded ambience, made silences "blacker" and got rid of some "hash and grain". Oh, I also glued two sheets of lead to the CD player base and this rests on a sandwich of two sheets of glass with 'plumber's mate' in between on cones and then on a sheet of marble with spikes embedded in it.

I like the sound of the system very much. As you might imagine, imaging and sound staging are very good and so are its dynamics. It probably helps that the speakers are very sensitive - 10 o'clock on the amplifier is about as loud as I ever need. Bass goes down to 30Hz or so.

**Terril Park,**  
London W3



# the Greening of Compact Disc

**Does the Green Pen work,  
or is it all in the mind?  
A selection of readers'  
letters, and a postscript.**

Further to November's sceptical thoughts from Tony Taylor of Lasaway's 'green pen theory' (and many reviewers' apologies for it), could I draw attention to a certain Fred E. Davis of the USA?

As an electronics engineer, he decided to test this theory by increasing the amount of internal reflections in a playing disc. This should make the sound noticeably worse if, as claimed, reducing such reflections enhances sound quality. Mr. Davis made measurements of jitter, etc. while injecting light from two different lasers into a CD from numerous locations and angles.

The results showed 'no change in error rate . . . eye pattern, no mistracking of the servos and . . . no change in the digital data read from the CD.' (See 'The Skeptical Inquirer', vol. 16, p.91.) Furthermore, there was no apparent deterioration in sound quality.

Noel Keywood's assertions that, for example, green ink 'increases light intensity as it reaches the laser' and that

'benefits may come in reduced jitter' mean little in the absence of proper scientific data and analysis. Many such assertions are directly contradicted by the above experiment. Mr. Keywood's mention of 'complex' translation processes and his conclusion of 'Who knows what all those electrons are up to?' only causes unnecessary obfuscation in the light of Mr. Davis' straightforward demonstration.

Of course, Mr. Davis' test and results are not definitive, nor does he claim them to be. Such results however, should be publicised for the benefit of potential green pen buyers. Also perhaps reviewers and advertisers would oblige us all with hard data and not the dubious theorising and hyperbole one all too often reads about such 'tweaks'.

**Richard P. Ward**  
London SE13

On page 10 of the November issue you state "It has been proven that the Green Pen increases light intensity reading

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the laser." Leaving aside the fact that the light is emitted from the laser and received by a photo-sensor, what proof exists that the Green Pen has any effect whatsoever?

**Ross Walker,  
Quad**

**We suggested Jimmy  
Hughes...**

**J**immy Hughes is living proof that "there's nowt so strange as folk."

Nevertheless I do not think that you can write that proof exists when in fact none does. That's how so many of the myths which plague our industry arise. As far as the green pen is concerned, it can be shown that it has absolutely no effect whatever upon the performance of any player. Proof that most of our reviewers have over fertile imaginations.

**Ross Walker  
Quad**

**Since we had rather taken his name in vain, we asked Jimmy Hughes if he'd like to put in his ha'porth. Here it is, backed up by Thomas Huxley.**

**I**do not pretend to know exactly why it is that treating the edge of a Compact Disc with a green felt-tip pen should alter its perceived sound. But my ears tell me it does, and many thousands of sceptical but open-minded hi-fi enthusiasts worldwide have tried it and found likewise. Hard scientific proof may yet be missing, but that is no reason to just dismiss the whole thing out of hand. After all, isn't it often the case with science that observable, repeatable phenomena are witnessed long before a convincing explanation demystifies things?

For what it's worth my own personal belief is that the current explanation - to do with the control of random scattered light within a CD is not correct, or at best only a partial answer. For one thing, many Polygram CDs have an opaque aluminised edge that is presumably light-proof, yet the pen works as well on these discs as those with a clear edge. And how to explain the

fact that the green pen works very effectively on vinyl LP records? No scattered light there!

Experiment further and it's hard not to conclude that all objects (not just CDs and LPs) can be beneficially manipulated by means of a suitable colour and shape. For example, green is not the only colour that works on Compact Discs. That tireless experimenter into all things strange and wonderful Peter Belt advocates a 1cm line of violet ink from a Staedtler Lumocolor pen. This, I think you'll find, is even more effective than an all-round coating of green. But how can a 1cm line of ink make any difference at all - especially if we stick to the scattered light theory?

For real enthusiasts Peter came up with a five colour treatment pattern which worked even more effectively, though it took a while to apply! The implications behind all this are pretty staggering, and anyone with even a little sense of wonder can see that an enormous number of new possibilities are opened up.

Finally a brief quote from Thomas Huxley who, in a few short words, expressed the ideal scientific attitude to new Phenomena when he wrote "Sit down before a fact like a little child, be prepared to give up every preconceived notion, follow humbly to wherever and to whatever abysses nature leads, or you shall learn nothing."

**Jimmy Hughes**

**I**always like reading readers' experiences on hi-fi and plugs. So I'll tell you mine. I read in an Audiophile (no, in two) that connecting the Compact Disc into the tuner input of the amplifier gave a better sound. So I tried. Wow, it really was better. Then I woke up one morning (after a prophetic dream) with the great idea of painting the plugs in green - of course! - and the sound, at that stage, was Wow Wow Wow! So I decided to paint the CD in green and Wow Wow Wow Wow! By that time I had gone bananas so I painted the whole room, then the whole house, then the outside in green, green, green.

Now my Philips 620 CD

player sounds like a Mi-cromega Trio, and I'm going to paint the whole city green. And I'll sing the Supertramp song 'Don't Arrange To Have Me Sent To No Asylum'. Of course, I am a great supporter of Greenpeace . . .

I propose you give a one year subscription as a Letter of the Month Award - the first, will, of course, be for me.

**Moshe Benarroch,  
Jerusalem, Israel.**

Experiments with green by Hi-Fi World editorial staff continue. Our farther-flung personnel report marked improvements in commuting pleasure through abandoning all Tube lines except the District (coloured green on the London Underground map), their cars and feet and taking to the Green Line buses. Noel is considering having the editorial Range Rover resprayed British Racing Green, and we have been thinking of taking up London dealers Kamla's offer to respray our equipment a tasteful shade of lime. Readers may have observed an increasing amount of green background to our photographs, and we have attempted listening sessions on the lawn outside the office. . We're not so sure about a prize of one year's subscription, though. It might encourage all sorts of loony - ahem! - closely argued and rational letters, mightn't it?

Seriously, however, a research report by Dr Peter R. Smith of Loughborough University of Technology comes to rather different conclusions to those of Fred E. Davis. A light emitting diode with a peak output at a wavelength of 850nm and a bandwidth of the order of 80nm was delivered to the surface of a Compact Disc at an angle of 45 degrees. Reflections were captured by a receiving fibre positioned in the specular direction in a light-proof container. The receiving fibre was connected to an optical power meter capable of making relative power measurements in the range +3dBm to -40dBm. Since there would be an inevitable variation in the thickness of the application, average values were obtained

over a series of experiments. The results with a variety of pens, including red and blue ones readily obtainable from stationers, were interesting, showing between a 60% and 90% absorption of red and infra-red light illuminating the surface of a Compact Disc. A blue pen, intriguingly, proved to have a rate of absorption very near (two per cent) to a "CD Green Pen" on the market, while a readily available red pen demonstrated less absorption, but to a similar degree to another brand of green pen sold for use on CDs. One of the popular green pens absorbed some 80% of the reflected light, another 90%. Readers may choose for themselves whether to argue from Mr Davis' findings, or Dr Smith's.

Experiment is one thing, interpretation is quite another. It might be worth bearing in mind that philosophers once earnestly discussed the number of angels which could sit on the head of a pin with a fervour of debate equalled more recently by physicists hunting Quarks and even more elusive particles. It is all down to the individual's weighing of the evidence in the end. If all science was an exact pursuit, there would not be the often acrimonious debate there frequently is in the journals.

Sceptics should bear in mind that if effects are purely psychological, they are not being imposed on anyone. If I go to a concert and enjoy the performance more having removed my glasses, no amount of acoustic measurement will show any difference in the sound reaching my ears, but I will come out happier nonetheless.

If a green pen, green ring, whatever, fertilises some listeners' imaginations, so be it. Listening to music, as well as making it, is a creative business. **EB**

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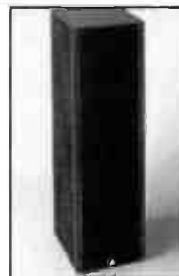
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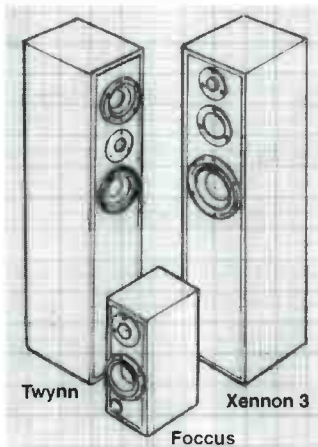
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I have treated "tweaks" with some amount of derision in the past, having tried a few via the "Belt phenomenon" and others.

I applied Laserguide, as per your instructions, to my Chris Rea "On the Beach" Compact Disc, as some of the tracks on this particular CD tend to sound a bit ragged to my ears. I have also found this to be the case on the LP version.

On using the Laserguide I found the sound to be "smoothed out" and more mellow; it made the CD more listenable with Chris Rea's voice appearing to lose some of the gravelly tone. Yes, I liked it. Some may say that it gives a false impression of the sound, as a friend of mine did, but on my old steam-driven Philips 471 it has certainly tidied things up. So much so that I'm going to buy a bottle, which will help matters along until I can afford a player such as the Rotel bitstream model. Thanks Hi-Fi World.

**Mike Wray,  
Waterlooville, Hampshire**

What prompted me to write is the small sachet stuck on your December issue. What's that, I thought? Having in mind the debate on Armor-All, I was rather suspicious - I myself damaged a couple of CDs. I won't describe my system since it is composed of - more or less - home-made stuff. The front-end is an early sixteen-bit Micromega CD player and I use valve amplification. Although I thought I was taking a risk, I treated three of my favourite discs. As Eric said, "my eyebrows lifted." What a difference, what an improvement! The discs, which are highly complex organ and orchestral all-digital recordings suddenly became clearer, less aggressive and the soundstage was significantly better too. But I'm still perplexed. You see (I have experienced this before) when you expect some improvement, no matter how effective the product is, it always seems magnificent in the enthusiasm of the moment. As I feel I can't deny laserguide has an effect, I'll try to get a bottle, if it's available here. Now I'm having to try it on my other CDs. Anyway, thanks for the very best magazine available in Europe -

I mean it! I discovered your magazine last summer trying to get a tan on a North Sea beach . . .

**J. Frantz,  
Lyon, France**

Thank you for the sample of LaserGuide with December's issue. I listened to its effects in a test I conducted with two friends.

The test was in two parts. We used eight compact discs (four CDs duplicated), one of each pair was coated with LaserGuide. First, we listened to selected tracks from the untreated CDs. Then the LaserGuide-coated discs were played for comparison. We all noted the sound of both discs. In the second part, the CDs were mixed up so that no one would know if any playing disc was treated or not, except by listening.

The results from both parts of the test were unanimous. No one noticed any difference between the discs of each pairing, nor could any of us identify any of the LaserGuide-coated discs in the second part. The conclusion was, inevitably, that if LaserGuide works, it's too subtle to be of any audible benefit whatsoever.

After reading your magazine and doing this test, several things occur to me. Blind testing, for example, should form part of any testing of tweak products. If we had heard any differences in the first stage of our test, the reliability of these first impressions would have been properly shown in our blind trial. Eric Braithwaite, on page 49, mentioned the very real effects of suggestion, which can predispose listeners to hear imaginary changes. Noel Keywood, however, failed to mention this in his advice to readers wishing to test LaserGuide.

The explanation of how LaserGuide allegedly works is very dubious; it reads like many other vague, pseudo-scientific bits of blurb that accompany other tweak products. We were also treated in the same issue to a 'Sceptics' Quest' which, for all Eric Braithwaite's peculiar form of scepticism, just happened to give the impression that LaserGuide is wonderfully effective.

What I read was nothing

less than a full blown promotion of a product that companies and individuals with vested interests will try to sell, whether it works or not. Given the choice, I'd rather spend £14.95 on another CD than a bottle of LaserGuide. I think even Kylie Minogue would be better value.

**Richard Ward  
London**

P.S. One of the LaserGuide-coated discs used in our test had also been given the 'green pen' treatment, but somehow none of the listeners noticed.

Glad to hear it, Messrs Frantz and Wray. After hiding under my chair from a sudden hail of green pen letters I had laid in a stock of tins to survive a siege of "What a load of (insert favoured expletive)" missives on Laserguide. Well, one arrived and now I have to take issue with Mr Ward.

**We offered a free sample of AudioQuest's Laserguide Compact Disc treatment with our December issue and asked readers to send us their responses. Here is a representative selection.**

## Laser Lore

Not that I don't respect the fact that his test apparently failed to show any differences, but over his assertion firstly that blind testing should form part of the review of tweaks, and that I was effectively plugging a product for commercial reasons.

To take the first point, as I wrote in the review, I did conduct a blind listening test with my friends. This was even more blindfold than usual, for they had no idea what I was doing, even if anything, nor to what. Both agreed with my previously formed opinion - which, by the way, they didn't learn until they read my published article several weeks later. The Engineer, I might add, has since used my Laserguide on discs played in his home budget system, and hasn't altered his opinion, though he would not say, I think, that the effect was other than subtle.

Now the implication that I was in some way involved in a conspiracy to promote a product. Now, we do sell it through the mail-order pages, but the review came about

because I had expressed my own scepticism to Bill Low himself, on the lines of Mr Ward's doubts, in fact, at the Penta Show. Far from being subject to suggestion, I listened in a far from accepting frame of mind. Should I find a product which is unsatisfactory, given the normal legal constraints I am not afraid to say so, and I would hope that most readers would accept my integrity. It is possible, of course, that a scepticism about tweaks generally can communicate to others as effectively as enthusiasm.

Our cover sample was free - so people could make up their own minds and be able to spend the money on a Kylie Minogue CD instead if they so wished. EB

? Since Hi-Fi World has such an interest in valve equipment, I wonder if you could help me with a problem I am experiencing with an Audio Innovations Series 800 pre-amp and Edison 12 power amp. The Edison has a very high input sensitivity of 250mV, much too high for the 800, resulting in very restricted volume control resolution and perhaps other nasties like excessive distortion or noise. It has been suggested that the amp could be de-sensitized by increasing the level of negative feedback, reducing the value of a resistor. Is there any other solution, apart from changing one or other of the amplifiers? I noted with interest the article on the Leak TL25 valve power amplifier, in particular the change of mode of the input valve. Perhaps I could do the same with the Edison 12?

**Rod Theobald,  
Rochdale, Lancashire.**

We spoke to Definitive Audio of Brighton, who suggested this solution:

Following the feedback loop from the red speaker terminal, you will come to a 4.7k resistor shunted by a 220pf capacitor, then another 4.7k resistor. Bypass, or replace, the second 4.7k resistor with a lower value. This will reduce the sensitivity by increasing the feedback. **EB**

? My system consists of Quad 405-2, 34 and FM4 linked to Spondor SA1's by QED 79 cable. Ancillary equipment is Marantz SE60 CD player and Aiwa 770 cassette deck.

Although pleased with the sound, the combination of Quad and Spondor being pleasantly neutral and articulate, the bass is somewhat of a problem. Reasons of space compel me to place them on shelves, fairly close to the wall, and older Spondors were not noted for good bass anyway. Is there another miniature that will give me the same euphony but improve the bass, and possibly the treble at the same time?

I have been through various ill-matched combinations before, therefore I am looking for a musical but articulate speaker. I nearly purchased Spondor LS 3/5As, but they were £330 and the second-hand SA1s were £150. However, the SA1s did seem to enjoy the same naturalness but give a bigger sound which helped to convince me.

Finally, would you comment on interconnect and speaker

cables, bearing in mind I shall retain, or stick with, Quad. My musical tastes are mainly classical, opera and middle of the road pop.

**Tony Fordy,  
Exmouth, Devon**

In order, there really is no substitute for taking the Spondors away from the walls. A friend of mine, with similar tastes and similar equipment discovered the Rogers LS2s, which might well suit, and can be put with their backs to the wall. These would have to be picked up second-hand, as they have been superseded by the LS2a/2. Check these out with a Rogers dealer. However, the answer to the last question may also be an answer to the first. Aforementioned friend has achieved results similar to the ones you desire by using Kimber 4PR speaker cable. This may well be worth a try with the Spondors. Quad amplifiers generally speaking seem to be some of the least fussy about interconnect, but I have found Tandy's low capacitance, low-loss patch cord, sold in phonograph pairs (and in colour) at around £8 per metre pair to be very effective and transparent. There may be a little nifty work involved here for the pre-power interconnect if your 405-2 has the four-pin Din input, but it is well worth trying elsewhere throughout the system. **EB**

? It is great to see the D.I.Y. aspect being revived, together with articles on older hi-fi equipment. Besides valve, I hope you will not ignore the better solid-state models such as the Sugden A48, Leak 30-Plus/70, Radford pre-power, etc. etc.

