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Cover Photograph by
Paul Hartley Studio 071- 482 3768

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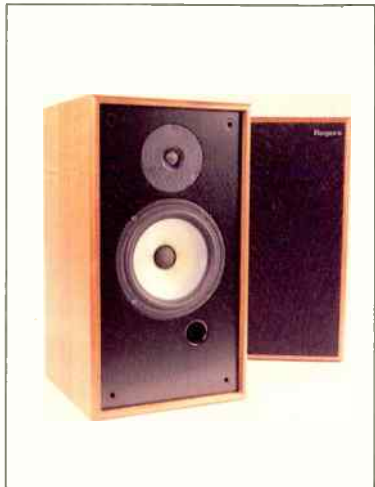


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COMPETITION 66
For this month's competition we raided KEF's warehouse. Into the swag-bag went one pair of floorstanding Reference 105/3s worth £2395, plus no fewer than four pairs of bookshelf Reference 101/3s, at £549 a pair. So this month's competition will net no fewer than five lucky winners.



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PHILIPS INVENTS

The Digital Compact Cassette

When it comes to sound quality, for Sting "good" just isn't good enough. He demands that his music is reproduced perfectly. That's why he is so impressed with Philips latest invention. DCC.



A digital cassette with the pure sound quality of a compact disc and the convenience of a compact cassette. There's a complete range of equipment, so you can play your DCC anywhere, in the home, in the car or on the street. And don't worry

about your collection of ordinary compact cassettes, the beauty of the DCC system is that it will play them too. DCC is already a big hit with the major record companies with hundreds of titles already available. So don't make a mistake, choose DCC. For details of stockists and further information telephone 081-665 6350.



DCC 600 Player/Recorder



FW 91 DCC System

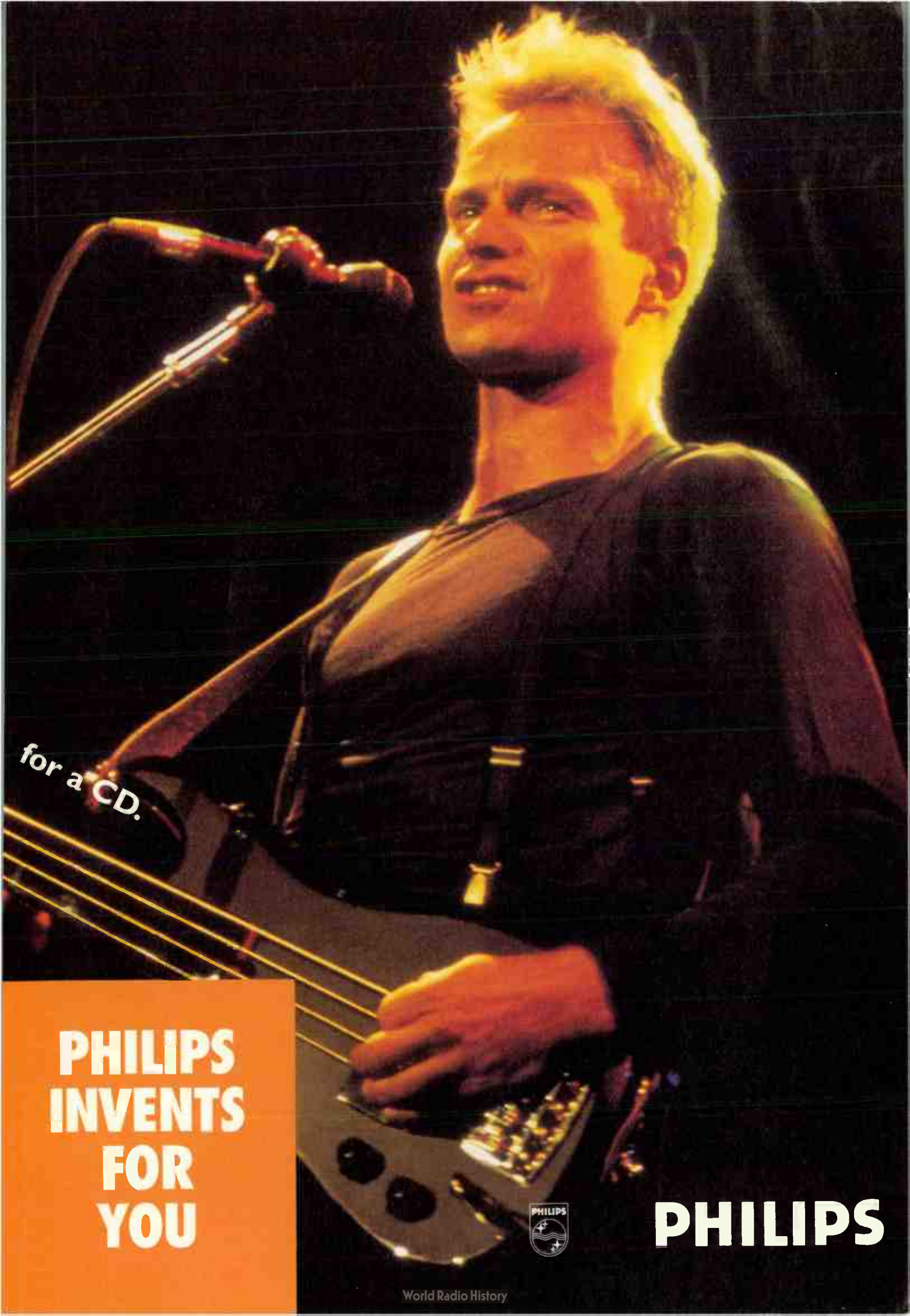


DCC 130 Portable



DCC 811 In-car





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PHILIPS

TANNOY GET ACTIVE IN THE BASS

Tannoy has just launched a fascinating new subwoofer which uses active sensing to provide feedback correction, so ensuring deep and uniquely clean bass. Aware that the boffins at Hi-Fi World have been experimenting with motional feedback subwoofers, to date putting numerous cones into orbit, Tannoy decided to show us how it should be done - we've got one for review in this issue, see p19.

TANNOY
Rosehall Industrial Estate
Coatbridge
Strathclyde ML5 4TF
Tel: 0236-420199

RECORD COMPANIES GET BEHIND MD, SONY SAY.

More than a thousand titles are now offered by Sony for its MiniDisc format. With 440 titles represented in Europe from 50 major record companies, including all the majors except Polygram (guess who owns that label) Sony is pushing the portability of the medium for the youth market. Prices of prerecorded discs remain high, however, averaging £13.49, HMV (Oxford Street) told us. They had information on 206 titles and reported a steady but not large sale from their Central London store.

The new MZ-E2 Walkman player is ultra-compact in size, being significantly smaller than the previous model. Weighing in at 205g (with battery) and measuring 74x18x107mm, the new portable is about the same size as a cassette tape case.

Sony promise longer battery life through new rechargeable Lithium-ion batteries. They give 7.5 hours of continuous play and are included in the player price of £349.99.

Sony is making an assault on all the major potential markets for MD by producing an in-car MD player and a full width hi-fi deck as well, the latter being expected to retail at £799.99.

SONY UK LTD
Sony House,
South Street,
Staines,
Middlesex, TW18 4PF.
Tel: 0784 467000

HMV Oxford Street
Tel: 071-629-1240



FASTER SOUND FROM CHORD COMPANY

With research and development originated by NASA, the latest speaker cable to be marketed by The Chord Company, Flatline, promises to be very high-tech.

It utilises Teflon surrounded oxygen free copper strands in a flat ribbon less than 1mm thick. According to the Chord Company, the signal travels through the Flatline cable faster than in any other cable and, being a 'low loss' cable with apparently impressive technical specifications, it can be used in long runs without compromising sound quality.

Three styles are available: Flatline Gold at £8.50 per metre, Flatline Twin for bi-wiring at £15.50 per metre and for the well-heeled audiophile, a silver stranded version, named Blue Heaven retailing at £58.50 per metre which can also be used as an interconnect.

THE CHORD COMPANY

30a Sarum Business Park,
Portway,
Salisbury,
Wilts, SP4 6EA.
Tel: 0722 331674

SENNHEISER FREEDOM

The 'freedom to walk, talk and listen' is the slogan under which Sennheiser is marketing its new infra-red cordless headphones.

The £149.95 IS 450 system is claimed to give exceptional audio performance, as well as having all the electronics, sensors and batteries built into a lightweight headset.

With the use of powerful output diodes the light transmission is said to flood a 400 square foot room with the IR signal.

Over 5000 installations worldwide use Sennheiser IR technology, for example Rock Circus, the Royal Festival Hall and a majority of West End theatres.

SENNHEISER UK
12 Davies Way,
Knaves Beech
Business Centre,
Loudwater,
High Wycombe,
Bucks, HP10 9QY
Tel: 0628 850811



MORE POWER TO GARRARD

With almost every major turntable manufacturer now

producing special power supplies to improve the performance of vinyl replay, Loricraft Audio has introduced a new supply for the venerable Garrard 301/401.

The PSU II is a low distortion active and isolated power supply retailing for £379 (or £399 with a meter) which improves on Loricraft's original PSU, although this is still in production at £149.

For those

Garrard addicts out there Loricraft produces a lubrication kit for the main spindle bearing and motor at £11.50 and will also supply high quality reprints of the original 301 instruction manual for £12.50.

LORICRAFT AUDIO

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

SOLID RESPONSE

Rock Solid Sounds Inc have released the Centrale. This multi purpose monitor is aimed at Home Cinema and hi-fi system users who require a stylish product that can be mounted in a number of ways.

The design, by Morten Warren, is backed by B&W's

acoustic engineering expertise to produce a cabinet with a low distortion front panel and a multi-radiused two-part construction that gives an enclosure with no parallel surfaces. The Centrale is claimed to have a sensitivity of 89dB and uses a 5 inch long-throw woofer combined with a 1 inch fluid-cooled soft-dome tweeter, all of which are fully magnetically shielded. Solid have made the Centrale available for sale as a single unit for use in Home Theatre surround sound systems. Prices are £149.95 for a single unit and £299.95 for the pair.

ROCK SOLID SOUNDS INC.
B&W LOUDSPEAKERS (UK)
LTD
Marlborough Road,
Churchill Industrial Estate,
Lancing,
West Sussex, BN15 8TR.
Tel: 0903 750750

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NEW ENTRY-LEVEL FROM TEAC

Priced at just £149.95, TEAC's new V-600 cassette deck is styled to match the rest of the range. Featuring a logic controlled, centrally mounted tape transport and a hard permalloy record/playback head, the V-600 also makes use of Dolby HX Pro as well as

B and C type noise reduction.

A comprehensive display has an electronic tape counter and level meters with peak hold. Tape selection is automatic.

TEAC UK LTD
5 Marlin House,
The Croxley Centre,
Watford,
Herts, WD1 8YA
Tel: 0923 819630



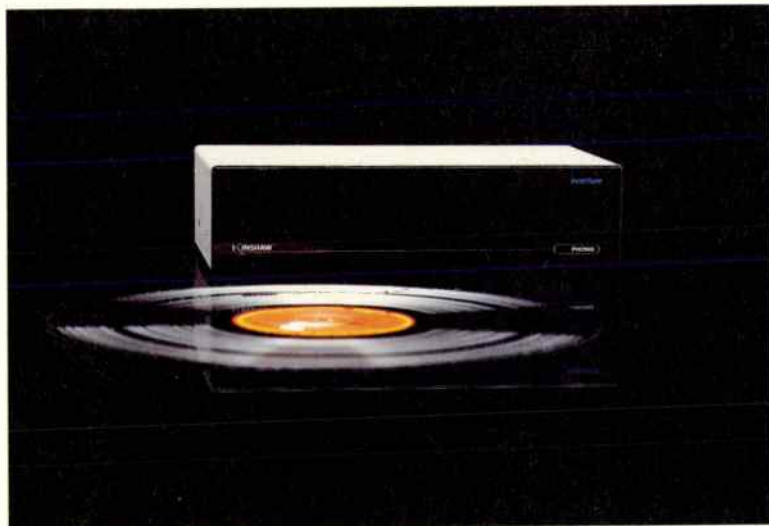
GOLDRING PRODUCE PERFECT SOUND

The Perfect Sound brand, the name under which Goldring market accessories, has produced a high grade interconnect cable. It uses an OFC copper conductor with foam PE insulation coupled to 24 carat gold plated plugs which have an alloy shell for extra shielding.

The interconnect will be sold in 1.2 metre lengths for £24.95.

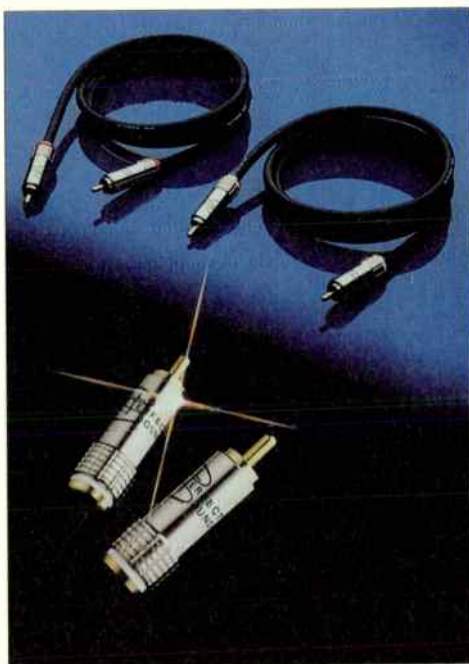
GOLDRING PRODUCTS LTD

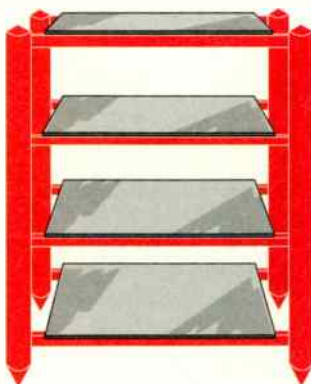
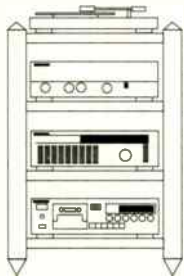
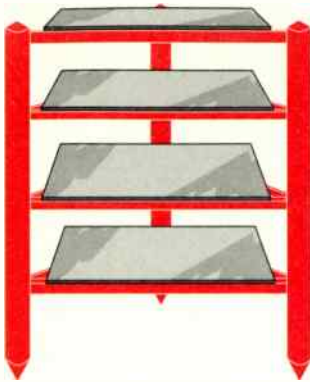
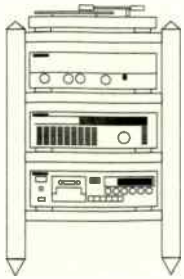
8 Greyfriars Road,
Bury St Edmunds,
Suffolk, IP32 7DX.
Tel: 0284 701101



The Overture integrated amp offers 45watts per channel and accepts inputs at line level only. Kinshaw say it will retail for £435.

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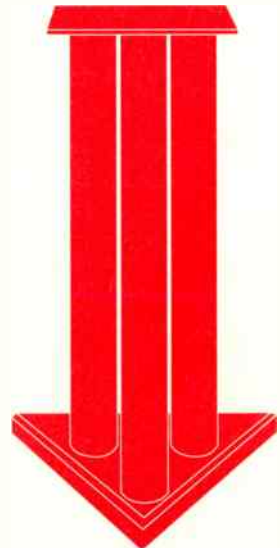
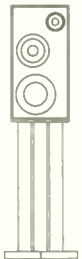
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AUDIO INNOVATIONS FULLY BUILT

Due to demand for the Classic 25 valve amp kit produced by Audio Innovations, they have decided to offer the design as a fully completed product.

The line level integrated amp comes in the 'enclosed valve' casework that is common to Audio Innovations' pre-amps and features four line inputs and a tape loop.

Power output is rated at 25 watts per channel in class A and is the Classic 25 is available for £899.

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Granby Industrial Estate Weymouth,
Dorset, DT4 9TH.
Tel: 0305 761017



SILVERADO, HOME ON THE RANGE

Selling direct to the customer and avoiding dealer mark-ups is how Silverado hope to offer high-end speaker performance at down-to-earth prices.



This new manufacturer is producing two different loudspeaker models aimed at either end of the market. The Raider comes as standard in a gorgeous piano black lacquer finish for £349.95. This small two-way design uses Morel drive units and high quality components, each speaker weighing 8 kgs.

The £1500 Silverado model is aimed at such high-end 'super' speakers as the Sonus Faber Extremas and Wilson WATTS. Using Dynaudio drive units and audiophile components in the crossover, the speaker features an overkill enclosure weighing in at 60 kilos per pair and is presented in a glorious hand-painted marble finish.