I look forward to seeing more reviews of do-it-yourself speakers. After your favourable review of the TDL4 I would recommend you try out some of the IPL Acoustics transmission designs using SEAS and Morel drivers. They are excellent, and with wood veneer they are around a third of the price of the commercial models.

I was pleased with your review of the Ion SAM 40 system. I had auditioned it before your article against my then Exposure XV and found it a considerable improvement, so I am now the proud owner of the Ion system, which as was pointed out, I can build up to a full active system using my IPL transmission line speakers.

But the main reason I am

writing concerns the Leak Troughline tuner. After your article I managed to acquire a stereo version in perfect working order and virtually spotless for ten pounds. After a brief conversation with a gentleman from Electronics Colour Services I was advised that if everything was working well to leave it alone or perhaps renew some of the valves. Any comments?

In comparison with my Rotel 870 tuner, there were gains in imagery, more musical involvement and a more realistic presentation of voices, though the Rotel was not lacking in any department. There are some minus points. It is less sensitive than the Rotel; I can't get maximum signal strength as I could with the later bigger aerial. It is also more prone to mains interference. But the biggest annoyance is its low output, which was not mentioned in your article. I have to turn the volume up to 2 o'clock plus for the same dBs I was getting from the Rotel at around 9 o'clock. Adding to the SAM and going active will give me more watts, but recording off-air I can only get to around -1 peak recording at maximum input, which is obviously insufficient for optimum dynamic range. I would appreciate it if you could offer me some advice on what could be done to alleviate the above problem.

What is the output of the Leak? I have heard mention of 25-50mV? Besides the old Stereo 70 are there other amps suitable for the above for a possible second system? Are there any line amps that can be used to boost the signal without destroying the sound quality?

Lastly I am seriously considering the Ion FMT1 to go with the amplifiers. It is highly recommended by the dealers I have spoken to. How does it compare to the Leak, and are there any others within a price range no higher than the Ion I should consider.

**R.D.Lewis,  
Tenby, Dyfed Wales**

Do not have your Troughline 'restored', unless the unit is not functioning at all. Unlike an amplifier, a tuner, particularly the Leak models, has components that live in a form of delicate balance. Change one component and the whole device can go out of kilter. It is possible to have the Leak realigned, however; this can act to improve the sensitivity and to 'up' the gain of a poorly aligned Troughline, without the

need for a line amplifier.

As we are dealing with a product that was discontinued before the discovery of crushed velvet loon pants, any output figure can only be looked on as a rough guideline; the quality and amount of Tender Loving Care a Troughline has received throughout its life could affect its output performance. In Leak's spec. sheet for the mono Troughline II (Jul. '61), it suggests that the audio output is approximately one volt. If our Troughline III was anything to go by, this quoted figure was very approximate.

A correctly working Leak will give almost any current tuner a run for its money, regardless of cost. If you cannot live with its poor sensitivity and low gain (even after realignment), then go for the Ion. It's well made, sounds good at the price and is a good match for the SAM 40. **AS**

? At long last I've settled on the Rock Reference/Excalibur as my final turntable, just as it looks like they're going to stop making records! I'm going for the larger Townshend speakers (Sir Tristans, I believe they're called) or possibly those big Mission 767s.

What I'd like is your advice on cartridge and amplifier choice: I thought maybe a Decca and a valve pre-power. My musical taste is wide and I have a very large and 'bright' room, and about £2500-£3000 to spend.

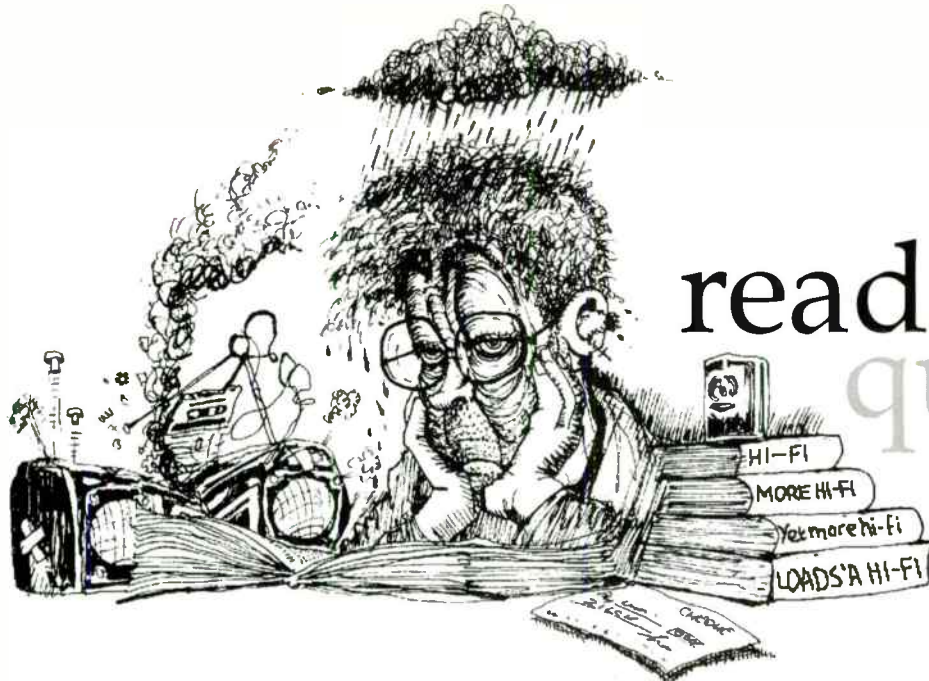
I like a sound I can feel as well as hear - something which can walk the furniture around a bit. Oh, and I need six inputs. Any suggestions?

**Cris McLean,  
Boness, Lothian, Scotland.**

Assuming you can get a hold of the Rock Reference, I have heard the Rock Reference/Excalibur together with the larger Townshend and yes, they do produce a soundstage that you can walk into, shake the hand of the trumpet player and so on. They do not need an exorbitant amount of power, either. I'm not as conversant with the big Missions, but I am reliably informed that they work well, performing best with a brace of Cyrus 2s and PSX power supplies.

First, the cartridge. I think a Decca would be a good bet in an arm like the Excalibur. Before you settle for a Decca, however, try a cartridge like a Audio Technica AT-OC9 (or its successor) or a Dynavector





# readers' queries

17D2 or XX-1L. Also, investigate cartridges like the Morch Da Capo.

Now, the amplifier. My feelings would be toward an Art Audio or Audio Innovations triode power amplifier, with a Michell Iso for the phono cartridge and a good passive pre-amplifier for the other sources. Passive devices here include the NVA and Audio Innovations' own. If you decide on the moving magnet Decca, however, you will need a different type of head amplifier to suit it. Here, I would suggest the NVA Phono2 or the budget QED head amplifier. **AS**

? My system consists of an  
• LPI2/Lingo sat on a stackable type Sound Organisation table. Amplification is a Naim 72 (upgraded from 32.5)/250/HICAP and A4 cable with Mk1 Kans.

I am unhappy with the sound of the system. The cartridge seems to mistrack and cause a tizzy distortion in the mid treble. I have experienced this to varying degrees since I purchased the K18 and it is very dependent on particular recordings. Any LPs with a dynamic treble, especially piano and strong vocals, will set it off - my collection of Carol Kidd LPs for instance, especially the latest. After a few playings the LP itself seems to be damaged, as it generally gets worse.

Both my Linn dealers seem unable to help; they both see nothing wrong. I have tried a new table, new belts, a service and a new stylus, all to no avail. The dealers assure me an Ekos

**Write in with your problems to Hi-Fi World, 64 Castellain Road, Maida Vale, London W9 1EX.**

**Our panel of experts will endeavour to solve them or at least offer some practical advice.**

will sound better - well, they would, wouldn't they, at £1000!

The question is, therefore, can you suggest a cure, or, as I suspect it is the cartridge, a replacement or ones to try without getting into silly money? Incidentally, do you consider it worthwhile trading in my Mk1 Kans for the Mk2 version? Please can you suggest some kind of cure as I am considering selling the lot and getting a CD as a replacement.

**F.A. Johnston-Banks, Chester**

This sounds as though either the tracking force of the cartridge is wrong, the bias setting is wrong, or both. The setting-up must be checked against Linn's recommendations. A misaligned cartridge - check that it is also vertical in the headshell - will produce exactly this kind of distortion. If

the K18 is correctly set, then the damage began with the cartridge it replaced, probably from a similar cause. Unfortunately, if that is the case, it's irremediable, and the only cure is to replace the records. Before you do that, take them round to a friend's to check. **EB**

The Mk II Kans sound slightly more acceptable to people with CD players; the early Kans can sound a bit overbright with all bar the finest players. They also appear to have a deeper bass performance than the Mk I's, although this is not a major improvement. More important than the loudspeakers in many respects, are the Kan II stands. If your loudspeakers are on the early stands, made entirely from box-section frame and with no steel top plate, it is well worth getting the newer Kan II stands. This makes a huge difference.

Finally, please get a separate turntable support for your Linn; either a wall shelf or a table. Without this, it's akin to using a Ferrari with remould tyres. Audiotech and, ideally, Mana Acoustics seem to work the best with the Linn, but failing that any of the reputable companies make good shelves and tables, and even the Ikea Lack coffee table must get a mention in dispatches. I would suggest that this would go a long way toward helping your mistracking problem. **AS**

? My five year old system, consisting of Linn Axis/K9, IncaTech Claymore and Epos ES14 speakers would be ripe for an upgrade to an LPI2 by now. However, I can't afford to do this and wondered about alternatives.

Malcolm Steward has said more than once that the ES14 will only 'sing' with a first class front end. In view of this do you think selling them and buying the likes of Mission 780s, B&W DM600s or Tannoy EI 1s would be a good idea?

**W. P. Kent, Warrington Cheshire**

Why do you want to take a backward step with your system? I think that you would be far better off waiting another year or so and get the Linn, rather than make a retrograde step, back to a lesser pair of loudspeakers.

If you find it impossible to resist the temptation to change, certain improvements can be made. First, if your system is five years old, how old is the stylus? It may be in dire need of a change by now. Secondly, are the turntable and amplifier on good stands? If not, money would be better spent here, than on the loudspeakers.

Only then can you look at the loudspeakers. The Epos ES11s seem to be an obvious choice if you need to change the ES14s. They have many of the virtues of the larger ES14s, but are not as demanding to drive. Apart from these, both the B+W 610's and Mission 780's were well received by our reviewer in our September group test. **AS**

? I read the review of the Excelsior pre-amp with great interest. This was the piece of equipment that turned me on to valves in a big way. My power amp is Audio Innovations First Series.

I know you are familiar with this set-up and that is why I have written to you. Some time ago I made my own passive pre-amp with some success, using the expensive £90 Penny and Giles pot, but replacing the Penny and Giles with Russ Andrews' at £18 was a revelation.

Remembering this, and always being a meddler, I replaced the Alps pot in the Excelsior as well. In a blind test I think I might reach in my pocket for about £500 - I think it is that good.

I have been a professional singer for thirty years, and while not claiming the best ears in the world, I don't think they are painted on! It would be nice to hear what you think.

**John H. Parry,  
Royal Opera House,  
Covent Garden**

Well, that is a surprise. What you pay for in the Penny and Giles pots is, of course, engineering - it might be over-engineering, even - and quality control. However, overkill is overkill, and I have to admit that having swapped pots around in the past, and having also built my own passive pre-amp, the sonic improvements do not necessarily increase in proportion to expense as much as care with wiring and soldering. The snag with cheaper pots tends to be that they wear and become crackly - Deltec use Penny and Giles, and after a good deal of use they are still as smooth and silent in operation as they were at the beginning. At least £18 seems a price which allows experiment without the bankruptcy court coming in on the act if the results are unsatisfactory. Readers should be warned (again!) that replacing pots is liable to void the manufacturers' guarantee and the process should be undertaken with care, not least in ensuring that the resistance, for example, matches the original specification. Otherwise distinct anomalies in the sound will result. **EB**

? I was particularly interested in your valve feature in November's "Tweaky Corner". I have an Audio Research D70 power amp. (three or four years old) and an Audio Research LSI Line-only pre-amp. I also have Quad ESL 63s, Meridian 602/606 and Quad FM tuner.

Would I benefit from your findings by replacing some of the existing valves by ones from Groove Tubes or Golden Dragons? I am not an electrical expert by any means, but could I replace these myself or do I need an expert? Also, where do these companies hang out?

**J. H. Evans,  
Newcastle, Staffordshire**

? I read "Tweaky Corner" on valves with interest as I have substituted Golden Dragon EL34s for the standard valves and have noticed a definite improvement. However, I should like to try Groove Tube valves in the earlier stages. Could you print their address?

**P. R. Davis,  
Doncaster**

There is no reason why you cannot replace the valves on your Audio Research amps yourself. It might seem obvious, but don't forget to switch the amplifier off before you do so. The valves' bases are designed to fit only in one way, so replacement is easy. For the LSI, fit one 6DJ8H valve, while the D70 uses seven 6DJ8s, two MP6550s, one 6550 and one 6L6. Either company should be able to supply these valves, or their equivalents.

Groove Tubes are located at 6 Ivy House Lane, Coseley, Bilston, W. Midlands. (0902) 882013; Golden Dragon, or PM Components, are based at Springhead Enterprise Park, Springhead Road, Gravesend, Kent DA11 8HD, Tel (0474) 560521. **AS**

? I currently own an LP12/Lingo/Akito/K18 on a Mana Reference Table, a Pioneer A400 and Tannoy DC2000 speakers with Exposure cable and I need some advice on the best way to upgrade.

I listen mainly to Rock music. My thoughts are whether to purchase a new arm. Would an Ekos be worth the extra cost compared to an Ittok, or is the Naim ARO suitable for heavy rock? Or should I be looking at a new amplifier, possibly the Naim 72 pre-amp., and a power amplifier when funds permit?

Finally, is CD a viable alternative - perhaps a Meridian 200 with a Deltec converter - would this be able to compete on sound quality with the Linn, even with a better arm?

**Nigel Wheeldon,  
Birmingham**

Normally, I would suggest going for an Ittok, Ekos or an Aro as the next move in a system, but I feel that your system cries out for a different amplifier than the A-400. The Phono stage on the Pioneer is O.K., but I would feel that a Naim 72/140, or similar, healthily blows it away, especially when it is used with a Linn front end. If you are happy with the Pioneer, however, go for the Ekos or the Aro, if you can afford them.

Either arm is suitable for heavy rock; Malcolm Steward has successfully used an Aro to track many a heavy track, while I know of others who plough their Metallica albums happily with an Ekos; it's a matter of choice.

Finally, it is not worth trying to find a CD that competes with the Linn LP12; the two formats are so radically different, it's like comparing a Porsche to a Powerboat. The Meridian 200 transport, partnered with a Deltec DAC works very well, however. Try the Bigger Bit. It may never give the life and sonority of the Linn, but it is a good example of the CD medium that doesn't grate as much as the silver disc has been known to. **AS**

? My system is a Roksan Xerxes/Tabriz/Linn K18, Meridian 206B (A-T 6115 Interconnect), Audiolab 8000C/P (Monster Ref. 2 Interconnect), Epos ESI I on Foundation Sir Freds (Audioquest type 4 cable to speakers) Sony 650 ES cassette, Apollo equipment stands.

Overall I'm very pleased with the sound which is highly detailed and clear, if a little bright on CD. However I would like to have a little more bass 'slam' available and I fear that however good the ESIs are they cannot shift quite that amount of air. I'd also like to take the brightness off the CD side of things. Could you comment on my thoughts:

- 1 Tabriz-zi upgrade on deck for more detail and better bass.
- 2 Audioquest Quartz interconnects throughout, to take off brightness on CD.
- 3 Going over to stranded cable, e.g. Linn K20 to take off brightness.

4 Change the stands to Epos' own or others.

5 Change speakers to Epos I4, KEF R103/4, Castle Chesters or Heybrook Sextets. (Two of which you reviewed last month. Perhaps you have other ideas: have you got hold of a new pair of Dalis yet?)

6 I'm considering putting 12mm plate glass shelves on the Apollo stands; or would a Mana table be better for the turntable?

7 Audiolab's new 8000M - but with which speakers?

In summary - help! My listening room is 15x10x8 feet, I listen to Pop, Folk and Classical and have say £1,000 to upgrade, but more if required.