SILVERADO

128 Clitherow Avenue,
Hanwell,
London, W7 2BX
Tel: 081 567 0260

PLINTH PROBLEM

Dominic thought it looked better without one, KEF prefer it with one - the Q50 plinth, that is. So, after our plinth-less picture of the Q50 loudspeaker last month, here's the officially recognised version complete with plinth.

KEF AUDIO (UK) LIMITED

Eccleston Road,
Tovil Maidstone,
Kent, ME15 6QP.
Tel: 0622 672261





A Valve Testament

From Tube Technology come the Prophet pre-amplifier and Genesis power amplifier, reviewed by seer and sage Noel Keywood.



The fascias are solid alloy plates of 5mm thick brushed aluminium, with a black anodised finish. Most of the steelwork is deeply chromed - and so are the custom-machined control knobs, with their neat brass-dimple insert. They have a reassuringly stiff and solid feel to them. Tube Technology remain little known in Britain, yet they build and finish to a standard approaching that of SME. The Prophet preamplifier and Genesis power amplifier reviewed here glistened and glinted in our listening room and their shapes were intriguing: they have an alluring presence in the home.

In a world of black boxes, valve amplifiers like this are scene stealers, appreciated more in the East than

anywhere. That's why Brits who, by and large think that all hi-fi is made by Sony, don't often get to see Tube Technology. "I exhibited at Live 93", founder Zia told us, "and most people couldn't work out what they were. They'd never seen a valve before! So I'm happy selling nearly all my products in the East, but they demand really high standards of finish."

The new Genesis monoblock power amplifiers are relatively compact, but they turn out no less than 100watts apiece our tests showed, easily enough to make insensitive loudspeakers go very loud. And, of course, compete with solid-state amplifiers. Each unit is built onto a sturdy mild steel chassis, heavily chromed for a deep, lustrous shine and fitted with a machined alloy face plate. Etched brass

Tube Technology badges and brass cap nuts add to the visual interest and provide an aura of heavy engineering reminiscent of Victorian times. Then, metals were cast, hammered and hewn so that form not only reflected function, but emphasised it too. That's how it is with the Genesis.

Each Genesis power amplifier has a mains transformer and output transformer at rear, a brace of four Golden Aero EL34S output valves that stand tall and glow brightly, plus two 12AT7 (ECC81) preamplifier valves up front. With an input sensitivity of 800mV they must be used in conjunction with an active preamplifier capable of providing gain.

The Prophet preamplifier comes in two-box form. The lower unit possesses a solid state power supply. Above it sits the valve preamplifier, with inputs for CD, tuner, tape, aux and phono (moving magnet only). There is a balance control, but no tape monitor switch, nor a headphone outlet.

One of a few criticisms I have about this amplifier combination concerns its switch-on antics. In a curiously inconsistent way, Tube Tech. fit the power amps with switch-on delay, but not the preamp, which needs it. To prevent heart-stopping thumps through the loudspeakers, the preamplifier must be switched on and off when the power amps are off, since it generates sizeable and prolonged thumps. It's inconvenient to be forced to remember this; it means the uninitiated cannot be allowed near and, of course, one day you'll forget. . .

In light of this it is surprising to find that just such a delay circuit has been fitted to the power amps to prolong valve life, switching the HT in - to the accompaniment of a resonant thrum from the mains transformer - after the heaters have lit. This can prolong life by 8-10% or so, not an enormous amount and generally considered important only with expensive output valves, like 300Bs. However, our Genesis amps came fitted with Golden Aero EL34S valves - and they are quite expensive. Tube Technology advise that the amplifier is best switched off when not in use, to preserve valve life.

The mains transformers gave just a very slight mechanical buzz, inaudible from more than a foot or two away; electrical hum from the speakers was negligible.

Like most powerful valve amplifiers, this one uses 'fixed-bias'. In consequence, the output valves must be balanced using some form of metering system when they are replaced. Tube Technology can supply a meter for this purpose and four potentiometers, one per valve, are accessed with an insulated screwdriver (supplied) through a side vent with a neat filigree screen over it. Potential owners should be aware of this requirement and take it seriously, because fixed-bias amps will go off song if the output stage goes out of balance, for whatever reason.

Art Audio

MAESTRO

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NK Hi-Fi World, June '91

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Nottingham, NG14 6LU
England
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LIVING VOICE LOUDSPEAKER SYSTEMS

Audio signals can be of infinite complexity.

Their content is prone to corruption during any part of the processes of recording and reproduction.

Given that it is possible to store and recover this information with some degree of accuracy, (a debatable but necessary starting point) audio engineering's prime concerns are with the electronic amplification of that information and its conversion back to mechanical energy in the form of sound.

Both the amplification and the transducer used for the conversion will inevitably distort the signal. The art of good audio design lies in minimising the amount of distortion that occurs.

In each stage of amplification some distortion will be introduced, although most arises as a by-product of the output device's attempts to control an uncooperative loudspeaker. The ease with which the loudspeaker can be controlled varies depending on both frequency and level. It therefore makes good sense to employ the most load tolerant output devices possible in the amplifier whilst keeping the number of gain stages of an absolute minimum.

Simple low powered amplifiers that fulfil these criteria have become more widely available over the past few years. Until now, the full benefits of this simplicity have not been readily apparent as all commercially available loudspeakers are too difficult to control accurately.

Loudspeaker drive units operate by passing a varying signal through a coil which is suspended in a magnetic field. The coil is usually coupled to a diaphragm and moves backwards and forwards following fluctuations in the input signal. As it is difficult to arrange a magnetic field that remains constant over a large area, the accuracy with which the coil and diaphragm follow the signal deteriorates as the excursions become larger.

If a loudspeaker drive unit can be constructed whereby the coil and diaphragm assembly can



move a great deal of air easily for a very small excursion then it will not be necessary to use as much power to generate a required amount of sound. A technique that achieves this more effectively than any other is "Horn Loading" and involves coupling the diaphragm to the air by using a flared horn. By arranging that the horn opens out at an optimally calculated rate, very effective coupling can be achieved with minimum distortion.

The loudspeaker can then be said to be an efficient transducer and will be easier for our idealised simple amplifier to control.

The AIR PARTNER & TONE SCOUT Loudspeakers use the principle of full range horn loading to optimise their efficiency. Both are 3-way systems with crossover points at 500 Hz and 10 KHz.

LIVING VOICE has worked closely with SECOMAKVITAVOX and other EC based manufacturers on the development of proprietary

Bass and Midrange drive units.

The Bass drivers have straight-sided, undoped, paper cones mounted in sturdy cast baskets attached to a huge magnet assembly. The decay of the Bass unit's response is very smooth and does not present significant problems in the octave above crossover.

The Bass horn is constructed entirely from High Density Birch Ply and is veneered using only "Crown-Cut" veneers.

The Mid-range units are pressure drivers featuring a rigid aluminium dome driven by a 75mm diameter coil operating in an intense magnetic field. The dome and coil former are of one piece of 50 micron thick, chemically stiffened aluminium. With the coil wound directly onto the dome there is direct drive - no intervening adhesive joint - and damping of eddy currents. The magnetic field is powered by a heavy ring magnet of Titanium, Nickel and Cobalt alloy.

Once again, the high frequency performance of the driver must decay smoothly and this is achieved by a phase corrector in the centre pole of the magnetic circuit. A complex arrangement of precision machined, tapered plugs form three concentric air channels angled to joint each other in the heart of the unit.

These drivers are directly coupled to a genuine, multi-cellular high frequency horn formed as a single piece aluminium casting. The assembly is encased in a matching, veneered cabinet.

The extreme treble response of both designs are handled by smaller horn loaded pressure drivers.

The astonishing efficiency of both the AIR PARTNER & THE TONE SCOUT allows them to reproduce all types of music with an appropriate sense of scale and ease. When used with suitable ancillary equipment they offer a level of resolution and realism that can truly be described as adequate.

SOUND QUALITY

We tend to think of the Mullard EL34 output pentode as having a warm, cuddly sound, of a sort that many valve-heads yearn for. It lacks stridency, giving a full, rounded tone.

That's a generalisation. In the Genesis the EL34, in high-anode-dissipation S form, provides a bright, clear sound possessed of a balance much more like that of a solid state amplifier. There's a sheen in the treble, one that highlights coarseness in recordings, whilst at the same time delivering strong, yet sweet highs. The Prophet and Genesis in combination provide the sort of deep insight into music and clearly defined image forms that valve amplifiers are valued for, especially across the mid-range of course, where vocalists like Angelique Kidjo were conjured up with vivid presence. She was a little further back on the stage and a mite less fuller in body than with some designs, I fancy, but full of voice and quite obviously exercising a superb vocal range.