**D.P.Drew,  
Droitwich Spa,  
Worcestershire**

So many questions! I think that it would be a good idea to answer each question in turn, and then to draw a conclusion from the answers we come across. So:

Question 1. Yes, the Tabriz will be improved by the 'zi turbo-charging'. It will improve bass depth, as well as clarifying matters in terms of detail.

Question 2. The 206B CD player is not known for its brightness. The combination of the Meridian's tidy output, combined with the clean CD input of the Audiolab could tend toward being bright, especially if used with the wrong cable. I am not too conversant with the Audio Technica interconnects, but they could be the flaw, unless the brightness that you complain of is that which is inherent in the medium itself. Audioquest Quartz would probably help to ameliorate this, together with DNM (solid core cable sometimes helps to take the sting out of an overbright signal), Furukawa FD-1010, Moth Ley Line Black, Audio Note Silver or Audioplan Care Music Super X-Wire. All of these cables have performed very well with a CD signal in my system.

Question 3. Once again, loudspeaker cable is very system dependent and very subjective. Linn K20, like the Type 4 that you are currently using, is a good standard cable. It will give you a fuller bass, but possibly at the expense of some cleanliness. Otherwise, try looking at multi-stranded cables from Furukawa or Audioplan. Failing that, try using DNM's new cable and experiment with repositioning the loudspeakers; I found that the cables made it necessary to position the



loudspeakers wider apart and closer to the listener than is normally acceptable.

Question 4. Oddly enough, I have heard the larger Epos ES14's sound superb on a column stand (sand filled Targets), although I do not recommend this in every case. These stands were selected after a great deal of deliberation and listening. Generally, I feel that the Epos designs are best suited to their own, open frame, stands which would improve over the Sir Freds. Question 5. If not happy with the ES1s and stands, given your wish for more bass 'slam' and volume, I would suggest the KEF Q90s, Reference 103/4 or even one of the larger pair of Tannoy Sixes, which may fit the bill, although they have not yet been tested by us. Given the budget that you mention at the end of the letter, I would suggest the Q90s would give you more leeway.

It is impossible to achieve real deep bass and slam without a monstrous bass cone - 12 to 15 inch is a good starting point. Most hi-fi loudspeakers do not go near this territory, as it is very difficult to get a large cone to perform without drastically colouring the sound. The KEFs and the Tannoy's get close, but they still do not achieve the sort of slam and intensity that a good horn, like the Tannoy Westminster, can give out. The nearest to this drive, at a more realistic price level, is something like the Impulse Horns. Question 6. Do not, under any circumstances, attempt to put a thick glass shelf on an Apollo stand. The same holds true for all stands and tables designed for use with medite boards. The Mana table, and its 'me-too' clones, have been designed to work with a glass platform and have overcome the problems that glass creates. This is why the Mana table uses L-section frame, instead of box-section, as found on Target, Sound Organisation, Apollo et al.

Instead, go for the Mana table. Start with a Reference table for the turntable and a power supply table sitting under the Reference table. After this, add a similar table for the CD player and eventually go for the equipment tables for everything else, if it is at all possible. You will be surprised at how much improvement can be had from each table in the chain. Some of those who have caught the Mana bug, have gone as far as Mana-ing their TV and video, with successful results. Soon, I

hope to perform the same experiment with my coffee percolator.

Question 7. Audiolab's 8000M monoblocks do improve on the 8000P stereo amplifier, but I feel that you are so confused by your system at the present, that this would be the last thing I would change. It would simply add more of the same; in a well-sorted system, this would be the icing on the cake, but it may amplify (pun only slightly intended) any problems that you are currently encountering with your system.

Still confused? Try this, for example, as a major upgrade:

- 1) Mana Reference table (£300),
  - 2) Roksan Tabriz zi upgrade (£115)
  - 3) Furukawa FD-1010 interconnect cable (£85),
  - 4) KEF Q90 loudspeakers (£649), using
  - 5) Furukawa loudspeaker cables; FS2T-20P (£7.50) to tweeter, FS2T-35P (£13.50) to bass.
- Assuming that the cable runs are five metres long, this comes to £1,359. While this is only an example, it shows what can be done with your system for just over £1000. **AS**

? I would like some advice about upgrading my amplifier which at present is a Cambridge C100/A100 combination. The rest of the system is an Aiwa F990 cassette deck, a Rotel RT870L tuner and, the main source, a Meridian 200 transport and a Deltac Little Bit DAC. The speakers are AEI's on AE stands.

I am thinking of getting a passive control unit - possibly NVA's PSO and spending up to £1600 if I have to on a good power amp, which will give a clear detailed sound and last for some time. I am considering monoblocs from NVA - A80s - and Albarry - 1008s - and the Iraklis stereo amp.

I would be grateful for any suggestions or comments on my proposals. For a little more than a pair of A80s I could buy four A70s and bi-amp. Is it worth it? **Graham Griffiths, Branston, Lincoln**

The NVA passive is one of the best models that I have encountered. Its natural partners are the A70 and A80 power amplifiers, but only if used with NVA's own loudspeaker cable. I would suggest going for a quartet of A70's to partner the AEI's, as the loudspeakers perform at their

best when bi-wired/bi-amped and NVA's amplifier design does not allow for bi-wiring at all.

I have not tried the Albarry 1008 power amplifiers with AEI's, but I have been reliably informed that they work well. I would imagine that the smooth sound of the Albarrys would balance out some of the stridency that the AEI's can sometimes produce. The Albarrys could be used with their own passive preamplifier; I can't imagine that there would be any mis-match if the NVA was used instead, however. Albarry's reputation for solid build quality, as well as pleasing aesthetics make it a good alternative to the NVA. I'm afraid that I have not listened to the Iraklis as yet, so I'm in the dark as much as you here. **AS**

? My system at present consists of an LPT with Tabriz arm and Nagoaka TS11 cartridge, amplification supplied by an NAD 3020e and rounded off with Celestion DL4 speakers. The weak links as I see it are the amplifier and speakers. My problem is that I am unsure what to replace, but if you follow the rules described by 'hierarchy' the amp is to be changed first. This is really the problem since I have no idea whether the turntable is capable of supporting an amplifier of Naim Nait or equivalent standard. I like a robust sound with plenty of detail although I am not an imagery freak and have wide musical tastes. At the same time I am going to purchase a CD player, not by choice, but by necessity, due to the poor production standards of vinyl by the major recording companies. I have a budget of approximately £500 and have been considering machines such as the Musical Fidelity CD1, Philips 850 or the Arcam Alpha ACD1. I really would like one which sounds like the LPT.

**P.C. Hedger, Oxford.**



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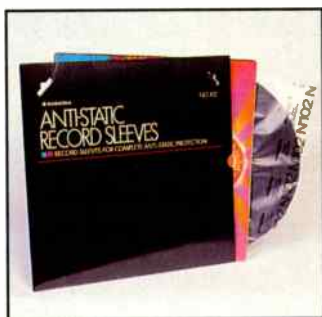
## KONTAK

Contact Cleaning Fluid Kontakt 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 Kontakt removes is clearly visible on the pipe cleaners, demonstrating just what degree of contamination contacts have reached and what Kontakt is achieving.

Users commonly express surprise at the amount of dirt and contamination Kontakt removes. After application, a system regains its original life, sparkle and vigour.

**KONTAK .....PRICE: £21.20**



## ANTI-STATIC RECORD SLEEVES

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

**LP SLEEVES (50) ....PRICE £7.50**

## NAGAOKA CD CLEANING KIT

As with cassette deck cleaning kits, we don't recommend the 'cogs and wheels' cleaners and choose not to sell any of them. Tests we have carried out with a Cambridge CD-1 CD Quality Control Unit clearly show that careful manual cleaning is the most effective way of removing all types of surface contaminants without causing damage to the disc.



Remember that CDs must not be scratched - even finely. Tests showed that the Nagaoka kit was the best all round cleaner. It has a solvent and a chamois leather pad which, together, bring the CD surface back to almost as-new condition.

**NAGAOKA CD CLEANING KIT .....£10.50**



## SORBOTHANE CD FEET

Four big, round rubber feet, 50mms in diameter and 18mms deep. Made from a soft, slightly sticky feeling form of artificial rubber known as Sorbothane, these feet have the peculiar ability to soak up vibrational energy, due to their high internal kinetic losses. Some people go nuts with them, swearing they improve everything, from the TV to the fridge! We sell them for use (as intended) with CD players, turntables and various other hi-fi components that might be sensitive to vibration. They improve sound quality by providing a more stable platform. Well-nutty and a lot of fun.

**SORBOTHANE CD FEET .....£27.95**



## NAGAOKA ROLLING RECORD CLEANER

The big drawback with most record cleaners is that they fail to remove all types of dirt. Brushes pick up fluff, but they redistribute

fine dust around the grooves, causing noise build up. Nagaoka's rolling record cleaner actually lifts dirt from the bottom of the groove - even fine dust. It uses a peculiar form of sticky coating on a soft foam backing. Dirt of all types - especially fine dust of the sort left by brushes - is removed completely. It is lifted from the record's surface, and no deposits are left behind. This is an effective way to dry clean a record.

**ROLLING RECORD CLEANER .....PRICE £10.20**



## PIXALL MK II RECORD CLEANER

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

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

## 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**

## AUDIO TECHNICA GREEN CD RING STABILIZER

These are detachable green rings which are fitted round the circumference of the Compact Disc. The non-slip material allows the disc to be picked up without





touching the playing side and leaving fingermarks. It also raises the disc slightly from any surface it's placed on, avoiding scratches if you don't replace it directly in the jewel box, as you should! It also adds a tiny but significant degree of mass to the outer edge of the disc, improving its stability and reducing vibration when it rotates at high speed inside the CD player. Green absorbs stray red laser light, so reducing random reflections within the disc, much like a green pen. So the rings perform many useful functions - and they are removable too! Improvements to the sound include better focussed and firmer images, plus a generally denser and richer sound.

**GREEN RING STABILIZER (5) .....£6.50**



**GOLD PLATED 4MM BANANA PLUGS**

We have a new style, heavy duty, gold plated banana plug with a unique type of axial solderless connection for loudspeaker cables. The wire is stripped back and pushed into a clamping collar, which is then screwed down tight. It will accept cables up to 6mm outside diameter and up to 4mm conductor diameter, holding them firmly and more evenly than the usual grub screw arrangements. They are supplied in a set of four.

**BANANA PLUGS (4) .....£8.00**

**SIDE ENTRY 4MM BANANA PLUGS**

Similar to the plugs described

above (i.e. gold plated, heavy duty) but with side entry for heavy loudspeaker cables of up to 5mm conductor diameter. The screw clamp grips the cable over its full diameter by applying pressure with a non-rotating cylindrical slug.

**SIDE ENTRY BANANA PLUGS (4) .....£10.00**

**GOLD PLATED SPADE CONNECTOR**

For amplifiers with loudspeaker screw terminals, here is a heavy, duty gold plated spade connector. It has the same unique axial clamp described above.

**SPADE CONNECTOR (4) £10.00**

**ARCAM RCA PHONO PLUGS**

Specially made in Japan to Arcam's specification, this heavy duty phono plug will accept audiophile cables up to 7mm in diameter. The 36mm long body is nickel plated and the contacts gold plated. Superbly built, we supply in polarised pairs with one/two ring end identity to allow send/receive ends to be established to take into account directionality. These plugs must be soldered with care to cables.

**RCA TYPE PHONO PLUGS (4) .....£15.50**



**LASAWAY GREEN PEN**

When rec laser light hits the silvered reflective surface of a disc, some of it scatters and is later

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

**LASAWAY GREEN PEN ... £7.50**



**AUDIO TECHNICA CD LENS CLEANER**

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

**CD LENS CLEANER .....£15.30**



**AUDIO TECHNICA ELECTRONIC STYLUS CLEANER**

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

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

**ELECTRONIC STYLUS CLEANER .....£19.95**

**LASERGUIDE**

The clear polycarbonate of Compact Discs scratches easily. Measurements we have carried out show that scratches, being closer to the silvered reflecting surface where the laser beam is focussed, are much more of a problem than fluff, finger marks, etc. They demand heavy error correction and often overwhelm a players capacity to substitute in spare programme information held redundantly for this purpose. Interpolation is then used to cover up the problem - which means guessing what the missing signal was like in order to fill in the gaps.

The only answer is to fill in scratches, lessening their ability to act as optical prisms capable of scattering the laser light. Laser-Guide is an optically engineered silicone treatment that claims to do this, reducing randomly reflected light by up to 50%. It is claimed that Laserguide improves stereo depth and openness. Just apply to the disc surface.

**LASERGUIDE .....£14.95**



**AUDIOQUEST OPTICAL LINK Z**

This is a wide bandwidth, ultra high performance optical cable for digital links, made by Audioquest. The most common use is linking a CD transport to a digital-to-analogue convertor. It is available in 1 metre and 2metre lengths with conventional TOS-link connectors.

**OPTICAL LINK Z (1M) .....£69 (2M) .....£99**

**AUDIOQUEST QUARTZ INTERCONNECT CABLES**

A fully balanced analogue signal cable with heavy duty, gold plated phono plugs and advanced Quartz Hyperlitz cables using polypropylene insulation. The Quartz cable we have chosen from our own experience as a fine sounding type. It uses FPC-6 ultra-pure copper (99.99997%) and the plugs are welded.

**AUDIOQUEST QUARTZ CABLE 1METRE LENGTHS ....£79/PAIR 2METRE LENGTHS ... £120/PAIR**

0677 800 505



## SWEATSHIRTS AND T-SHIRTS

A whole new range printed with "Hi-Fi World" and our slogan "The Magazine for enthusiasts" both front and back to prove to everybody you read probably the best hi-fi magazine in the universe. The sweatshirts and T-shirts come in white, grey, black and navy-blue in Large and Extra Large sizes; track-top one-size sweatshirts (with hoods).

**SWEATSHIRTS** ..... £12.00  
**HOODED TRACK-TOPS** . £15.00  
**T-SHIRTS** ..... £7.99

## RECORD STORAGE CUBE

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

Strongly made from 15mm medium density fibreboard (MDF), the panels are milled to have strong side joints. We have specified a durable black paint finish to give it a smart, yet unintrusive appearance. The screws are self-starting, but clearance holes are pre-drilled. It comes in a flat pack with screws and Allen key for easy home assembly.

**RECORD STORAGE CUBE** ..... **PRICE £42 EACH**

**FREE!**  
**20 RECORD SLEEVES WITH 2 CUBES**  
**50 RECORD SLEEVES WITH 4 CUBES**  
**FOR 6 CUBES,**  
**JUST PAY FOR FIVE** ..... (£210)  
**FOR 8 CUBES,**  
**JUST PAY FOR SEVEN** .... (£294)

## CD CABINET

Designed to match the Record Storage Cube, in the same black finish. Made of strong 15mm MDF, the cabinets can be stacked on each other, or on top of our Record Cubes. 400mm long, 360mm high and 150mm deep, a central shelf allows up to seventy CDs or forty two cassettes to be stored with space above for fingers to pull them out. Supplied flat-packed with screws and Allen key for easy home assembly. Price includes postage and packing.

**CD CABINET** ..... **£29.95**

## A NEW RANGE!

### TDK CLEANING KITS

A comprehensive range of cleaning materials from TDK for cassette decks, Compact Discs and even connectors. There are two head cleaning kits. One, the CK-A1, includes two bottles of fluid of different compositions for the heads and the rubber pinch wheel,

and specially shaped cotton buds for applying it. The CK-TB pack has similar cotton buds but with a single bottle of dual-purpose liquid.

TDK offer three cleaning pens, about the size of marker pens, colour-coded to avoid mix-ups. Each has a soft double-ended replaceable shaped tip. The Audio Head Cleaning Pen is 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.

A neat little CD cleaning kit contains a bottle of specially developed fluid and a soft pink cloth which can be used for removing grime and stains. Finally, a dandy CD cleaning tool with two soft pads at either end of a blue holder, one for applying the cleaning fluid supplied, the other for drying the CD off afterwards. Both pads of the Wet and Dry CD Cleaner are replaceable.



**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 AV 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**





## THE RADIO COMPANION

Paul Donovan  
Harper Collins £25

Paul Donovan, who writes on radio for the Sunday Times, fell in love with the wireless as a boy. The Radio Companion, a quarter of a million word A-Z encyclopedia on everything to do with sound broadcasting since the twenties, proves his love affair with the ether hasn't diminished over the years.

It is almost impossible to dip into this compendium without coming up with the questions for a do-it-yourself Radio Trivial Pursuit. What radio station's DJ's do it standing up? (Atlantic 252 - their control desks are the same height as a kitchen work-top.) What was the first Outside Broadcast? (Mozart's Magic Flute, from Covent Garden in 1923.) If you want to know how many celebrities were marooned on a Desert Island with only eight discs for company, the Radio Companion is where you look.