Tube Techs do as a breed tend to offer a tighter rendition of music than is common from glowing bottles. It was in this amplifier's bass tightness, depth and speed that it pulled ahead of so many of its thermionic rivals. Walking bass lines in particular came across beautifully, their progression and intent were so clearly discernible. The ever difficult 'Break Every Rule', by Tina Turner, highlighted this strength of the Genesis, one that will be appreciated by anyone used to the low frequency power and control of a good solid state amplifier. Those massive output transformers help keep deep bass tight and clean.

There was a little less rosin on violin strings perhaps, and a little less stage depth with orchestras than some valve amps would have and here those that yearn, or perhaps expect to revel in the silky glow of shimmering strings might wish to ask some questions. The Tube Techs lie diametrically opposed to the 'warm and cuddly' sound - they're tight and fast, taking no prisoners. I would say they place more emphasis on pace and power than on variation of tonal textures, yet at the same time, good valve amplifiers always manage to excel across their midranges in this area - always a plus point easy to discern on demonstration.

I ran a Goldring 1042 cartridge through the disc stage and noticed that the Prophet made it sound brighter than usual, giving LPs a hard-etched clarity, with strong detail rendition and superbly tight, fast bass. There was no doubt that the 1042, which has a warm balance (but at the same time has superbly detailed treble due to its stylus), sounded a little brighter and more forward than usual, due I believe to the high frequency lift in the disc stage (see Measured Performance). Quite what I heard depended upon the record being played. For example, Tracey Chapman's Bridges,

having an innately warm balance, sounded very clear; Big Youth's A Luta Continua came over as a little harsh at the top end (I played Reggae to put strong bass through the amplifier - it held up well). The Prophet is best suited to warm-sounding cartridges and Goldring moving magnet types are amongst the most suitable.

Explosive bass dynamics, a midrange clear as a bell and shimmering treble mark out this Tube Technology combination. From valves there's also that wonderful lack of graininess and clear reproduction of vocalists to revel in.

Beautifully built and finished, the Prophet and Genesis form a captivating combination that will attract attention in any home ●

Genesis Monoblocks £2599
Prophet £1310
Tube Technology,
Hatch Farm,
Chertsey Road,
Addlestone,
Surrey, KT15 3EH
Tel: 0932 850361

MEASURED PERFORMANCE

The Genesis power amplifier is a fixed-bias design. This technique is used to give maximum power output and it allows the Genesis to turn out no less than 100watts - a very high figure for four EL34 output valves in parallel-push-pull. Yet the Genesis runs fairly cool and has a relatively compact mains transformer, helped by running the EL34s at low standing current. This means it is a Class AB design run substantially in Class B. The transformer is configured for 8Ω loudspeakers only; it has no 4/16Ω taps. This power amplifier will run even insensitive loudspeakers up to high volume levels, but it will not be at its best with low impedance speakers.

Tube Technology achieve a very wide bandwidth of 4Hz-116kHz from the CD input of the Prophet preamp through to output of the power amp. Noise was low at -92dB, with little hum.

The disc stage (moving magnet cartridges only) similarly had a wide bandwidth of 8Hz-35kHz, treble output rising slowly up to 60kHz. This could well give a bright sound. There was no warp filter either, something I feel is especially unwise with valve amps because 5Hz warp signals saturate output transformers at around 5watts of output. Sure enough, the Genesis went into premature output overload when fed a 5Hz signal. This is less of a problem with medium-compliance moving coil cartridges than high compliance moving magnets, yet the Prophet only has an MM input. I'd suggest it is used with MCs only, with an intervening step-up transformer or preamp, or that Tube Technology fit the Prophet with a high rate (-12dB/octave) warp filter at 50Hz, as do Linn and Mission with their disc stages, for example.

Distortion levels were set by the power amp, not the preamp, I found. At low signal levels of a few watts, innocuous sounding second harmonic distortion of around 0.05% dominates. As power increases above 5watts or so, third harmonic dominates, rising from 0.2% up to 0.6% in the midband. Run at high output levels, I would expect this to give the Genesis a bright, clear sound, but one that may be a trifle hard etched. At high

frequencies, distortion reached 1% at full output (-1dB), but in this case it comprised second and third harmonic in equal part.

Bearing in mind that the EL34 is not an especially linear valve at high outputs, these figures are low, suggesting good basic design and high quality transformers.

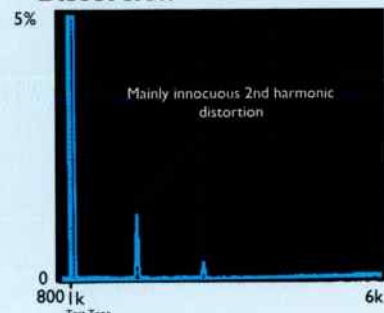
Switch-on pulses from the Prophet preamp measured 200mV, and at switch-off 400mV - enough to drive sensitive power amps to full output. As Tube Technology warn in their handbook, the Prophet must in consequence be turned on well before the power amplifier.

The Prophet and Genesis in combination offer high power and wide bandwidth. They measure well. Care is needed to avoid possible problems from LP warps and switch-on thumps, however. **NK**

TEST RESULTS

Power	100watts
CD/tuner/aux.	
Frequency response	4Hz-116kHz
Separation	72dB
Noise	-92dB
Distortion	0.05%
Sensitivity	190mV
dc offset	none
Disc (MM)	
Frequency response	8Hz-35kHz
Separation	68dB
Noise	-67dB
Distortion	0.05%
Sensitivity	1.8mV
Overload	150mV

Distortion



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TAKING THE BOOM OUT OF THE BOX

Tannoy have successfully designed an 'electronic' subwoofer, one that uses motional feedback to give super bass quality. Dominic Baker - master of the lows - takes a listen.

Subwoofers have always been regarded by audiophiles as crude boom boxes and not real hi-fi - with justification. To get bass from a small cabinet they are made to boom and, aware of this I suspect, their manufacturers don't take them seriously. You want bass from a small box? We've got it - boom...boom...boom.

Richard Lord at REL changed all this a couple of years back by developing a

small range of high quality, powered subwoofers that didn't require an active crossover and second power amplifier, as do the complex, up-market Celestion and Gradient subwoofers, for example. The RELs were fitted with rugged and powerful drive units capable of reproducing realistic levels of bass down to 20Hz. They weren't room and position dependent like the dipole Celestion and Gradient and, with some effort, could be tuned to work with just

about any loudspeaker. But until the more affordable £495 Strata came along recently, they were still out of the financial reach of many music lovers.

Now Tannoy have joined the fray with something different and a bit revolutionary, if not totally unique. Hoping to leap in at the top of the league in terms of bass quality, they have employed motional feedback. In simple diagrammatic terms, this is how it works, and why it's so special.

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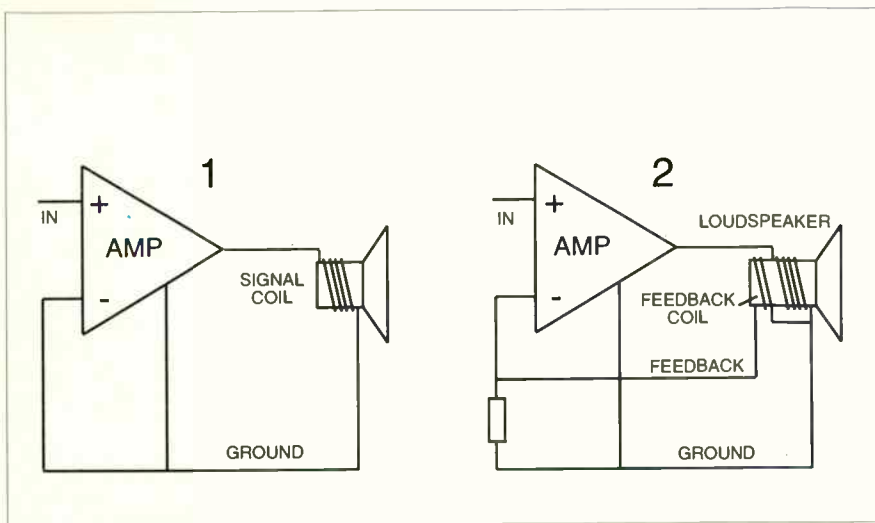
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1. The in-built power amplifier drives the 12" bass unit with bass frequencies, as in a normal system. But the subwoofer doesn't behave linearly, and what you hear is the response of the bass unit in a cabinet interacting with the room.