It's an absolute mine of information. Like Paul Donovan, I too was introduced to pop music by a crackly, interference-ridden Radio Luxembourg (p220). Remember Horace Batchelor, of "K-E-Y-N-S-H-A-M, Bristol" and his Infra-draw football pools system? Yes, but did you know his first business venture was making nicotine-free cigarettes?

I discovered classical music as a child on what then was the Third Programme, listening with my ear close to one of those wonderful fretwork loudspeaker grilles on a real wireless with glowing valves and a proper dial. Like the

one Paul Donovan listened to, it too had station names on it like Daventry and Hilversum. Daventry I could find an entry for, but not, alas, Hilversum, so I don't suppose I'll ever quite know where it is. Or did it expire along with the last valve-powered wireless? Somehow those names were much more friendly than mere numbers.

Though there is plenty on the wireless days, there are entries on programmes and personalities right up to the nineties. The paragraphs on Pirate radio stations are a history of the phenomenon in themselves. Ones like Radio Jackie I remember, and anyone over thirty will remember Radio Caroline, but Radio 390, run by thriller writer Ted Allbeury from an anti-aircraft fort in the Thames estuary was new to me.

The later Pirates like the now respectable and licensed Kiss FM aren't neglected either, although Kiss's entry doesn't mention it had a legal franchise in Paris before the British airwave allocators would accept the station.

I'd love to go on, but I'd end up quoting the entire book. The book is not just an exercise in nostalgia; as the publishers say, this is the first "Radio Halliwell" and it's wonderful. If only we could hear, as well as read about, Jack de Manio's spectacular inability to tell the time on the morning "Today" programme in the days before John Timpson and Brian Redhead. Apparently one listener crashed his car on hearing a wildly inaccurate time-check on his way to work. The entry on John Snagge raised a chuckle too, quoting his famous blunder in a fog-bound boat-race commentary: "I can't see who's in the lead, it's either



Oxford or Cambridge." Preserved in print, too, are comics, comedy shows and catch-phrases of the last sixty years. Not only that, but personalities from Lord Reith right through to the Rankin' Miss P have their brief biographies.

The Radio Companion is not a coffee-table book. It's a mug of cocoa and-curl-up-in-front-of-a-warm-fire book, which is exactly how I've spent my odd spare hours in the evenings dipping into it since it came through the post. A warm valve-wireless glow and a consuming delight in radio has suffused Paul Donovan's style, light but informative. And he has something fascinating on every page ●

## HI-FI WORLD SPECIAL AUDIO ACCESSORIES ORDER FORM

Please send me:

- Record storage cube ..... £42.00 each
- CD Cabinet ..... £29.95 each
- Sweatshirt (state size and colour) ..... £12.00 each
- Hooded track-top (one-size) ..... £15.00 each
- T-Shirt (state size and colour) ..... £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
- Anti-static record sleeves ..... £7.50 (50)
- Nagaoka rolling record cleaner ..... £10.20 each
- Nagaoka CD cleaning kit ..... £10.50
- Gold plated 4mm plugs ..... £8.00 (4)
- Gold plated side entry 4mm plugs ..... £10.00 (4)
- Gold plated spade connectors ..... £10.00 (4)
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- Lasaway Green Pen ..... £7.50 each
- Laserguide ..... £14.95
- Audio Technica CD Lens cleaner ..... £15.30 each
- 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)
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- TDK Audio Head Cleaning Pen CP-AH1 ..... £5.00
- TDK CD Cleaning Pen CP-CD1 ..... £5.00
- TDK AVV Connector Cleaning Pen CP-CR1 ..... £5.00
- TDK CD Cloth Cleaning Kit CD-C2TP ..... £6.50
- TDK Wet and Dry CD Cleaner CD CITB ..... £8.75

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# World favourites

## COMPACT DISC

**AIWA XC-700** £170  
Using Philips SAA-7350 Bitstream chip, this player sets new standards of smoothness and clarity at the price.

**NAD 5420/5425** £170/£290  
One of the best implementations of Japan's MASH low-bit system, offering a big, solid sound with plenty of weight.

**ROTEL RCD-865** £300  
Engagingly full of richness and life, with a natural and effortless quality; a player that transforms facsimile into reality before your ears.

**PIONEER PD-8700** £300  
Chunkier than most of its compatriots, to allow space for a turntable (!), a lean, dry quick-witted player which makes no concessions to difficult discs.

**PHILIPS CD-850** £400  
All the finesse of top quality Bitstream, with an open, balanced and involving performance.

**ARCAM ALPHA ACDI** £420  
Offers a warm, full bodied sound with big bass.

**ARCAM DELTA 70.3** £699  
Arcam's first Bitstream player. Its refined, but powerful sound sets the standard at the price.

**MERIDIAN 206B** £950  
'Entry level' Meridian player. Detailed, with a wide soundstage, but somewhat lacking in 'joie de vivre'.

**NAIM CDS** £2937.50  
The current talking point in the world of hi-fi. A worthy contender for the 'best CD player in the world' throne. Perfect partner for a Naim system.

## D/A CONVERTORS

**ARCAM BLACK BOX I, II AND III** £210, £260 & £360  
Three solid performers that can transform a mid-price Compact Disc player with a digital output. They get progressively better as the price gets higher.

**DELTEC LITTLE BIT** £300  
Sets up a wide, open stage and places a captivating performance within it. Spectacular Bitstream technology at a very low price.

**AUDIO ALCHEMY DIGITAL DECODING ENGINE** £376  
Paperback sized Bitstream convertor that offers a serious upgrade for the price. Sweet, open and detailed.

**MERIDIAN 203** £495  
Impressively detailed and complex sound, if a little lacking in involvement.

**MICROMEGA DUO BS** £499  
Superb, warm, rich analogue-like Bitstream sound, from the idiosyncratic French. Latest guise suits a wide variety of convertors, as opposed to earlier versions.

**DELTEC PDM SERIESII** £595  
Spacious representation with strong embodiment of performers. Natural and relaxing, but superbly refined and subtly impressive.

**MERIDIAN 606** £1200  
Now revamped to allow for the DAC-7 Bitstream, the earlier 606 was a fine performer, improving on the traits of the 203, but still a trifle uninvolved at times. We shall see how the DAC-7 version fares.

**DELTEC PDM-II** £2000  
Uses Philips new Bitstream DAC-7 super-chip to give a performance of unparalleled drama. Frighteningly deep and controlled bass, master tape standards of fidelity. Very forthright; a trifle violent in its truthfulness. Literally - stunning!

## TRANSPORTS

**ARCAM DELTA 170** £620  
An easy yet tidy sound that underpins digital convertors well.

**MERIDIAN 200** £750  
Well built transport mechanism which lends a fine sense of solidity and detail to music. Well suited to non-Meridian DAC's too.

**TEAC P10** £1400  
Orders events in a precise manner, lessening time domain confusion and blurring. Succinct and impressively controlled.

**MERIDIAN 602** £1500  
As with the 606, this improves over the 200 transport. Good build quality and a strong sound, if a touch bland when used with the wrong DAC.

**MICROMEGA DUO** £1745  
With the new CD-ROM chips, the Duo transport has a glorious balance of delicacy, imagery and drive.

## TURNTABLES

**REGA PLANAR 2** £155  
The first of the real 'hi-fi' turntables. Excellent value for money, having been spent where it matters - the arm and the bearing. Quite transparent and lucid, it fares well against some more expensive turntables.

**SYSTEMDEK IIX-900£190(no arm)**  
Great package. A suspended turntable that is easy to set up and takes a variety of arms (the Moth arm being the obvious choice). Sound quality is surprisingly natural, if not as precise as some.

**REGA PLANAR 3** £249  
Improves upon the Rega 2 in almost every way. Sets an impressive standard that others strive to beat.

**MICHELL SYNCHRO**  
without arm £301  
with arm £398

Very well built turntable. Distinctive looks. Solid, stable sound, with good bass at the price. Bit lacking in involvement and detail.

**LINN BASIK** £285  
Fitted with Linn's excellent Akito tonearm, the Basik is very much in the Linn mould. Its timing and pace are superb. Very musical.

**PINK TRIANGLE LITTLE PINK THING** £392  
Good-looking, neutral sounding turntable. Excellent soundstaging capacity and decent bass. Best partnered with a Rega, Roksan or Linn arm.

**NOTTINGHAM ANALOGUE SPACEDECK** £590  
Idiosyncratic turntable, with its high mass platter and distinctive looks, that is both fast and goes deep. Well partnered by the Space Arm (£380) and the Analogue Tracer II cartridge (£175) from the same company. Usually used in the context of a valve-based system.

**MICHELL GYRODEC** £659 (£801 with RB300)

Highly underrated turntable. Impressive build quality, virtually unmatched by the other British high-end manufacturers. Very solid, dry sound. Plenty of bass and good soundstaging. In some systems it can sound a little bland; in others, excellent. Better than ever with its new power supply.

**PINK TRIANGLE PT EXPORT** £676

Terrific soundstaging abilities, good bass and a neutral performance that improves upon the LPT considerably. Works with all the arms listed with the LPT, plus the SME range.

**LINN SONDEK LP12** £679  
Still one of the finest, after all these years. Brought into the 90's by the Linn Lingo (or Pink Triangle's Pink Link) power supply at £496 extra, the LP12 has always been the turntable by which all else is measured in this country. Tuneful and musical, placing dynamics above imagery in its list of priorities.

**ROKSAN XERXES** £695  
Fast, tight and clean, some have described the Roksan (especially with its Artax-erxes phono pre-amplifier) as almost CD-like in its presentation. A good alternative to the LP12.

**VOYD VALDI** £699  
Similar to the Pink Triangle, the Valdi is an expressive performer, with a deep bass that sneaks up on you. Matches Audio Innovations equipment well.

**PINK TRIANGLE ANNIVERSARY** £1175  
One of the finest sounding turntables in production, the Anniversary takes the listener nearer the recording studio than almost any turntable. Suits the same arms as the PT Export.

**TOWNSHEND ROCK REFERENCE** £1995  
Great soundstaging, pitch stability and timing, the Rock Reference has a bass performance that is deeply impressive.

## TO NEARMS

**REGA (MOTH) RB250** £78  
Excellent value for money. The one piece Rega arm. Lucid and graceful.

**REGA RB300** £115  
Little to beat this arm at the money. Has appeared in some outrageously expensive turntable packages without sounding out of place. Very slight softening of notes, when compared to the finest.

**LINN AKITO** £137  
Different presentation to the Rega arm. Not quite as happy with expensive MC cartridges as the RB300, it nevertheless shines with cheaper MM's (especially on all Linn turntables).

**ROKSAN TABRIZ** £165  
Good bass and not too tizzy for the price. Works very well in Roksans (naturally) and Pinks.

**LINN ITTOK LVIII** £560  
Great dynamics, excellent timing and delves deep into the lower registers. Latest models use refinements developed on the Linn Ekos.

**NAIM ARO** £752  
Unipivot tonearm with a seductive soundstage and a lot of character. Can resolve an vast amount of information from a groove. Works well in a Linn, its sheer freedom of movement makes it difficult to use with a more 'springy' deck.

**LINN EKOS** £1097  
A sort of 'Turbo' Ittok, the Ekos improves upon the strengths of the Tik-Tok, making it more transparent and dynamic, without becoming overtly so.

**SME SERIES V** £1247  
Probably the finest built of all pick-up arms, the V seems to have little to criticise about it, on the right turntable. Some suggest that it can sound polite; it performs (without getting in the way of the music) with grace and artistry. Strong soundstaging properties; it does not appear to have the problems associated with other arms at frequency extremes.

## CARTRIDGES

**AUDIO TECHNICA AT95E** £18  
Probably the finest starter cartridge. A little bright, scratchy and a trifle thin, it still represents excellent value for money.

**ARCAM C77** £22  
Good all rounder. Quite neutral and tidy, but a bit lacking in life. Works very well in old arms. Can be upgraded by stylii changes.

**ORTOFON 510** £30  
Even-toned, with excellent bass and good stereo imaging (all due to its solid body) for the price. Also upgradable via stylii.

**GOLDRING I020** £49  
Sweet sounding cartridge, similar to the Ortofon in many ways, but has less clattery treble. The mid point of their 1000 series cartridges.

**DENON DLI10** £70  
Moving-coil at moving magnet money. Old-ish - it has so far had quite a lengthy lifespan - this maroon tortoise-shell coloured high-output cartridge has subtle detailing and a fine delicate sweet sound.

**LINN K9** £89  
Can sound a bit forward and lacking in bass in some turntables and arms; the Linn nevertheless has a tight, crisp sound, with plenty of speed of attack. It is also quite detailed.

**ROKSAN CORUS BLACK** £110  
Very expressive and musical cartridge. Coherent and detailed, it can be a little bright in some systems.

**AUDIO TECHNICA AT-OC5** £122.95  
Needs an exceptionally good front end to sound good, its resolution of detail is very good for the price. A cautious recommendation, as it can easily sound raucous and fierce in the treble.

**SHURE VST-V** £173  
Excellent tracking moving magnet cartridge. The Shure offers some of the fine detail of MC's with the brusque-ness of an MM.

**ORTOFON MC30 SUPER** £270  
Despite being detailed and analytical, the MC30 still sings a seductive song. Very solid body.

**GOLDRING EXCEL** £499  
Smooth, detailed and refined sounding cartridge. Bit relaxed and easy on the ear, but still high in enjoyment quotient.

**LINN TROIKA** £798  
One of the most musical cartridges ever, the Troika uses a three point mounting. As such, it is somewhat limited to Linn and Naim arms (and would usually appear on the LP12).

**LYRA CLAVIS** £980  
The cartridge that currently resides at the top of the U.K. music lovers' list. One of the finest cartridges ever made. More music than hi-fi!

**AUDIO NOTE IOIIV** £1295  
A lean, clean, pick-up machine. For the Audio Note/Audio Innovations user, the Io is almost impossible to beat, short of the more expensive Io Ltd.

**ORTOFON MCS000** £1500  
The big information retriever. Can resolve more detail from the plastic than almost any other cartridge around. Slightly too analytical for some tastes.

## HEAD AMPLIFIERS

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**TECHNICS RS-BX 606** £170  
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**AKAI GX-52** £200  
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**NAD 6340** £220  
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**JVC TD-541** £280  
In the class of '60, or rather with the class of the Technics '606, though slightly less engaging at first listen. Serious machine for serious recording and listening.

**NAKAMICHI CASSETTE DECK 2** £300

Especially good with metal tape, with which it makes fine recordings. Excellent with prerecorded tapes too, but slightly inferior to NAD.

**NAKAMICHI CASSETTE DECK 1** £600

Our sample had poor speed stability, but otherwise the Cassette Deck 1 offers a good, if somewhat overpriced, all round performance.

**NAKAMICHI CR-7E** £1500  
As cassette goes this is the ultimate - and better than the Dragon. Near perfect recordings on all tape types; replays prerecorded tapes extremely well too.

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**DENON TU-260L** £100  
Sensitive and has a clean, balanced sound. Astonishing value.

**NAD 4225** £159  
Fine, spacious presentation; smooth and easy sounding. The best under £200.

**ION SYSTEMS FMT-1** £259  
Fine minimalist tuner with good stereo, deep bass and excellent detail. Probably the cheapest 'real' tuner on the market.

**ONIX BWD1** £395 (exc power supply + lead)  
Great partner for the OA21s, as it can be powered from the amplifier, the tuner has a wonderful open clarity that belies its price.

**QUAD FM4** £399  
Revealing and airy, and a ruthless way with anything other than high studio quality from the transmitter.

**NAIM NAT-02** £853  
Little box, big money, dead good. Try and find better unless it's a...

**NAIM NAT-01** £1377  
All else is mere artifice. If you want better radio reception, go and live in the BBC's studio.

## AMPLIFIERS

**NAD 30201** £149.95  
Well known budget classic. Its crown has slipped a bit of late, but it still represents the standard to beat. Distinctive 'NAD' sound.

**DENON PMA-350** £169.99  
The usurper to NAD's throne. Packs a lot of punch for the money. Phono stage not as strong as the rest of the amplifier.

**ARCAM ALPHA 3** £200  
Lean and lively, with an astonishing amount of detail built in; the best at this price for line-level sources and won't disgrace an LP collection.

**MISSION CYRUS ONE** £200  
Well-known British amplifier. Minimalist appearance, suitable partner for most equipment.

**CREEK 4040S3** £220  
Easy on the ear, the Creek seems better suited to LP than CD.

**PIONEER A-400** £230  
One of the most controversial and popular amplifiers today. Excellent sound, especially when partnered with extremely esoteric source components. As with the PMA-350, weakest link is the phono stage.

**ONIX OA21S** £350  
Yet another minimalist amplifier, the OA21 has the rare combination of detail, finesse and balls.

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Hand built range of pre and power amplifiers. Exceptional value for money. Very warm and inviting (and so is the sound).

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**JOHN SHEARNE PHASE ONE** £2398  
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**LINN KAIRN/LK-280/SPARK** £1295/£653/£639  
Top flight Linn amplification. A little forward for some tastes, but very detailed and designed with the future in mind.

**MUSICAL FIDELITY SA-470** £6000  
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Fine 'giant killer' loudspeaker. Not as small a sound as would be expected from a small box. Will not compromise expensive equipment.

**GOODMANS M500** £130  
Fine budget loudspeaker. Not very subtle, but highly efficient, even-handed and dynamic. Good for loud rock.

**NAD 8225** £149.95  
Very light, open and clear sound for the money.

**MISSION 776 II** £169  
Terrific fun loudspeakers. Easy to position, easy to drive, easy to sit in front of. Slightly unsubtle at times, but highly musical.

**WHARFEDALE 505.2** £190  
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**B&W DM610** £199  
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**HEYBROOK HB153** £249  
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**NAD 8100** £299.95  
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**EPOS ES II** £330  
Few can match the virtues of the ES II. One of the finest at the price. Great imagery, weighty bass without becoming overpowering. A goody!

**ROGERS LS3/5A** £350  
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**HARBETH HL/P3** £359  
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**LINN KAN II** £439  
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**KEF 101/2** £495  
The baby of the KEF Reference series. Tells you exactly what is being played, does not mask flaws in the system prior to the loudspeakers. Very system dependent, but can sound good with the right system.

**PENTACHORD** £499 (or £990 for sub-woofer system)  
Real wood finished pentagonal loudspeakers with Bandor units and no crossover. With the addition of the sub-woofer, they are capable of a superbly transparent, but deep and dramatic sound.

**NEAT PETITE** £525  
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**TDL STUDIO I** £599  
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**PROAC STUDIO I MK 2** £612.25  
Since removing the metal dome tweeter, ProAc's Studio I has taken the lead among neutral loudspeakers at this price break. Very musical.

**KEF Q90** £649  
Very efficient, very dynamic and capable of becoming very loud indeed, the Q90s are one of KEF's finest loudspeakers.

**NAIM IBL5** £815  
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**AUDIO NOTE AN-J** £799 (Copper Wired) £999 (Silver Wired)  
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**HEYBROOK SEXTET** £899  
Revealing, lucid floorstanders. Not smooth, but tight and fast-paced. Need careful partnering with ancillary equipment.

**KEF REFERENCE I03/4** £995  
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**LINN KABER** £1198  
The obvious upgrade for owners of Linn Kans. Need a lot of power to drive properly. Active version also available.

**TDL STUDIO 4** £1499  
Bigger version of the Studio I. Needs a large room. Capable of moving a lot of air. The best loudspeaker for organ music, short of the really big TDL's. Impressive, awesome and a bit frightening.

**NAIM SBL** £1527  
Highly suited to the Naim system, the SBLs are impressive, dynamic, powerful and expressive sounding, especially in active guise. May prove too intense an experience for some people!

**PENTACOLUMN** £1695  
Active column loudspeakers, again using Bandor units, that improve upon the already excellent sound of the cheaper Pentachords. Superb imagery, but a little amplifier dependant. Suits valves well.

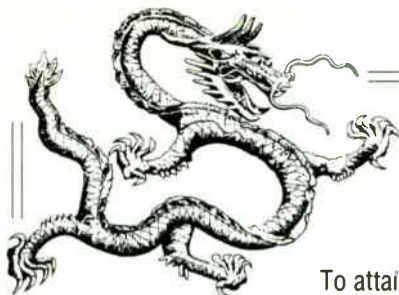
**QUAD ESL-63** £2072  
Large electrostatic loudspeakers. Imagery and detailing second to none, but lacking in bass. An academic among loudspeakers.

**LINN ISOBARIKS** from £2190  
Few who listen to Isobariks working properly cannot fail to be stunned into submission by their gut-wrenching dynamics. A bit larger than life at times. If the Quad is an academic, the 'bariks are the Mike Tyson of the loudspeaker world.

**NAIM DBL** £6000  
Huge, active-only loudspeakers, which make even the powerful Isobarik quake in its boots (stands?). Can produce immense sound pressure levels. Not for the squeamish!

**MERIDIAN D6000** £7500  
The pinnacle of Meridian's research into active loudspeaker systems. Makes other systems seem primitive by comparison. Once set up, it becomes one of the easiest systems to use. Very controllable, the overall sound is slightly bright in some rooms, but is otherwise intensely dynamic and powerful.

**TANNOY WESTMINSTER ROYAL** £10000  
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# Golden Dragon

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PHOTO: PAUL COX

**CHAPTERHOUSE**  
**Whirlpool**  
DEDICATED DEDCD0001

● Daresay I'm a trifle late with this one as I have to confess I was attracted to the debut Chapterhouse LP when first I spied the beautiful cover in a West London bargain bin basement. That said, this is a cracker of a debut, jam-packed with music as sinuously sensual as the long haired pussy (cat) which adorns the sleeve. At first hearing the group's dense maelstrom-of-sound production is not a little unlike the sounds achieved by My Bloody Valentine (q.v.) using similar effects. On the whole though, Chapterhouse are far more accessible and direct, and ought therefore to appeal to an even larger audience. Songs like "Guilt", for example, begin with a more or less orthodox rock arrangement before leading the listener into territories new; and "If you Want Me", with its isolated guitar and solitary chimes is a distant cousin of the Veilvet Underground's "Sunday Morning", which is no bad thing. "Falling Down" proceeds via sinuous wah-wah guitar and severe bass-line to underpin the ethereal (if lyrically all but unintelligible) vocals. Not a record most people will want to play every day, perhaps, but a distinct and welcome debut for all that. Keep them bargain bin eyes peeled.



**MY BLOODY VALENTINE**  
**Loveless**  
CREATION CRECD 060

● The name was lifted from a Z-grade pulp movie thriller, the line-up - two per gender, half European, half British - is just too socio-politically spot-on for words. Add to that the fact that live appearances and records (a debut LP close on three years old, a pair of highly collectable EPs) are as scarce as curate's eggs and cult's the word amigos, I kid thee not.

At first hearing, MBV's music - simple rhythmic structures overlaid by a dense soup of part-found, part-created soundscapes - appears to be both repetitive and dense to the point of unintelligibility. A few listens, however, and endless subtleties make themselves heard. Small wonder that this is the second version of the current long-player, an entire previous LP having been scrapped as unsatisfactory. Beneath vocals that have an

*giovanni*  
*dadomo*

eerie, wraith-like quality at times not unreminiscent of Julee "Twin Peaks" Cruse, lurk a plethora of wild rhythmic twists and turns. And when - as on the stunning "Loomer" - the background maelstrom suddenly changes gear to be replaced by a chillingly familiar cascade of wicked guitar chords . . . well, the effect is, as they say, truly shattering. The only current band that come even barely close to MBV's trademark discordant rhythmic thunder are New York's Swans, most notably on parts of their majestic This Burning World LP. But that's as close as anyone gets; this is music as mysterious and intangibly evocative as can be. So who on earth cares what the words are when the sounds they help to make bewitch one so? It's as if they'd written the soundtrack to one of those quirky, dreamscape-setting stories by Jorge Luis Borges. Just as enticing, just as corner-of-the-mind's eye tantalising. Dub this Electric Magic Realism and



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Paul Hartley, *Hi-Fi World*, May '91

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Martin Colloms, *Hi-Fi News*, July '90

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Paul Messenger, *Hi-Fi Choice*, June '90

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Paul Hartley, *Hi-Fi World*, May '91

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Alan Sircom, *Hi-Fi World*, July '91

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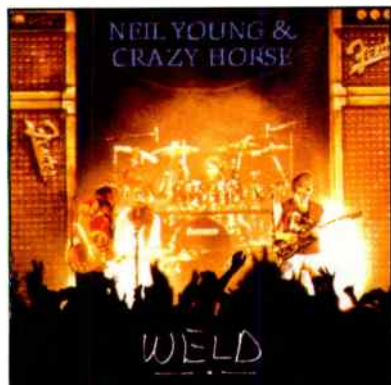
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you may be just part of the way there. This is a Velvet Underground for the Nineties, a Joy Division-matured and grown, er . . . the permutations are endless. The truth is that what we have here are purely and simply perhaps the single most stylistically inventive and most immediately distinctive sound-makers of the current era. Whether they'll ever achieve major crossover acceptance is a moot point, but if you're looking for a record that'll sound just as timely a decade hence (if not more) then I'll wager this is it.

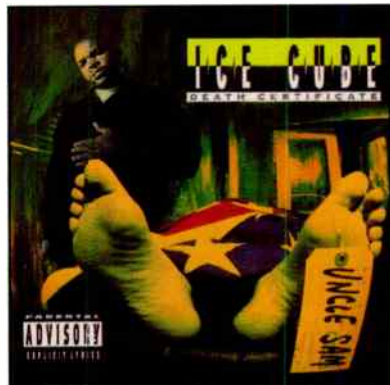


**NEIL YOUNG & CRAZY HORSE**  
**Weld**

REPRISE 7599 26671-2

● For someone who's been around a good quarter-century, Neil Young's managed to retain his credibility better than most. True, like any old soldier he's had to endure the odd period in the wilderness. (There was an ill-advised Country album *Old Ways*, and several other hit-or-miss genre forays in recent years.) In the last couple of years, and via the critically and publically-acclaimed *Freedom* and *Ragged Glory* LPs, Neil seems to be enjoying a new lease of life - witness the rave reviews already generally accorded this latest live collection of old and new songs recorded on tour with long-time support band Crazy Horse. I'm none too crazy about the set myself, if you'll pardon the pun. Lou Reed made a comment a while ago to the extent that when you're playing live you exaggerate everything - every gesture has to communicate as much to the bloke in the back row of the upper circle as it does to the lucky ones in front. I'm sure this applies just as much musically as it does to onstage comportment, and this is where my main reservations lie when it comes to *Weld*. True that the sound quality and production are damn near faultless and that the aforementioned attest to a live show that sounds like it must have been great fun in the flesh. Only in the comfort of one's own hovel it appears that Neil and company are trying that little bit too hard. The

result is that everything - vocals, guitar solos, general playing and arrangements - seem that little bit too much larger than life; a little - shall we say - strained. Add to that the fact that a great deal of the material herein - 'Cinnamon Girl', 'Hey, Hey, My, My' etc. - have made frequent appearances on previous Young Records and bootlegs, new converts and real Young die-hards will have every reason to be satisfied; the more selective among us will, I fear, have to wait until the next studio album.



**ICE CUBE**  
**Death Certificate**  
**FOURTH & BROADWAY**  
**BRCD 510-656-2**

● Ice Cube, if my memory serves me well, is a former member of Public Enemy. His official title was Minister of Information, and, regrettably, the pseudo-political title is fairly typical of the worse excesses of the latter's para-military stance. To their credit (see last month's issue) Public Enemy are capable of making *Great Records* and their hearts are more frequently than not in the right place. I wouldn't go so far as to make the same claim for Mr Cube, who's a so-so rapper (i.e. he can't sing but his rhymes are better than most) with an unenviable bias towards every negative-ism you'd care to mention: racism, sexism, etcetera. *Death Certificate* would appear on a cursory listen to be a conceptual album of sorts, dealing with Big Topics such as Birth, Sex and Death, starting with the last mentioned, of which there is an unnecessarily high amount among the Back youth of the US ghettos. Now if Ice Cube stuck to topics he all too obviously knows about, like the insensitivity and callousness of drive-by killings, then I'd be on his side. Even when he knocks fellow made-good rappers-turned-would-be-whites, as on "True to the Game", you can see his point. It's when he drops into numbskull machismo for its own sake ("It's the number one crew in the area/ Make a move for your gat and I'll bury ya") or, as in the heinous racism of "Black Korea" or the even more vile sexism of "Givin'

Up the Nappy Dugout" that I take the needle (or whatever) off the record and draw the line. The world's in a sorry enough state without numb-nuts like Ice Cube - so what if he puts all his profits into his own neighbourhood if he isn't helping anyone else? - preaching messages of hate. This is the sort of recording that gives rap a bad name/it's dumb and it's lame. . .



**WORLD OF TWIST**  
**Quality Street**  
**CIRCA CIRCI7**

● There are eight or nine of them at least, they're very, very British, and their tongues are - one fervently hopes - most firmly embedded in their cheeks. Even the briefest earful of WOT's debut LP would confirm this last hypothesis: it opens with a barrage of patently retro Ennio Morricone/Herb Alpert horns. As the grossly inoffensive pretty-voice melody proceeds (a sort of sugared-up Teardrop Explodes reject crossed with Flowerpot Men or some such late-Sixties session-muso artefact) it is bolstered by thundering Chinnichap percussions and the most irritatingly primitive electronic effects to be heard this side of a Gerry and Sylvia Anderson theme tune. *World of Twist's* songs don't sound so much like hits that ought to be as hits that have already been . . . and we've all forgotten. More retro than Blondie at their most bathetic, more overblown than Dave Dee, Dozy, Beaky Mick and Titch at their "Zabadak" worst. . . (Production comes partly c/o Dave Ball - he used to be Marc Almond's collaborator and ought to know a bit of melodrama when he hears it.) *World of Twist* are making the sort of music that combines all the worst elements of Capital Gold at its most banal . . . so why aren't they enormous? Because a) they're twenty years too late and/or b) Tony Blackburn hasn't heard them yet. A new Dark Age in music could be just around the corner, and *World of Twist* are just the people to bring us it. Pray for deliverance!



**The arrival of a clutch of re-issue CDs normally prompts Malcolm Steward to pass unpleasant comments about the record industry... but not this month.**

*malcolm  
steward*

**SANDY DENNY  
Who Knows Where The Time Goes?**

**HANNIBAL HNCDS301 (3 CDS)  
HNBX5301 (4 LPS)**

● Hannibal's boxed set contains valuable recordings by a singer whose life was cut short by an unfortunate accident in 1978. Sandy Denny was a classically-trained pianist who turned to playing guitar whilst working as a nurse after leaving school. She started travelling round London's burgeoning folk-rock circuit whilst attending Art School where her fellow scholars included Jimmy Page and Eric Clapton. Impromptu sessions with the then unknown Simon and Garfunkel resulted in them encouraging her to perform regularly. She subsequently went on to work as a solo artist and as part of respected folk-rock groups The Strawbs, Fairport Convention and Fotheringhay.

At first it was purely her strikingly effective alto voice which drew attention to her but she was soon writing poignant songs which boosted her status further still. It's hard to believe that the second of these was "Who Knows Where The Time Goes?" a song recorded by Judy Collins as the title track of an album

which went gold. Her music still influences singers today. The title track of Mary Black's album "By The Time It Gets Dark", for example, is a Denny song, which is featured on this compilation as a demo recording made at her home in 1976. She sings to her own accompaniment on twelve-string acoustic guitar and despite the rudimentary arrangement and recording the song's incandescence beams through defiantly.

The variety of the material and the circumstances of its recording make this bounteously rewarding three-CD collection a real must-have for anyone who can be touched deep down by music. There are forty-three songs included and amongst that number are solo and group performances, live and studio cuts, previously unreleased tracks and performances, out-takes and demos. An excellent book of photographs and lyrics supplied with the discs is the icing on the cake.

Despite the sheer volume of songs in this set I found it disarmingly easy to work my way through the whole shooting match in one uninterrupted session. The highest of its high points are many but personal favourites include her duet with Linda Thompson on the Everley Brothers'



"When Will I Be Loved?", the aforementioned demo of "By The Time It Gets Dark", the demo of "Take Away The Load", and a spirited concert recording of her leading Fotheringhay through Chuck Berry's "Memphis, Tennessee".

The material for this release was compiled and produced by Hannibal's Joe Boyd and Denny's husband, guitarist Trevor Lucas. It was a job well done and the collection deserves to be an unmitigated success. Do yourself a favour and look out for it.

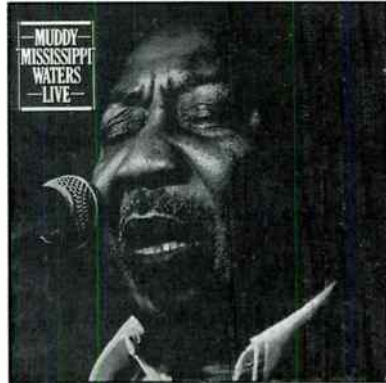


**MUDDY WATERS**  
**I'm Ready**  
BEAT GOES ON BGOCD108

● "Thank you very much. Here I go," intones Muddy Waters enthusiastically as he and his band barrel into this album's title track. And what a band he's playing with! Johnny Winter and Jimmy Rogers join him on guitar, Walter Horton and Jerry Portnoy play some wicked harp, Pine Top Perkins tinkles the ivories, and Bob Margolin and Willie "Big Eyes" Smith lay down the sturdiest of foundations with bass and drums. However, there's never a moment's doubt that it's Chicago's premier bluesman who is in charge of the proceedings. The man who brought the blues out of the Mississippi Delta and plugged it into the mains electricity supply, constantly carves his path through the music to remind everybody just who is calling the shots. Waters was the blues equivalent to rock's Frank Zappa in that all the guys with the meanest chops wanted to play in his band, but nobody, however talented, could or would steal a march on him. He was too highly respected to fool with.