2. The Tannoy system uses a second voice coil to provide a signal that describes what the drive unit is actually doing in response to the flat input signal. This signal is inverted and combined at the input of the subwoofer amplifier to correct for the distortion and give a flat bass response.

So, distortion is greatly reduced. But in addition, because the motional feedback corrects any disparity between what the power amplifier sends to the subwoofer, and what the subwoofer actually does, deep, powerful bass can be achieved from a relatively compact enclosure. In theory, a motional feedback system should produce clean, dynamic, fast and natural bass of a quality that conventional systems can't match.

Both Noel and I have experimented with motional feedback and the quality of bass it can provide is indeed fantastic, we found. Unfortunately, in both cases the system lasted around 30 seconds before a transient upset it and the drive unit destroyed itself. The problem we faced was that without a position transducer, the system had no reference position and was potentially unstable. The correction signal would drive the unit to its end stops with a loud crack, normally followed by smoke from the burnt out voice coil. We haven't stopped trying though: 30 seconds was enough to convince us that it's worth the effort.

But Tannoy have succeeded and the 625ALF is the result. And as the Tannoy literature says, "Dynamic, articulate and realistic deep bass reproduced in a natural way will set your foot tapping and bring a smile to your face as music is reproduced with a sense of limitless dynamic range". This sales talk certainly brought a smile to my face.

But all the same, there are a few things that Tannoy could have learnt from REL. Although complex, REL's two controls for accurately setting the upper limit of bass response enables their subwoofers to be accurately and smoothly integrated with just about any pair of stereo loudspeakers. Tannoy have chosen to fix their upper limit at 85Hz.

So unless your main loudspeakers roll off at exactly this frequency (unlikely), the result will either be a peak where they overlap, or a dip where they fail to meet. Noting that there is also an enhanced mode for home cinema use, I suspect that 625ALF has been designed more for bass reinforcement in such a system, than for being subtly integrated into a hi-fi system.



There is no adjustment for upper bass roll-off.

I wasn't about to give up though, the promise of superb bass driving me to find a way to integrate it to a pair of quality 'speakers. Here's where I'm lucky to have a large room. By pulling a pair of ProAc Studio 100s out far enough into free space I could adjust their bass to suit 'ALF quite well. Obviously, this isn't going to be all that convenient for most people, so if the quality of bass that the 'ALF produces is persuasive enough, pick a pair of small bookshelf speakers that won't have to be pulled quite as far into the room as the ProAc's had to be.

Another thing too. If you use a sensitive valve amplifier with efficient loudspeakers, as more and more people

are, 625ALF will not go loud enough to keep up with them. A little more gain would be useful for such situations.

So, after the palaver of swapping from valve amplifier to transistor, replacing the Quads with ProAc's and pulling them out into the room far enough to limit their bass so that the subwoofer integrated satisfactorily, I was ready to listen.

You're probably asking the same question as me at the time: was it worth the effort? Well, the quality is certainly there. 'ALF has a subjective speed and cleanliness in the bass that the RELs can't quite match. The new Stadium, which we have in for review at the moment, comes close, but is no real match for a motional feedback bass system.

It's not so much on fast punch and dynamic bass that you notice it though, more on those long thunderous, reverberant bass notes than can send lesser subs out of control. 625ALF stays firm and controlled to the end, with real room filling power to compliment it. In fact, I couldn't find a CD that really caused 'ALF any problems, even The Beloved's over emphasised electronic bass couldn't upset the tuneful and articulate manner with which it played each note.

A rapidly plucked bass guitar was no match for 'ALF's speed either; it managed to squeeze in each note with ease, and without slurring from one string to the next.

There's no doubt motional feedback is certainly one way forward for superior bass performance - and the best way so far, from what I've heard. It has the clarity and effortless dynamics of a dipole, without the complex room positioning problems.

As part of a hi-fi system, 625ALF isn't quite there yet though. Even after my efforts trying to integrate it as best I could with the ProAc's, there was still an obvious overlap. 625ALF looks to have been developed more for AV than hi-fi. Hopefully, Tannoy will produce a dedicated hi-fi version, one with adjustable roll-off and a little more gain in the very near future. As it stands though, I feel they've ignored a very important market, one where REL reign supreme. Let's face it, AV is

not so much about ultimate fidelity so much as the simple reproduction of effects. To produce a super low colouration, low distortion and neutral sounding subwoofer and then aim it at this market is a little contradictory I feel. So near, yet ●●●

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LOOKING TO REIGN

Could the new Monarchy CD convertor reign supreme? Dominic Baker assess the credentials of this new U.S. product.

Monarchy Audio have been very busy since we last took a look at their Model 22 CD convertor. They now not only have a transport, but a Digital Interface Processor that improves the signal on its way to the DAC. There's even a new convertor, the Model 33, complete with a Class A line pre-amp with inputs for two additional line level sources.

The new DT-40A transport is based on a laserdisc player, Monarchy claiming it is more stable than a conventional CD player. It is a little slow to use, since it looks for laser discs and CD video discs before looking for a music CD, the motor whirring busily whilst it tries each in turn. But once it has identified the disc, operation is fast and smooth.

It's strange how after getting used to

CD you find even a few seconds of delay irritating, the ceremony of playing an LP seeming so far away. You do get used to such a delay though, and it does give just enough time to get back to the sofa and get comfortable. Only Play, Pause, Stop, Track Skip and Search are provided on the thick alloy fascia, giving the DT-40A a purposeful audiophile look. It has both professional balanced AES/EBU digital outputs as well as the standard RCA electrical output, but no optical.

The transport is linked via the DIP (Digital Interface Processor) to the new Model 33 CD convertor. The DIP can be used between any transport and convertor and does a number of things to clean up and improve the digital signal. It re-clocks the signal from the transport and uses a special phase locked loop to

help suppress jitter. In addition, a custom transformer is used to isolate the DAC from the transport, reducing interference.

Last in the chain is the Model 33 convertor. At £1495 the Model 33 certainly isn't a budget convertor, but when you consider that it has the facility to act as a pre-amplifier with two additional auxiliary inputs available, things take on a different perspective. Monarchy use Burr Brown's PCM63P chipset and high quality OP275 op-amps to drive the convertor's line output. Analogue Devices' AD847s are used for the Class A pre-amp stage which makes a pleasant change from the common NE5534s, and component quality is generally high throughout.

I've been using the Monarchy

transport and DIP processor for several months now and they've driven a variety of different convertors. I must say that once you get over their little quirks, they form a formidable set-up. Whatever convertor is used, there's always been a powerful, dynamic and firm presentation of music. These units also sound remarkably smooth, having a similar lack of roughness in the upper midband to that of sync-locked convertors. I feel that a lot of this is attributable to the DIP, rather than the transport. In my experience there's not so much to choose between good transports. Sync-locking and digital signal cleaners seem to have a greater influence on the final sound.

Removing the DIP from the system robbed the sound of some of the fine detail and finesse it had, whereas, replacing the transport with a TEAC P500 made little difference. The effect of the DIP is not night and day, but it does give the sound a more cohesive, and expansive presentation. It puts things in order.

The Model 33 convertor, on the end of the DT-40A transport and DIP, sounded effortless. Bass was deep, full and firm, the midband had a sweetness and lack of grain that is uncommon even in convertors of this price and the treble was bright and articulate. It lost very little of this character through the built-in pre-amp, making it able to drive a power amp direct without any need for a

separate pre-amp. In fact, unless you were to spend upwards of £500 on a pre-amp, I'd say it'd be hard to better. A little richness is added and a sparkle in the treble, but these are aurally pleasant and certainly didn't detract from my enjoyment.

Inspirational Carpets' new album, complete with Hammond organ which is becoming increasingly popular with modern bands, had a large soundstage with reasonable depth to it - an area that CD players are traditionally weak in. There was plenty of atmosphere surrounding the performers as well, which helps to produce a more natural and realistic performance.

The crisp and open nature of the Monarchy CD system also suited Grant Lee Buffalo's acoustic country style, the briskly strummed guitar pushing forwards in the soundstage alongside vocals. The fluidity of the music was never strangled by the Monarchy, just allowed to breathe and open out to reveal the recording. It's this unconstrained delivery that made it enjoyable hour after hour; I never doubted that what it provided is what the recording engineer intended.

As I mentioned earlier, I've been using this CD player for several months now and it hasn't let me down. There is no area that I could strongly criticise. If I was being really picky, I'd suggest that just a little more body could be given to central images, and a little more depth to the soundstage, but this is a criticism that

could be levelled at almost all CD players regardless of price.