His style is rough and hard: both his singing, which draws on that of Son House, and his abrasive, pungent guitar which pays frequent homage to Robert Johnson. This re-released album from 1978 is one of his finest and showcases the talent which influenced more nascent rock'n'rollers and R'n'B players than you could shake a forest full of sticks at. "I'm Your Hoochie Coochie Man" is the fifth track of nine and more than any other it resonates with motifs and

devices that have subsequently graced thousands of recordings by bands the world over. The closing number is another classic, "Good Morning Little Schoolgirl", a cover of which first introduced me to Johnny Winter, one of Waters' biggest admirers and the man who signed him to his Blue Sky label on which this Grammy-winning album was first released.



**MUDDY WATERS**  
**Muddy 'Mississippi' Waters**  
**- Live**  
BEAT GOES ON BGOCD109

● Waters also received a Grammy award - his sixth - for this album, the follow-up to "I'm Ready", released in 1979. Also produced by Johnny Winter, this is my personal favourite of the two albums reviewed here. Only seven tracks are featured but none is shorter than four minutes long and one of them, "Deep Down In Florida", steamrollers along for more than nine.

The disc opens with "Mannish Boy", a concrete slab of electric blues written in 1955 which provided the soundtrack to a TV commercial for Levi 501s in 1988, five years after the singer died from a heart attack in Chicago. Listening to it performed live on this disc it's almost impossible to reconcile the fact that the song is bellowing forth from a body fast approaching retirement age. Waters' energy is quite incredible, his presence truly awesome. It's almost as awe-inspiring as his slide guitar playing on track five, "Howlin' Wolf", which is hot enough to blister paint.

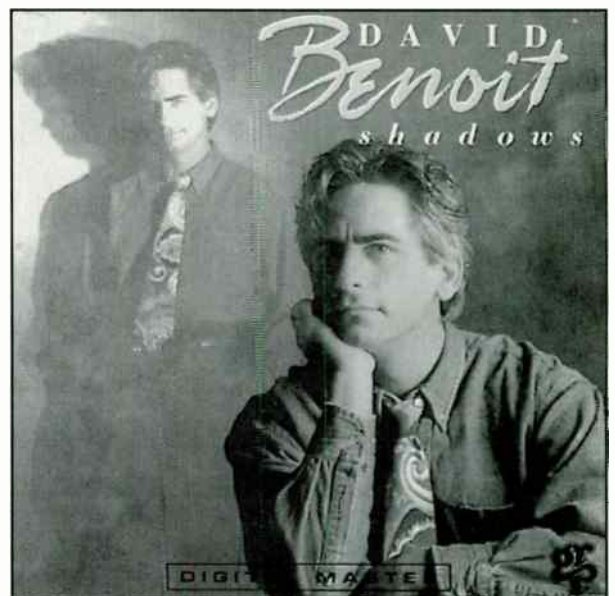
Throughout the seven tracks the album's musical strength is compounded by the atmosphere which is as electric as Muddy's blues. This is an album to excite and delight anyone with the faintest interest in whence contemporary guitar music drew much of its spirit and nutrition as an infantile form. It should be regarded as an utterly essential purchase. and if you decide to buy just one of the two Waters' albums reviewed here I'd suggest you make it this one. Maximum R'n'B? This disc goes way past the red line!

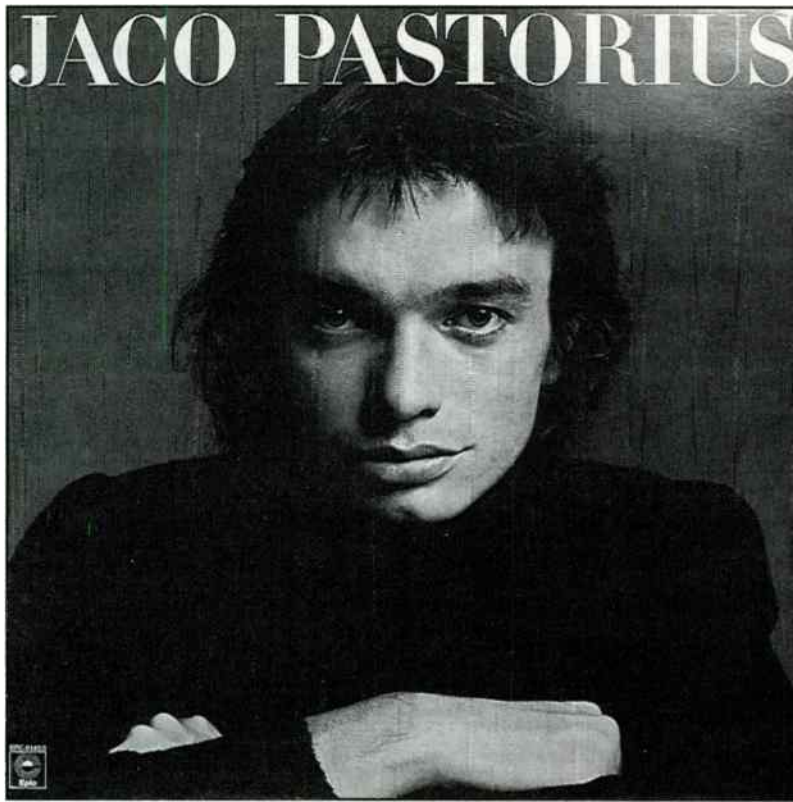


**DAVID BENOIT**  
**Shadows**  
GRP GRP96542

● If there was any justice in this world the playing of jazz/funk, surely the most castrated genre in music's rich and varied arena, would be made a criminal offence, punishable by indefinite imprisonment. This album is exhibit one for the prosecution's case.

The GRP label has established a name with jazz/funk (hereinafter referred to as junk) aficionados for recordings whose quality is as high as any digital recording could wish to be: yet the best moment on the disc I received occurred around 54 seconds





into the first track, called - how about this for pretentiousness - "Overture", when the sound coming from my Naim CDS stopped for an all-too-brief breather. GRP has some good artists on its roster and Benoit is certainly a capable keyboard slapper but the music to which he devotes his talents.

Shadows is yuppie CD fodder par excellence. If musical dynamics were dynamite here would stand eleven tracks without the combined combustible might to blow the CD's jewel case open. Music which is, in the humble opinion of your correspondent, totally devoid of grace, passion and emotion. The aural equivalent to Babycham.

Its only saving grace is that it's ideal for the hi-fi reviewer who needs music to use for warming up equipment, something to play which won't disturb his concentration whilst he's working away at his keyboard processing another article or sorting out his VAT return. And sorting out one's payments to Her Mudge's Customs and Excise is more fun than wasting neuron activity trying to gain anything from this disc.

The prosecution rests, m'lud.

**JACO PASTORIUS**  
**Jaco Pastorius**  
**EPIC EPC81453**

● This isn't an official re-issue as far as I know, and I didn't have time to do any research because I only picked it up about an hour or so before this copy was due to be committed to floppy disk and mailed to Hi-Fi

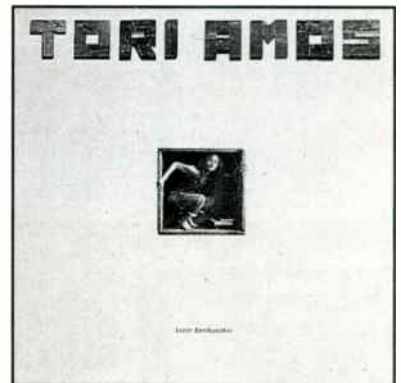
World. I had gone down to The Record Shop (66 Fife Road, Kingston, Surrey, Tel: 081 546 3880) to see if its proprietor, Tim Bright could furnish me with any new releases to bring my word count for the month up to the required level. Tim's a great character for springing surprises and one of them was this album. "I picked up a few copies in Holland," he told me, gesturing to this LP (Yeah, he's also extremely unusual in being someone who owns a record outlet who actually prefers LP to CD) which I hadn't seen in years. How could I resist buying a copy?

I have a fondness for the bass guitar, especially when Pastorius is in the driving seat: his were the four strings that ducked and dived through my favourite Joni Mitchell albums. Herbie Hancock's sleeve notes on this album describe him as "a phenomenon... able to make sounds on the bass that are a total surprise to the sensibilities. Not only single notes, but chords, harmonics, and all sorts of nuances with the color of the instrument which when combined and translated through Jaco make for some of the best music that I've heard..."

I can't top that, neither can I adequately convey the pleasure his music gives me. There's a warmth and fluidity to his playing which gives the impression that he and his bass were a single entity. Listening to him play it's easy to forget that there are any mechanics involved, that thought, physical activity, and electronics are all a part of that gorgeous, sensuous sound which floats towards and wraps around you like a draft of

aromatic cigarette smoke. (Pseud's Corner, here I come...)

The only way to appreciate it is to experience it. If you don't want to hunt around to find a copy get on the phone to Tim. But hurry, I don't know how many more copies there are on vinyl. Note that it's also worth talking to him about any recent 'CD-only' releases you might like to have on LP. I was assured by the record company responsible for the Marianne Faithfull album "Blazing Away" that it wasn't being released on vinyl; not at all, never, not ever, no way. So how come I have a copy on what looks to my untrained eye remarkably like a twelve inch slab of black plastic? Tim sourced it from Germany! What a geezer!



**TORI AMOS**  
**Little Earthquakes**  
**EAST WEST 7567-82358-1**

● So who's Tori Amos? I dunno. I can tell you that she's a damn good-looking girl who sits inside packing crates with a toy piano but, hey, that much you can work out for yourself from the album sleeve! You'll have to play the disc, however, to discover that she's also a perceptive songwriter and possesses an enormously charming and distinctive singing voice.

That voice is American but nonetheless sounds like it's singing the same language that I speak most of the time: in other words her vowels aren't tortured a la Justified and Ancient Tammy Wynette. Sheyeeeeeet, thayert wuhman's voyeece jurst keeeeeeels me. Tori also benefits from having a touch of the Kate Bush's about her, being able to sustain and float notes, even those which rise barely above a whisper. Real toe-tinglin' sensual stuff.

She also appears to have that elusive quality of being able to produce highly commercial sounding songs without sacrificing any lyrical integrity. By the time this review appears she might even be a household name. Perhaps she could then teach other Tonies a thing or two about making life more fun for people!



# RECORD OF THE MONTH

## NICK DRAKE

### Fruit Tree

HANNIBAL HNCD5402 (4 CDS)

HNBX5302 (4 LPS)

★ My attitude towards old albums which are subsequently re-issued on CD tends to be rather negative. Being slightly over twenty-one years of age I enjoyed the benefit of growing up with rock music and I managed to catch most of the worthwhile record releases the first time round. Many of them have remained with me to the present day which says more about the robustness of the vinyl medium than any undue care on my part. I wasn't a precious audiophile back in the sixties and I'm not one now. I still leave naked discs on the carpet, dust them off with my shirt sleeves, and place them on the record player with a cigarette clenched between my teeth! I take a dim view when record labels repackage those albums onto CD and try to persuade me to buy them for a second time, particularly when the original albums sounded - and still are - magnificent and the re-issued silver discs don't have the same magic.

I will admit, however, that some of the discs I would like to have owned did escape me. Conversely, some which should have escaped . . . why, I wonder, did I ever spend money on

Blodwyn Pig's *A Head Rings Out* and, more to the point, why do I still have it? One worthwhile singer/composer whose work passed by unnoticed, perhaps because of such impetuous or mind-altered extravagances, was Nick Drake. *Fruit Tree* is a complete set of his recordings on four Compact Discs (the albums *Five Leaves Left*, *Bryter Layter*, *Pink Moon*, plus *Time Of No Reply*, Hannibal's own collection of demo's and out-takes) which comes with a sixteen page booklet containing full lyrics and and a biography which paints a disturbing and tragic picture of the artist who died at the age of twenty-six in 1974.

Often tagged - and I think inappropriately - as a "folk singer" that doesn't adequately describe Drake or his music, although he was around during the British folk revival spear-headed by the likes of Fairport Convention and his friend John Martyn. Songs like "I Was Made to Love Magic" with its jazzy overtones and orchestral backing prove the point: just because someone plays mainly to the accompaniment of an acoustic guitar it doesn't mean that they're a fully paid up, card carrying member of the I Woke Up One Morning fraternity.

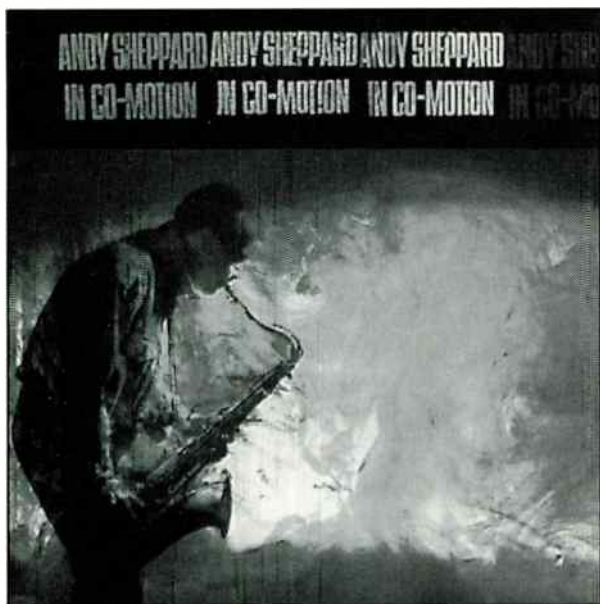
Drake's music, although quite beautiful, splendid and fragile, clearly betrays his disturbed, reclusive, melancholic personality. The songs are not products of the wistful onanism of the deliberately miserable-in-my-bedsit singer-songwriter clique but a poetic and musically

rewarding insight into a genuinely vulnerable psyche. One of the saddest aspects is that, despite his obvious and individual talent, Drake never tasted the rewards of commercial success.

Listening to his albums I became aware of the striking similarity between his voice and that of Martin Stephenson, another musician for whose music I have a lot of respect. The longer I listened the more certain I became that Drake had influenced him strongly. If you like the latter's laconic, unforced singing style you ought to check out Drake. Elsewhere on the four discs in this set you'll discover some familiar names amongst the credits and you'll find some good playing throughout from the likes of Richard Thompson, Danny Thompson, Dave Mattacks, John Cale and others.

And if you worry about the sound of CD reissues I can't tell you how these compare to the original releases because I don't have them. They certainly don't have the anally retentive, pristine, clinical sheen of a Steely Dan CD but they sound close enough to real human beings playing real instruments which is far more important if you're into the music and not the presentation. Once you're taken by Drake's performances you won't give a flying one about the master tape hiss.





**ANDY SHEPPARD**  
**In Co-Motion**  
 ANTILLES 510344-2

● "It was inevitable Andy Sheppard would make an album like *In Co-Motion*" announce the liner notes on this, Sheppard's fourth outing for Antilles. Well, that's probably true, but whether that's a good thing or not isn't entirely clear to this reviewer.

Sheppard emerged in the mid 80s as part of the much-talked-about British jazz revival, and since then has often played second fiddle, in the media at least, to his labelmate Courtney Pine. Where many of the young "Brit jazzers" were content to recycle American hard-bop in much the same way that the Marsalis clan had in the States (and no-one was more guilty of this than Pine), from the outset Sheppard had broader horizons. His debut album toyed with a wide variety of rhythmic styles, from calypso to odd-meter rock. The follow-up *Introductions In The Dark* introduced his writing ambitions with a twenty-odd minute suite that somehow encompassed African-sounding flute passages and ferocious soprano saxophone solos over a constantly changing stylistic backdrop. Last year's *Soft On The Inside* featured his arrangements for big band which at times rivalled his old boss George Russell's in their ingenuity.

Which is why *In Co-Motion* comes as something of a disappointment. The album features a small electric group of keyboards (Steve Lodder), drums (Dave Adams), trumpet (Claude Deppa) and bass (Sylvan Richardson) and opens promisingly with "ASAP", a fast piece featuring a blistering percussion and trumpet duet that recalls Miles Davis' "Tutu" - no small achievement. But following on from that stark opening,

the album is swamped with altogether too much feeling for its own good. The ballads sound pretty where they should sound aching ("Earliding" and "Movies") and the uptempo stuff, with the possible exception of "ASAP", grooves along nicely enough but never really *drives* the way the best jazz-rock should.