Of the three components, the DIP and the Model 33 convertor stand out as being best value. The pre-amp in the convertor is good enough to make it recommendable in its own right, and it's something of a bonus on top of an already very good DAC. The DIP should be auditioned by anyone already using a separate transport and convertor, especially if it doesn't have the facility to be sync-locked.

As a whole, this Monarchy set-up isn't cheap, but if you're looking for a solid, dependable sound, free from the slight coarseness in the midband that many convertors suffer, but with a big powerful presentation, it's definitely worth an audition. And you can always pass off the transport as a laserdisc player for the kids to justify some of the outlay ●

DT-40A transport £1595
Model 33 DAC £1495
DIP Digital Interface Processor £245

Wollaton Audio,
134 Parkside,
Wollaton,
Nottingham.
NG8 2NP
Tel: 0602 284147

MEASURED PERFORMANCE

The Monarchy Model 33 uses Burr Brown PCM63P convertor chips to good effect. Distortion was reasonably low at all levels. At -30dB, a level that represents a normal music programme, I measured 0.025% and, as you can see from the oscillogram, although the distortion harmonics are wide spread they are low in level. I would, however, expect to hear just a slight brightness due to the dominant odd-order 3rd and 5th harmonics.

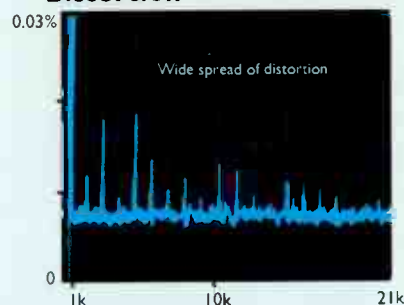
The frequency response revealed a slight problem, possibly caused by a mis-terminated filter. The sharp peak just before the roll-off point is not so much of a problem in itself, being so high up the frequency response, but the steady lift up to the peak will add a brightness or sparkle to the treble. The peak was different on both channels as well, being 0.3dB up on the left and 0.7dB on the right, suggesting component tolerance to be the cause.

Elsewhere, the Model 33 measured well, with good channel separation and wide dynamic range. The output was extremely healthy too, measuring a high 3.27V, so in a demonstration the Model 33 will be considerably louder than most of its competitors. **DB**

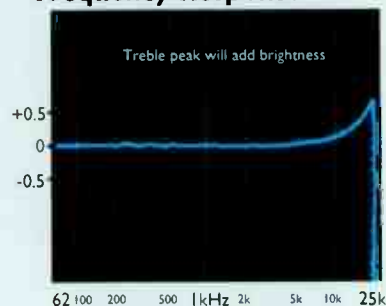
TEST RESULTS

Frequency response	4Hz-21.5kHz	
Distortion %		
-6dB	0.005	0.005
-30dB	0.028	0.022
-60dB	0.56	0.45
-90dB	29.2	29.1
-90dB dithered	5.2	5.6
Separation dB	left	right
1kHz	98	98
20kHz	71	72
Noise	-99dB	
with emphasis	-101dB	
Dynamic range	108dB	
Output	3.27V	

Distortion



Frequency Response





after sales service in a local market.

As the Oriental tide receded - and it has done significantly in hi-fi separates - some canny UK personnel realised that it was possible to improve the sound of many Japanese amplifiers, their weak area, whilst retaining all their strengths. Models like the Denon PMA-350 and Pioneer A400 were born. More importantly, however, they also thrived, helping to restore the reputation of Pioneer, for example, as an active player in the field.

But the fight isn't over. Arcam and Mission, to name but two British manufacturers, continue to do well and won't let the matter drop. Then there are relatively recent entrants like Aura, with the funds and expertise of B&W behind them, who have also gathered a reputation for producing an amplifier of good sound quality. So the competition in this field is tough. No one is prepared to give up too quickly.

Prospective buyers will find themselves confronted by variety. Denon offer tone controls on a big, black, chunky chassis, whilst Aura discard them in favour of an elegantly slim chromed case. Everyone offers an LP input, except Rotel, and there is power in abundance. So much of it in fact, with no less than 150watts peak

available from the NAD for example, that these amplifiers will all go plenty loud enough in the home - especially now that loudspeakers are getting increasingly sensitive. An output of 50watts will fill any room, except when insensitive loudspeakers (84dB SPL/watt) are to be run loud, in a large room. Then 80watts or more will be necessary.

Otherwise, choice can come down to facilities versus sound quality. It's unwise to place too much reliance on the former, since most tone controls are blunt instruments rarely able to apply the subtle changes usually needed to trim a system's subjective balance.

There's little else to consider. Balance controls can be useful to compensate for loudspeaker positioning and pickup cartridge imbalance, as well as listening position of course. Headphone outputs can also be useful. Otherwise, the best advice is to try and get some dealer demonstrations to see what you think of the differences we highlight, preferably with an understanding that if you don't like one amp you may be able to

Competitive Spirit

Competition between manufacturers has produced some fine budget amplifiers, as Robert Wilson and Noel keyword discover.

Fierce competition has brought some fine-sounding amplifiers to the marketplace. Once upon a time, Japanese manufacturers almost had it in the bag, offering consistently reliable and competitively priced products. Then UK

specialists like Mission and Arcam started to fight back, using modern production methods and tighter quality control techniques to meet the Japanese on reliability and consistency, whilst improving upon them in sound quality and



Cosmetically, this amp stood out from the rest, largely due to the optional bright chrome finish, but also because of its slim profile.

Switchgear on the Aura was elegant in its minimalism, with just four controls present on the front of the amp. Two solid black knobs control both volume and source selection, a small button placed between them switching in the tape circuit. The VA-50 has four line inputs and a moving magnet phono input for those of us still addicted to vinyl. A jack socket is provided for headphones, placed on the left side of the amp next to the on/off switch. Power-on is indicated by a bright green LED.

The rear of the Aura is as neatly laid out as the front, being dominated by the four large, centrally positioned, speaker outputs which accept 4mm banana plugs. Power comes to the Aura via a standard 3pin IEC mains 'kettle plug' socket.

Gold plating has been provided on the inputs for phono and CD, but other inputs of lesser importance must make do with standard RCAs.

SOUND QUALITY

This amp was excellent. From the first few bars of 'Roll With It' I knew that we were going to get on well. There was so much life to its performance, as well as a fullness that made the Aura stand out from the other models on test.

I found the VA-50's excellent bass quality made listening to rock a very satisfying experience; it has just the right amount of strength, weight and warmth, producing a cohesive portrayal of a rhythm section. Kick drum really did kick, and electric bass seemed to go down forever; this VA-50 had more apparent downward extension than any other model on test, it seemed.

The Aura knows how to drive a song. It had a mid-band with a natural texture and presence, one that captivated me. Allied to this was exact image placement across the plane of the

speakers, yet with tangible 3D imagery that injected plenty of space and body to the structure.

The ability of the mid-band to convey subtle nuances and inflections of tone and delivery made listening to vocalists such a pleasure. This was highlighted when I listened to Sade. The emotion and dynamic shading in her voice came over so naturally that I felt instinctively it was right. The harmonics were well filled out and the sound just seemed to possess more 'flesh and blood' compared to the others.

Treble had lots of energy and detail, never becoming obvious or intrusive, the decay of crash-cymbals on the Stranglers disc was quite stunning, hi-hat was razor sharp, and the slap-echo used on the rim shots was excellent.

Listening to some Pink Floyd on vinyl helped reinforce my belief in this amp's natural sounding midrange. However, the treble became slightly recessed and the bass a little dynamically compressed. The MM stage also produced a lot of cone movement due to record warps.

SUMMARY

Subjectively the Aura is a very complete package, appealing to the musical as well as audiophile senses.

Its bottom end is powerful and controlled, giving music solid rhythmic drive, without any resort to euphonic enhancement. The mid-band is expressive and detailed with good recovery of ambient acoustic information, while the top is spacious and lively with almost as much sparkle as that of the Pioneer A-300X ●

Aura VA-50
Aura Designs Ltd.,
Marlborough Road,
Curchill Ind. Est.,
Lancing,
West Sussex.
BN 15 8TR
Tel: 0903 750750

£349.95

MEASURED PERFORMANCE

The VA-50 uses a MOSFET output stage. Although robust (and expensive), MOSFETs do suffer distortion unless a lot of feedback is used, but this in itself can make an amplifier sound 'flat'. Aura have effected some curious balances to cope with this. The VA-50 has a high 0.24% distortion at 10kHz, with an extended harmonic structure - not a good sign. So to add apparent warmth and smoothness, treble output has been rolled off very early, reaching just 18.5kHz (-1dB) at all volume control positions. I've never measured such a limited bandwidth in a hi-fi amp, -0.5dB at 20kHz being the usual minimum. The impact upon sound quality can only be judged subjectively.