Quite why this is all the case is a bit of a poser. The production? That opening, with the timbales leaping out at you, scuppers that one. And the players, newcomer Sylvan Richardson apart, have proved themselves on numerous live and recorded dates with Sheppard in the past. No, ultimately the problem lies with the charts which simply don't push the musicians enough. Jazz-rock has already had a bad name among jazz snobs, undeservedly so when one considers that Lifetime, the Mahavishnu Orchestra, Last Exit and Material all sit in there somewhere, but this record surely does not help its case.

If you're already into Sheppard, then you'll need this to see what his playing is up to. There are no worries on that score; Sheppard, with his vast vocabulary of everything from piercing harmonic squalls to wonderfully sweet phrasing, continues to prove himself one of the first truly unique British jazz voices to emerge since Evan Parker. The uninitiated should check out *Introductions* and *Soft* first.



**GOD**  
**Loco**  
 PERMIS DE COSTRUIRE  
 PPP106/PATH 09

● The outer limits, to be sure. God are a London-based collective of musicians led by saxophonist/vocalist Kevin Martin, whose music may not sound a whole lot like jazz to most listeners. The line-up nonetheless boasts some members well known in the field, notably Henry Cow's Tim Hodgkinson, and Eddie Prevost of the legendary improvisatory group AMM, and who tap into a rich vein of jazz influence: 70s period Miles Davis ("Dark Magus", "Agharta", "Pangaea" and so on); the 60s "New Thing" (in

particular, to these ears at any rate, Albert Ayler); the electric bands of Ornette Coleman and his successors (Prime Time, the Decoding Society, Material, Last Exit); and the noisier end of the European free jazz scene. (Peter Brotzmann must be a god to God, if you see what I mean.)

Of course, there's a lot of other stuff in there; early PIL, the On-U-Sound set, hardcore and a whole bunch else, and the titles alone ("Sick Puppy", "I'll See You In Hell") would probably put off your average Wynton Marsalis fan. But no less a jazz figure than the alto saxist-composer-collagist John Zorn is enough of a fan to have insisted that last year's "Outside In" jazz festival put them on the bill.

*Loco* is actually the group's debut release, a live album that really only gives a glimpse of things to come for them. Rumour has it that they've signed a deal with a major label and are already at work on their debut studio release. It's for only the most adventurous of jazz listeners, but for those who are concerned with where the music is going, God are a useful barometer.



**MILES DAVIS**  
**Filles de Kilimanjaro**  
 CBS 467088 2

● When Miles Davis died last year, no-one could say with any real degree of honesty that a huge hole had been left in contemporary music. Although the trumpeter had been working throughout the 80s, and often with alarming levels of creativity for a man of his age and state of health, it's probably fair to say that, had he lived another twenty years, music wouldn't be significantly enhanced. Had he died twenty-odd years earlier, however, pretty much all creative music from then on would sound unrecognisable. For between 1968 and the late 70s, Davis recorded a series of albums which so seamlessly reconciled apparently disparate musical styles - from the blues to serialism, free-form jazz to funk - that the cross-fertilisation enriched everything that followed.

1968's *Filles De Kilimanjaro*, at



long last released on CD in the wake of its creator's death, presaged this legacy, coming as it did between the virtuosic, acoustic mid-period "Miles Smiles" and "Nefertiti" and the electric maelstrom that began with "In a Silent Way". A small group of Davis, Wayne Shorter on tenor, Tony Williams on drums, Herbie Hancock or Chick Corea on electric piano and Ron Carter or Dave Holland on bass, work their way through a set of Davis originals that balance the explosive freedom of jazz soloing and the basic inner shriek of the blues in a way that has seldom been recaptured.

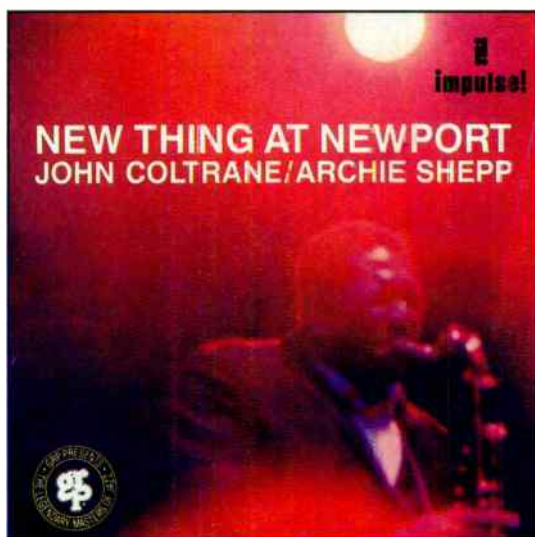
And then there's the sheer sound of this band: the warmth of the Fender Rhodes piano, relatively unused in jazz even as late as '68, the searching, restless tenor solos of Wayne Shorter (who went on to find fame in Weather Report alongside another Davis alumnus, Joe Zawinul), the James Brown basslines (often played in unison with the electric piano). Above it all, Davis's brooding malevolent trumpet, all the while seeking the sound that a somewhat younger man, Jimi Hendrix, was eliciting from a much younger instrument, the electric guitar.

Twenty-odd years on this remains an astonishing record, alone in Davis' oeuvre and for that matter, in the entire canon of jazz since; and for that alone, it's surely worth acquiring.

**JOHN COLTRANE/ARCHIE SHEPP**  
**New Thing at Newport**  
 GRP/IMPULSE GRD-105

● Finally re-issued on CD, 1965's "New Thing at Newport" isn't what it might initially seem, a collaboration between the tenor saxophone giants Coltrane and Shepp (although that's a mouth-watering prospect), but a record of two separate sets by the saxists' quartets given on the same evening of July 2nd, 1965, at the Newport Jazz Festival. Which probably gives the impression that what we have here is a slice of history, a document, a mere snapshot of a moment in time. History.

Well, it is, but it is a whole lot more besides. The album opens up with Coltrane's two-song set, almost thirty minutes of music that showcases one of those groups which is, like the Hendrix Experience, or Bill Evans with Scott La Faro and Paul



Motian (two fairly different groups, admittedly!), somehow, almost mystically, just right. Coltrane is on tenor, McCoy Tyner on piano, Jimmy Garrison on bass, and the explosive Elvin Jones on drums. The group was to implode in just a few months but the energy contained in this set alone outshines much of the music of the years since. On the second song in particular, the Coltrane perennial "My favourite Things", the inter-play between the musicians is staggering; the beat remains, and forcefully at that, but in and out weaves each voice, individual but utterly essential to the whole. Definitive ensemble jazz.

Archie Shepp's set is a very different barrel of worms. Where the Coltrane quartet home in on the details of a single theme, a Rodgers and Hammerstein standard, say, Shepp's delight in the dramatic contrasting of genres - frantic and abstract group improvising, a sleazy blues, a poem recited over a vibes and bass ostinato - and work through their ideas with astonishing speed. They play five songs in just over the time it takes Coltrane to get through a couple. At the time both critics and audiences were baffled by Shepp's eclecticism and apparent restlessness (although few ever doubted his evident technique as a saxophonist), but a quarter of a century on and with post-modernism woven firmly into all of our thinking, Shepp in many ways sounds more contemporary than Coltrane.

A history lesson, then, but an undeniably enjoyable one.

**TRILOK GURTU**  
**Living Magic**  
 CMP RECORDS CMP CD 50

● And finally... Trilok Gurtu is a master Indian percussionist whose association with jazz goes back to his days in Shakti, John McLaughlin's post Mahavishnu Orchestra acoustic

**Something of a commotion caused by Andy Sheppard, and adventures in Kilimanjaro, Newport and London.**

*simon hopkins*

Indian/jazz fusion ensemble and has continued the association ever since. "Living Magic" is his second outing for CMP and features a couple of jazz notables - Brazilian percussionist Nana Vasconcelos and tenor and soprano saxophonist Jan Garbarek.

The album's an odd mix of fairly standard fusion tunes which wouldn't sound out of place on, say, a Steps Ahead album, all underpinned by Gurtu's frenetic drumming. Not an essential album (and one not helped by an idiosyncratic production which has instruments moving around in the mix to an irritating degree) but worth it for Garbarek alone whose splendidly titled "Once I wished a tree upside down" is the standout track here.





# MARY BLACK

*All albums available now on the Grapevine label*



**GRAPE 1 :1983**  
**MARY BLACK**



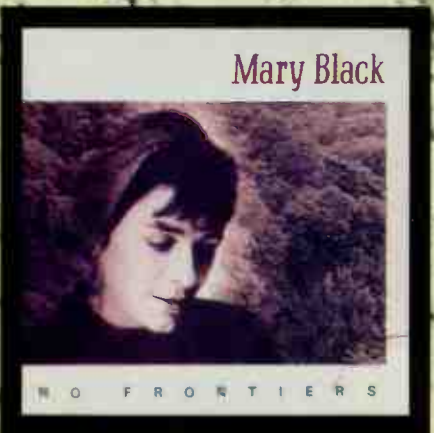
**GRAPE 2 :1984**  
**COLLECTED**



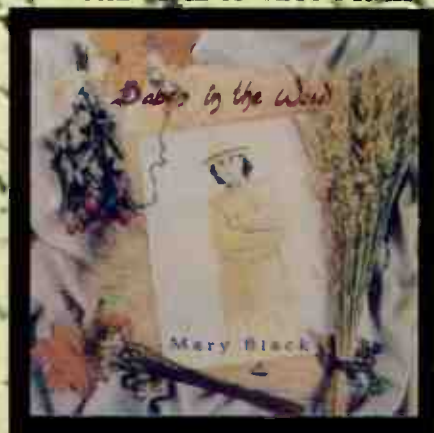
**GRAPE 3 :1985**  
**WITHOUT THE FANFARE**



**GRAPE 4 :1987**  
**BY THE TIME IT GETS DARK**



**GRAPE 5 :1989**  
**NO FRONTIERS**



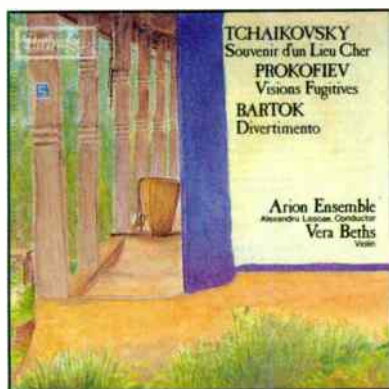
**GRAPE 8 :1991**  
**BABES IN THE WOOD**

*The Grapevine Label* 97 Charlotte Street, London, W1P 1LB. TEL: 071 323 5590

World Radio History

IN ASSOCIATION  
WITH  
**PENTAX**





**BELA BARTOK**  
**Divertimento for Strings**  
**SERGEI PROKOFIEV**  
**Visions Fugitives**

Op22 (arranged Rudolf Barshai)  
**PYOTR TCHAIKOVSKY**  
**Souvenir d'un Lieu Cher**  
 Op42\* (arranged Alexandru Lascae)  
 Vera Beths, violin\*; Arion Ensemble;  
 conductor, Alexandru Lascae.  
**PARTRIDGE 1126-2 (DDD/60.46)**

● This Netherlands-based chamber orchestra was founded in 1969, and Romanian-born Alexandru Lascae has been its leader and conductor from the very beginning. The rapport established in the ensuing twenty-two years seems to have brought its rewards, to judge by this, the Arion Ensemble's second recording for the Dutch Partridge label. (No, I still don't know why the name.)

It's an attractive programme: a masterpiece of Bartok's later years; a first-rate transcription of one of Prokofiev's finest piano compositions; and some rarely heard, yet utterly beguiling Tchaikovsky (congratulations to ensemble and conductor on not doing yet another version of the Serenade for Strings or Souvenir de Florence).

In May 1878, Tchaikovsky sought refuge from the tribulations of his divorce from Antonina Milyukovna at the estate of his patroness, Nadezhda von Meck. In two peaceful weeks he wrote several compositions including three pieces for violin and piano. The first, a Meditation in D minor, was a reworking of the discarded original second movement of the Violin Concerto. He added two further movements to complete the charming Souvenir d'un Lieu Cher (Memory of a Dearly-Loved Place - an indication of how much those two weeks' respite from his personal troubles meant to him). It is music with all the typical melodic traits of Tchaikovsky and the transcription by Alexandru Lascae is sensitively done.

As, indeed, is that by the Russian conductor, Rudolf Barshai, of Prokofiev's brilliant piano miniatures the Visions Fugitives of 1915-17. In a sequence of fifteen pieces, many displaying the most startling harmonic development, Prokofiev pursues a course through fantasy, irony, wry humour and bitter-sweet tenderness. And, while the special character brought to the Visions by the piano original could not be displaced,

Barshai's transcription loses nothing of their incisiveness.

Bartok's Divertimento, composed in August 1939 to a commission from that towering champion of contemporary music, Paul Sacher, is a wholly accessible, richly melodic, yet technically highly-demanding work whose light, folk-like, often frolicsome outer movements are in sharp relief to the anguished foreboding of the second movement. Given the date of the composition, there is little doubt that this movement reflects Bartok's mood at the time, with his native Hungary poised to become part of the Nazi empire.

Given the appeal and originality of the programme and the qualities of the playing (Vera Beths is a very fine soloist in the Tchaikovsky) and recording, this Partridge issue merits attention.

**ANTONIN DVORAK**  
**Ten Legends**

Op59/From the Bohemian Woods  
 Op68/Polonaise in E flat Major.  
 Duo Crommelynck, piano.  
**CLAVES CD50-9106 (DDD/66.44)**

● When, in 1881, Dvorak completed his Op59, the Ten Legends for piano four hands, he dedicated them to the prominent music critic, Eduard Hanslick. It would appear that Hanslick was genuinely impressed by Dvorak's offering, writing: "Each person may have his own particular favourite among the Legends, but there is one point in which certainly everyone is in agreement: they are all beautiful." And listening to these musical pictures, so richly characterful and imaginative, so replete with variations of tempo and mood, it is difficult to disagree.

Three years later, buoyed by the success of both the Legends and the Slavonic Dances (also originally written for piano four hands), Dvorak's publisher, Simrock, urged him to write another work in the same vein. The result was another set of what Dvorak called "character pieces", From the Bohemian Woods. The six pieces begin with a subject which also captivated Mendelssohn, the spinning wheel. His Spinning Song is among the most famous of the Songs Without Words. Dvorak's In the Spinning Room stems from the same poetic root, as does the second of the Bohemian 'pictures', On the Black Sea. The atmosphere of mystery and sorcery is perfectly evoked in Walpurgis Night, while in On Watch, the measured tread of the hunter is embellished with delicate imitations of birdsong. From Stormy Times is perhaps the most demanding piece in a set which asks much of the players in terms of both virtuosity and poetry. The appeal of the fifth piece, Forest Calm, saw it transcribed for both cello and piano and cello and orchestra.

As in its recording of the Slavonic Dances (recommended in a previous issue), the Duo Crommelynck produce a most persuasive performance, idiomatic and colourful. After hearing

**Pride of place this month goes to the music of Dmitri Shostakovich, including the most famous of his fifteen symphonies - and still one of the most controversial. Indeed, there is a strong emphasis on twentieth century music, both European and American, but we also mark an anniversary just past - Mozart - and the one now arrived, the 200th birthday of Gioacchino Rossini.**

*peter herring*



this playing, Dvorak's mastery of the art of writing for piano four hands cannot be doubted - and what pleasures it brings. The recording, made in a studio in Ghent and employing a Steinway, is full, clear and full, free from any hint of clanginess. Once again the combination of Patrick Crommelynck and Taeko Kuwata has come up with a winner. ▶



**GIOACCHINO ROSSINI**  
**La Cambiale di Matrimonio**  
 Bruno Pratico; Alessandra Rossi;  
 Maurizio Comencini; Bruno di Simone;  
 Francesco Facini; Valeria Baiano; Maciej  
 Rakowski, violin; Ursula Duetschler,  
 harpsichord; English Chamber Orches-  
 tra; conductor, Marcello Viotti.  
**CLAVES CD50-9101 (DDD/77.50)**

● Exit Mozart (died 1791), enter Rossini (born 1792). Another anniversary to celebrate and, if all the commemorative issues and reissues are up to the standard of this Claves production, one to relish. *La Cambiale di Matrimonio* (The Marriage Contract), first staged in 1810, was the first of five operatic farces composed by Rossini for the San Moise theatre in Venice. It was an astonishingly mature debut for an eighteen-year-old, a comprehensive illustration of how his natural musical gifts had been finely-honed by the experience of working as keyboard accompanist at the communal theatre in Bologna. *La Cambiale di Matrimonio* draws upon the established classical models with which Rossini would have been familiar, but also acknowledges the embryonic Romanticism of the nineteenth century operatic style.