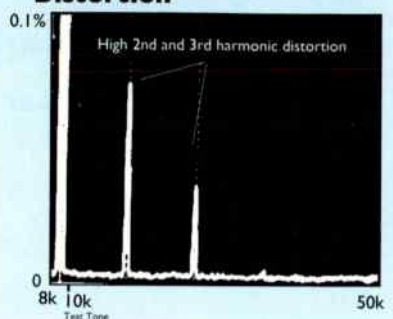
Power measures a healthy 60watts into 8ohms and 80 into 4ohms. The designer likes an extended subsonic response: CD reaches down to 4Hz, LP down to 11Hz. Warps are likely to cause cone flap on reflex speakers. Otherwise, the disc stage was well engineered, and so was CD/tuner/tape.

This is an unusual amplifier. **NK**

Power 60watts

	CD/TUNER/TAPE	DISC
Frequency response	4Hz-18kHz	11Hz-21kHz
Separation	70dB	66dB
Noise	-97dB	-79dB
Distortion	0.01%	0.01
Sensitivity	220mV	3.2mV
Overload		100mV
dc offset	8/4mV	

Distortion





MEASURED PERFORMANCE

Frequency response through the 'flat' CD/tuner/aux inputs was wide at 4Hz-70kHz, with plenty of subsonic extension for CD, which with some discs does help show up some surprisingly low information. High sensitivity (170mV) makes it compatible with all sources, no matter how low their output.

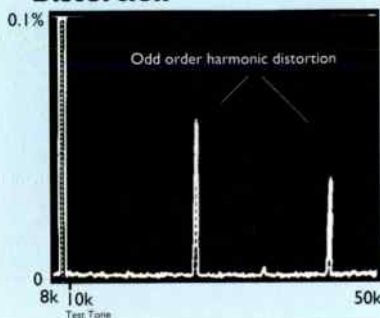
Distortion was low across the mid-band, measuring 0.007%. It rose a little toward high frequencies, hitting 0.07% comprising odd order harmonics. I start to get worried when levels exceed 0.2% at 10kHz.

The disc stage has a warp filter at 50Hz, bass lower than this being attenuated. Equalisation was, otherwise, accurate right across the audio band, giving a flat frequency response, but I would expect some obvious lack of bass extension on LP. Sensitivity was high at 2mV and overload satisfactory at 105mV. Input capacitance measured around 180pF. The Alpha 5 measured well in all respects. **NK**

Power 55watts

	CD/TUNER/TAPE	DISC
Frequency response	4Hz-70kHz	50Hz-60kHz
Separation	72dB	48dB
Noise	-94dB	-74dB
Distortion	0.007%	0.008%
Sensitivity	70mV	2mV
Overload		105mV
dc offset	0/1mV	

Distortion



The first thing that is noticeable about the Alpha is the fact that it's right-hand drive in true British fashion, meaning that Arcam have chosen to place the power switch on the right of the fascia, one in the eye for convention.

As with all ergonomically correct amps the most prominent knob on the front is the volume control, which along with others on the Alpha has a small dimple on the surface to indicate the position.

Selection of the five inputs (four line, one MM phono) is by a rotary switch selector, whereas tape is selected by a button, although line out is only available for one machine. Another button is used to select the source-direct route, by-passing bass, treble and channel balance controls. The Alpha also has the ability to accept two loudspeaker systems as well as having an outlet for those of us who like to monitor on headphones.

Unfortunately, the Arcam budget didn't extend to the inclusion of a little gold plating for the RCAs, which would mean more to audiophiles than another set of speaker terminals (unless they were for bi-wiring).

SOUND QUALITY

Arcam appear to have taken the same approach to sound quality that Denon advocate, namely lots of life and dynamics.

The Alpha has a clear, concise and smooth presentation which projects the central image forward to a certain degree, making listening to vocals and prominent instrumentation very easy and enjoyable.

With the Stranglers' Dreamtime album I became aware of the vivacious presentation of the guitar solo during 'Always the Sun' which harmonised well with the tightly knit rhythm section, producing excellent timing between the kick drum, snare and bass. This ability to blend the musical information into a harmonious event was again evident with a Steve Winwood disc, which possessed

a fluidity that gave the band a believable presence. The ticking pulses on the hi-hat were very well defined, making it easy to determine when it was being played open or closed. Treble quality overall was very good, with a high amount of detail and a genuine degree of sparkle, personified by the gorgeous ride cymbal fills on 'Your Love is King' by Sade.

Mid-range detail, at times, was explicit with obvious examples being the reproduction of keyboard instruments and saxophone. This, in particular, had a rough and abrasive texture which left me in no doubt as to the timbre of the reed.

Bass went down a long way and was again fluid and dynamic, with a crispness that didn't leave the bass hanging around due to an excess of overhang that some amps like to portray.

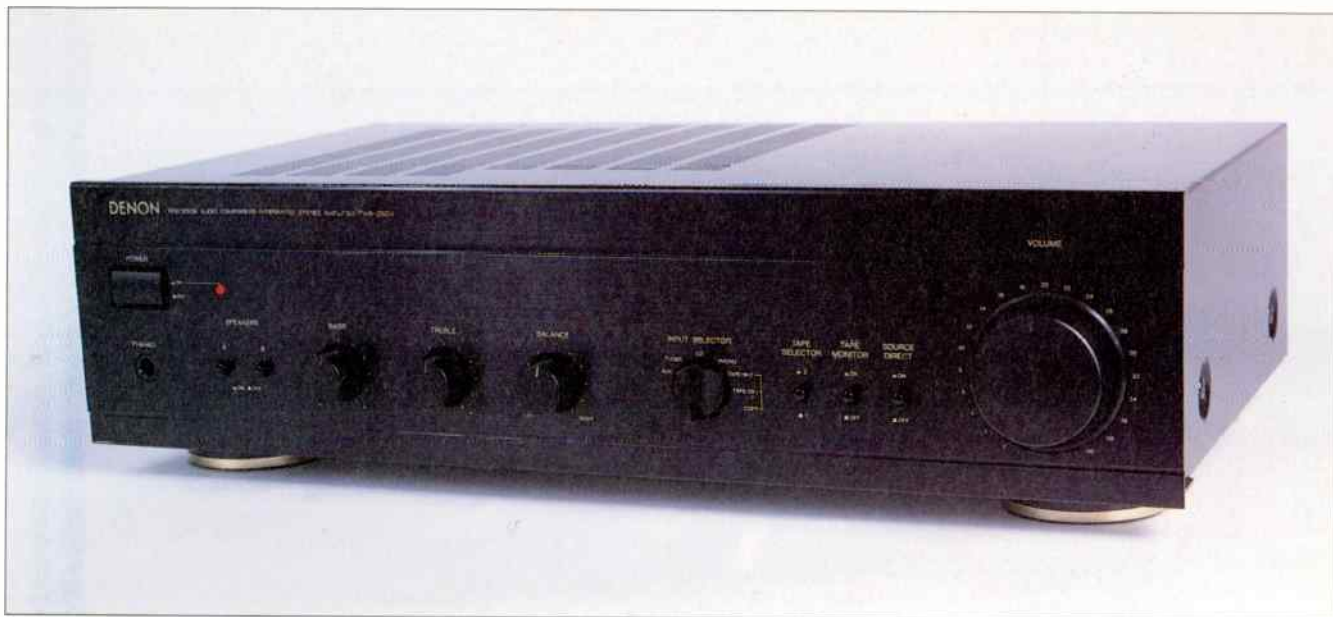
With a moving magnet cartridge the Alpha really impresses. It has clean treble and bass with good weight and dynamics, leading to a lively, musical sound from the vinyl medium with very little background noise.

SUMMARY

The Alpha is a terrific little amp with lots of life. It produces music that is fluid and easy to follow and gives the listener a good deal of insight into the musical intentions of the piece. Dynamic expression is well maintained, making the Alpha very persuasive with piano recordings and good vocal renditions, especially those that have been captured with a large quantity of their dynamic shading still intact ●

Arcam Alpha 5
A&R Cambridge Ltd.,
Pembroke Avenue,
Denny Ind. Centre,
Waterbeach,
Cambridge,
CB5 9PB
Tel: 0223 440964

£229.90



The Denon is presented in typical Japanese business-like fashion, everything in its place and a place for everything.