What is also remarkable about this work is the depth of its characterization. These are not one-dimensional figures, but the products of subtle allusion, parody, irony and sharp-witted caricature. The absurdity of some of their behaviour - an idiotic duel, for example - is pointedly satirized. The opera also provides early evidence of Rossini's sophisticated dramatic skills, as well as his consummate musical technique. *La Cambiale*, I should add, is also hugely enjoyable and full of the most delicious music.

The plot, to a libretto by Gaetano Rossi, is a familiar one: father pledges daughter to lucrative (for him) marriage contract with important business client; she, of course, loves another; enter the go-between to mediate between the two conflicting interests. Eventually the 'client' recognizes true love when he

sees it, renounces all claim on the daughter and, after an abortive attempt at a duel, persuades the father that his child is more than merchandise. Wisdom and humanity prevail. As comic opera plots go, it isn't all that outlandish.

For this production, Claves assembled an Anglo-Italian team: a first-class set of Italian soloists, under the able direction of Marcello Viotti, and our own English Chamber Orchestra, all superbly recorded by Tony Faulkner in All Saints, Tooting. The whole recording bubbles with vitality and enthusiasm and, at a digestible length of seventy-odd minutes, seems to me an ideal way to sample the genius of Rossini. For established Rossini enthusiasts, the recording is self-recommending. One drawback: there is no translation of the Italian libretto, but the precis of the plot should prove adequate.



**ROBERT KURKA**  
**The Good Soldier**  
**Schweik - suite\***  
**PETER MENNIN**  
**Cello Concerto**  
**WALTER PISTON**  
**Symphony No 1**  
 Janos Starker, cello; The Louisville  
 Orchestra; conductors, Robert Whit-  
 ney\*, Jorge Mester.  
**ALBANY RECORDS TROY 044 (AAD/  
 72.29)**

● We in Europe are quick to accuse Americans of insularity yet, it has to be asked, beyond Copland, Bernstein, Gershwin and, to a small degree, Ives and Barber, how much attention has Europe paid to the achievements of 'serious' American music? A recording such as this can be something of an eye-opener. The British musicologist and composer Robert Simpson thought Walter Piston "America's most mature composer" and, listening to this cogent and well-crafted First Symphony it is easy to see why.

Piston first studied art and went to work in the drawing office of a Boston railroad company. He played the violin and piano in his spare time and only took up serious musical studies after service in the First World War. His first symphony was first performed by the Boston Symphony Orchestra in 1938, when the composer was forty-four. Its taut, three-movement structure is both arresting and immediately accessible.

Just as accessible is the lively suite by

Robert Kurka inspired by that pungent anti-war satire 'The Good Soldier Schweik'. Brilliantly orchestrated and full of wit and sardonic humour, the suite is very reminiscent of Prokofiev's Lieutenant Kije, which also of course sets out to satirize the stupidity, hypocrisy and self-serving of military hierarchies. The music owes something to Gershwin and, in its use of winds and percussion, to the neo-classical Stravinsky, but in most respects it is the work of an imaginative musical talent.

Kurka developed the *Schweik* suite into an opera which should have marked the beginning of a memorable career. Sadly, Kurka died the year he completed the work - 1957 - at the age of just thirty-six. The previous year had seen the premiere of Peter Mennin's richly romantic Cello Concerto, Leonard Rose taking the solo part. This fine work, here beautifully played by Janos Starker, explores the 'singing', poetic nature of the cello to the full and is unashamedly virtuosic. Like the other works here, it rewards exploration. The recordings, which date from 1969 and 1978 and have been expertly remixed by Andrew Kazdin, are wholly acceptable.



**WOLFGANG AMADEUS**  
**MOZART**  
**Violin Concerto No 1 in B flat**  
**Major K207/Violin Concerto**  
**No 3 in G Major K216/Violin**  
**Concerto No 7 in D Major**  
**K271a**  
 Scottish Chamber Orchestra; soloist/  
 director, Ernst Kovacic.  
**IMP CLASSICS PCD946 (DDD/67.03)**

● Mozart completed his five 'authenticated' violin concertos in the space of one year, 1775, during his, ultimately unhappy, tenure with the Archbishop of Salzburg. As so often, they were written with one player in mind, in this case Antonio Brunetti, soloist and first violin of the Salzburg court orchestra. Mozart does not seem to have regarded Brunetti as anything more than a proficient musician, which may explain why these concertos concentrate on the singing, expressive qualities of the instrument rather than technical display. If not Mozart at his most profound, the Violin Concertos - especially the Fourth and Fifth - have riches of beauty, melody, charm and elegance which elevate them above the level of purely



'entertainment' music and do make special demands on the sensibilities of soloist and orchestra.

Two of the 'Brunetti concertos' are included here, along with the disputed Violin Concerto No.7. Certainly, Mozart is known to have written a violin concerto in the key of D Major in 1777 and the fact that this score turned up in Paris in 1835 is not so implausible as it may first seem. Mozart fled his Salzburg appointment in the same year and, when he arrived in the French capital in 1778, could well have been carrying his most recent manuscripts with him.

Though the work, as heard here, could not be counted among the major masterpieces, its outer movements do have the stamp of authenticity and it is only the Andante where the style seems out of character. But, then, who knows what the Parisians did with the score? Whatever its origins, it is good to have it recorded, and adding to the interest of what is a wholly enjoyable recording. Kovacic opts for lively, effervescent performances, but not at the expense of refinement or charm. His mellifluous solo playing is well caught by the sound, clear and full in a bright, reverberant acoustic. Authentic or otherwise, this is eminently agreeable listening, and good value at mid-price.



**GIROLAMO FRESCOBALDI  
Toccatas for Harpsichord -  
Book One (1615-16)**

Sergio Vartolo, harpsichord.  
**TACTUS TC58060701 (DDD/57.47)**

● The dry history records that Girolamo Frescobaldi was born in Ferrara in 1583 and died in Rome in 1643 and that such was his reputation as an organist, when he was appointed to St Peter's, around 30,000 people came to hear his first performance there. He was one of the founding fathers of instrumental music and, through his pupils such as Froberger, became a vital influence on the later German school of Bach and Handel.

From that, you might assume that Frescobaldi and his music could be safely left as an entry in the musical dictionary. But that would be to overlook some of the most eloquent instrumental music of the Italian Renaissance, for Frescobaldi is one of the first composers for whom the keyboard became significantly more

than merely a vehicle for virtuoso display.

The very term 'Tocatta' suggests virtuosity in abundance, and that is true of the eight works recorded here, but in each case that virtuosity remains the servant of a quest for deeper expression and it is that which makes Frescobaldi's music so involving and rewarding. Each Tocatta resembles an intimate, revealing discourse, seemingly free of structural constraints. But the expression is carefully nurtured in the spread chords, the thoughtful selection of registers and dynamics, the articulation and phrasing, and the subtle use of ornamentation. Essentially, it is the skilful transcription of free invention.

Frescobaldi's music has its roots in the traditions of his native Ferrara and of Mantua, but was to become a synthesis of styles from all over Italy. He assimilated these styles into his own sophisticated, cultivated and ambitious musical language with dazzling success.

In this Tactus recording, Sergio Vartolo plays a copy by Barthelemy Fomentelli of an Italian harpsichord in the collection of the Ca' Rezzonico Conservatory in Venice and it is difficult to conceive of a more persuasive introduction to Frescobaldi's music. As with all the Tactus issues I have encountered, the sound is first class, the product, it would seem from the sleeve-note, of just a Sony PCM1610 and a single Neumann SM69fet microphone; whatever the technique, it works beautifully.

**KURT WEILL  
The Berlin Requiem/  
Recordare Op11/Legend of the  
Dead Soldier/At Potsdam  
under the Oak Trees/Four  
Walt Whitman Songs\*/  
Kiddush\***

Jurgen Wagner, tenor; Wolfgang Holzmaier, baritone; Niederrheinische Men's Chorus; Students' Chorus of the Evangelical Church, Dusseldorf; Hannover Girls' Choir; Arno Ruus, organ; Robert Schumann Chamber Orchestra; Winds of the Dusseldorf Symphony; conductors, Hartmut Schmidt, Marc-Andreas Schlingensiefen.\*

**KOCH/SCHWANN MUSICA MUNDI  
314050 (DDD/65.43)**

● It has been encouraging to see the representation of Weill's music on record increasing in recent years; not so long ago, it started and stopped with his most famous collaboration with Brecht, the Dreigroschenoper (The Threepenny Opera). Now we have excellent versions of Silverlake and the Rise and Fall of the City of Mahagonny, as well as that superlative song recital on Decca by Ute Lemper. This live recording from the Robert Schumann-Saal in Dusseldorf also fills some important gaps, with a programme that brings together vocal works composed between 1923 and 1947: in other words, spanning Weill's



early acceptance of Brecht's concept of Gebrauchsmusik (roughly translated, music for the masses) and his last years of exile in the United States.

The centrepiece of this remarkable concert (would any promoter stage an all-Weill concert in London, I wonder) is the Berlin Requiem of 1928, an utterly secular work where Brecht and Weill, in the latter's own words, set out "to express what today's cosmopolitan feels about death. The piece as a whole is a series of funeral dirges, memorial plaques and tombstone inscriptions." Sixty years on, the Berlin Requiem retains its resonance and relevance and its angular, lucid scoring still sounds starkly original. Like the other works here, all of which reflect Weill's moral stance on war and death, with one exception, there is nothing especially mournful or lugubrious about this music. The Whitman settings are jewels, passionately sung by the baritone, Wolfgang Holzmaier. There is fine singing, too, in the cappella choral pieces, both to texts by Brecht, Legend of the Dead Soldier and At Potsdam under the Oak Trees.

The earliest composition on this recording, the Recordare of 1923 to a text from the Lamentations of Jeremiah, was never performed in Weill's lifetime and the score was presumed lost until a manuscript copy turned up in a Paris music shop in 1970. This work takes a religious stance, as does Kiddush of 1946, the liturgy of the wine ritual in Judaism. Weill dedicated this work to his father who was Cantor of the synagogue in the composer's birthplace of Dessau.

The wealth of Weill's music can be appreciated here, the sweetness and the satire. It is well-performed throughout and vividly recorded and is the kind of recording that should ensure Kurt Weill his true place in the pantheon of twentieth century music (given that there are still tomes being published which entirely overlook his contribution).

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## RECORD OF THE MONTH

On January 28, 1936, the official Communist Party newspaper Pravda launched an attack on Shostakovich's opera 'Lady Macbeth of Mtsensk'. For the thirty-year-old composer who, up until then, had largely enjoyed the support of the Soviet authorities, it was a bolt from the blue. Suddenly, he was responsible for 'muddle instead of music'; he had let past compliments go to his head. Such terms as 'leftist', 'formalist', 'cacophony' and 'musical chaos' were applied. The plot of the opera, according to Pravda, was vulgar, decadent and tasteless. Yet this had come two years after the work's first performance, two years during which the opera had become a success throughout the Soviet Union, Europe and in the United States, all with the apparent encouragement of Stalin's apparatchiks. Clearly, there had been a change of policy and Shostakovich was its hapless victim. It was not to be the last time he would suffer in such a way.

Shostakovich had tried to serve two masters: his art and the state. The results had not fallen short of his own expectations nor, he believed, the state's. But, by 1936, the composer's ideal of realism, as so effectively articulated in 'Lady Macbeth' was no longer synchronized with Soviet realism. The role of the artist was no longer to experiment and to stimulate ideas. In a country feeling increasingly threatened and isolated it was to spread solidarity and confidence, to espouse patriotism and heroism. Prokofiev's cantata 'Alexander Nevsky' of 1938 fitted the ideal exactly (it is worth recalling that Prokofiev openly stated that he wrote two types of music: one for the masses and one for posterity).

Shostakovich remained silent during his 'purge'. He must have been bewildered by it all since he was in no way attempting to undermine the Soviet state; quite the opposite. Prudence dictated that, to avoid further controversy (and possibly worse) he withdrew the brooding, complex Fourth Symphony and began work on something that, while acknowledging his critics, would not compromise his own ideals. The result was the Fifth Symphony, the controversial 'Soviet Artist's Practical Creative Reply To Just Criticism'. The Soviet authorities took this subtitle at face value; the errant composer had seen the error of his ways. The more perceptive, though, saw that Shostakovich had acknowledged the criticism that he himself thought 'just', based on

musical judgement not ideological tenets. Whatever they may have thought, the apparatchiks had not changed Shostakovich; he had matured.

The Fifth Symphony was premiered in Leningrad (now St Petersburg) under the baton of Yevgeni Mravinsky on November 21, 1937. It was an immediate success and redeemed Shostakovich in the eyes of the Party. It earned him a status he would never relinquish, even during Stalin's later purges, such as the attacks of 1948. It also probably demonstrated to him that, like Prokofiev, he would have to be prepared to exist in a kind of musical schizophrenia. On the one hand, a tool of the state; on the other, a composer whose integrity remained intact and who could largely express his innermost feelings and ideas through the intimate medium of chamber music, especially the string quartet. That he performed this balancing act for so long and so successfully is a tribute both to his genius and his resilience.

### DMITRI SHOSTAKOVICH Symphony No 5 in D minor Op 47

Leningrad Symphony Orchestra;  
conductor, Alexander Dmitriev.

LINN RECORDS CKD004 (DDD/  
44.38)

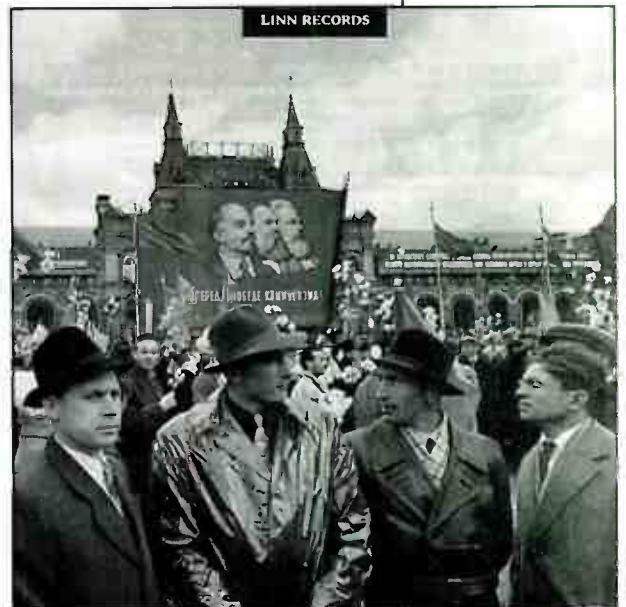
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★ Attitudes to the Fifth Symphony have changed somewhat in the past decade, largely prompted by Solomon Volkov's much-disputed 'conversations' with Shostakovich published in his book *Testimony*. It was originally seen as an heroic symphony on heroic themes: the composer himself talked of the theme being "the making of man". The finale, he said, was "the optimistic solution of the tragically tense moments of the first movement." Tragedy there certainly is, both in the first movement and the profoundly intense Largo. But, if we are to believe Volkov, the 'triumph' of the last movement is a deliberate sham, full of hollow rhetoric that would be credible only to the cultural thugs it was meant to convince. Anyone of sensitivity would see through the superficial bluster to the emptiness within.

In which case, this interpretation of the Fifth, recorded live in the City Halls, Glasgow, in April 1990, may well be the version for the 'nineties, reflecting a period when an entire ideology has been exposed as a sham. Dmitriev accentuates the bombast of the finale, points up the sardonic

humour of the scherzo, the fake charm of the violin solo, but then - rightly - brings out the intensity and heartfelt sincerity of the Largo, with all the personal and universal sadness it seems to contain.

But perhaps the finest trait of this performance, along with the playing of the Leningrad orchestra (recently renamed, of course), is its cohesiveness and its sense of direction. In the opening movement, where he is faster than any other version in my collection, Dmitriev initially appears lightweight in comparison to Previn, Bernstein or Haitink. Yet, overall, the approach is justified; it is in character with the rest of the interpretation which sees the Largo as the heart of the work and the key to its ambivalent, ambiguous nature. It is a challeng-



ing view and one which is eloquently expressed by the players. Through their articulation and phrasing, and with Dmitriev's attention to detail, every nuance of the score is illuminated.

The recording is warm, clear, well-balanced, tonally precise but unobtrusive; as is the audience, until the applause. The presentation is good, too - I like William Klein's amazing cover picture taken at the May Day rally in Red Square in 1961, showing the archetypal KGB thugs against the once-familiar backdrop of Marx, Engels and Lenin. Already it seems an image from another epoch. But what on earth does sleeve-note writer mean by "Shostakovich produced no further symphony in Stalin's lifetime"? Numbers Six to Nine all appeared between 1939 and 1945, when the 'Great Leader' (sic) was still in power, and the Tenth was first performed in the year of Stalin's death, 1953.

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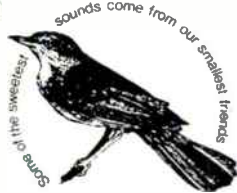
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