Two fluted channels across the top and bottom of the fascia frame the controls nicely, these being dominated by the presence of a large imposing volume control which feels good and makes volume setting easy and accurate, particularly at low levels.

Facilities are in keeping with the industry standard for this class of amp, three line inputs and one phono stage (MM only) as well as tape monitoring for two decks. Three small rotary knobs control the channel balance for the stereo image and also the bass and treble tone controls. However, Denon have the audiophile in mind and include a source direct button which by-passes all three controls.

Provision is made for the connection of two sets of loudspeakers which can be accessed independently using buttons located next to the headphone jack socket.

Around the back everything is neatly arranged, with speaker sockets able to accept banana plugs. However, there is a lack of gold plating on the RCA inputs, not important I know, but a nice touch all the same.

SOUND QUALITY

Especially after the mesmerising Pioneer, the Denon came as a bit of a culture shock, being a harder, punchier, more dynamic amp.

The sound was more immediate. With The Stranglers Dreamtime disc this amp's projection of the mid-range was involving, especially in the strong dynamic expression that the Denon resolves from the music. The amp also threw out a wide soundstage which remained solid at the outer extremes, but unfortunately this wide expanse of sound was quite flat, the Denon seeming to lack the depth and space that the Pioneer produced.

The drum beats and snappy

percussion on the intro to Winwood's 'Roll With It' really blasted out from the speakers, complemented by a tight, assertive bass which was fast, but a little dry. The Denon portrayed the lively, infectious quality of this song's arrangement very well. All the cymbals: ride, crash and hi-hat, while lacking the finesse and delicate touch of the Pioneer, were sharp and incisive, with their separate timbral characters intact.

This enthusiasm for the performance did have some drawbacks, which at times masked a little of the delicate internal structure of the music. While listening to Sade, I became aware of a cooler, more analytical aspect to her voice, although it still remained smooth. The amp placed more emphasis on the Fender-Rhodes piano that is present; it sounded excellent, the upper harmonic ringing of this instrument was reproduced with bell-like clarity.

The smooth, punchy sound of the Denon was also carried over to the MM input which had a lot of meat and weight at the bottom end, which I found very infectious on rhythmical music.

SUMMARY

Music reproduction with life and dynamics is the Denon's forte. This amp creates a wide expanse of sound that is both bouncy and exciting, with very good lower mid-range detail. The amp tends towards an up-front, analytical approach to some types of music, being slightly too clinical for warmer, more mellow styles of arrangement. However, Rock and powerful Blues sound great, particularly when listening to vinyl ●

Denon PMA-350 II £219.99
Hayden Laboratories Ltd.,
Hayden House,
Chiltern Hill,
Chalfont St. Peter,
Bucks. SL9 9UG
Tel: 0753 888447

MEASURED PERFORMANCE

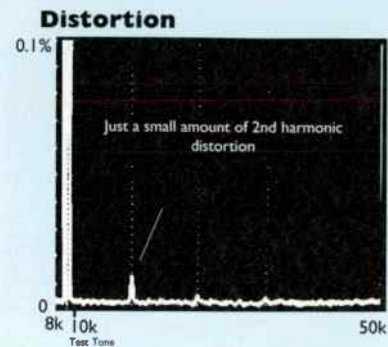
The PMA-350II is a powerful beast. It produces no less than 84watts into 8ohms and can manage 132watts into 4ohms. This gives it plenty enough power to go really loud and the 350 will handle difficult (low impedance and reactive) loads with ease.

The 350II has low distortion across the audio band, plus a tightly band-limited frequency response that reaches up to just 23kHz (-1dB) via CD. This is thought to lessen transient distortions. It often results in a warm sound as well. The bass end reaches down to 8Hz, low enough to contribute toward good, solid bass.

There is a moving magnet (MM) phono stage, but no moving coil provision. British design input comes in again with a bass roll-off below 30Hz to suppress warps; Japanese amps rarely, if ever, possess this property. Sensitivity was correct, overload high and hiss low. Loading was correct at 47k//200pF.

The 350II has an impressive measured performance. **NK**

Power	84watts	
	CD/TUNER/TAPE	DISC
Frequency response	8Hz-23kHz	30Hz-20kHz
Separation	82dB	80dB
Noise	-96dB	-77dB
Distortion	0.004%	0.004%
Sensitivity	180mV	3mV
Overload		170mV
dc offset	2.5/2.7mV	





MEASURED PERFORMANCE

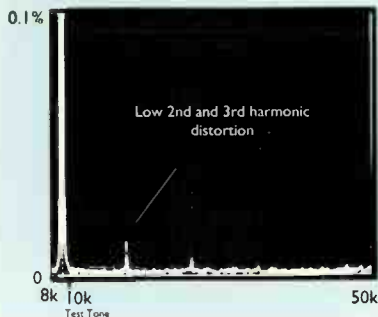
The 304 has an unusual short-term high power delivery system to cope with high level musical peaks that last one second at most. This means fast transients (e.g. a clash of cymbals), rather than sustained musical crescendos. It's a way of preventing overload distortion. At heart, the 304 is a 50watt amplifier (continuous power), but it can deliver a clean 150watts short-term. There's no problem with low 4ohm speaker loads: the figures rise to 70watts and 170watts respectively. So the 304 can go loud and avoid short term overload.

Distortion was low at all frequencies and levels, and comprised second harmonic only - a good sign. NAD limit bandwidth via CD (18Hz-40kHz) and fit a warp filter on the disc input. The disc stage was quietest of all the amplifiers, as always with NAD. Sensitivity was normal and the overload ceiling very high. This is a cleverly and thoughtfully engineered amplifier. **NK**

Power 50/150watts

	CD/TUNER/TAPE	DISC
Frequency response	18Hz-40kHz	30Hz-43kHz
Separation	70dB	70dB
Noise	-105dB	-70dB
Distortion	0.003%	0.0023
Sensitivity	200mV	3mV
Overload		240mV
dc offset	3/2mV	

Distortion



The 304 came to us in NAD's usual dark grey corporate colour scheme and it was styled in the their understated, functional manner. Here's an amp whose looks you'll either love or hate.

The 304 comes equipped with its fair share of facilities, including NAD's unique soft clipping circuitry. The largest control on the front panel is the volume control which has a lovely, smooth, well-weighted action. Source selection is provided by push buttons: a row of six is provided (including MM phono), plus one for tape monitor selection. Stereo balance, bass and treble are adjusted by rotary controls (no parametrics here) but those of us who don't believe in such frivolities can make use of a tone by-pass switch. A provision for switching between two sets of speakers is included, as is a headphone socket.

Around the back, everything is neatly set out, gold-plated RCA phono sockets being used for the phono and CD inputs. Two sets of sockets marked Pre-out/Main-in allow for the separation of the pre and power amp sections within by removing the metal jumpers that bridge them. Speaker terminals accept bare wire and 4mm plugs.

SOUND QUALITY

The NAD was a very rich-sounding amp, possessing a sound that had lots of body, but a darker tonal presentation than is usual.

On the Strangers CD, the NAD put lots of space around the rim-shot in 'Always the Sun', resolving the artificial reverb very well, but giving it a distinctly 'cuppy' timbre. This amp also placed importance on the dynamic content of the music signal, something I enjoy as it gives the music dimension and expression and, although the NAD wasn't quite as explicit as the Denon in this area, it made this amplifier a real foot tapper.

A marginal loosening of the bass could be detected with the Aye disc by

Angelique Kidjo where the full, rich character of the NAD tended to over-blow the bottom end slightly, but it still managed to maintain a solid drive to the rhythm. Percussion was very coherent, the NAD giving a good measure of snap to quick dynamic transients. Treble was refined, if a little restrained in comparison to that of the sparkling and airy Pioneer.

Vocal reproduction was very natural I felt, making lyrical content easy to follow and understand within the context of the song. The prominent lower mid-band did exhibit a discernible colouration, however the darkening of tone lent itself well to the definition of left hand notes played by Steve Winwood on a Hammond organ.

Imaging was good, producing, like the Denon, a broad, well-preserved picture of the musical event, though some more space and depth still needed to be resolved.

The NAD had a very quiet disc stage with a warm and engaging tonal character due to lots of presence in the bass and a sweet treble that made listening to vinyl very involving and communicative.

SUMMARY

In the 304 NAD have succeeded in producing a pleasantly musical amplifier, with a well engineered phono stage, one that has great body and weight, as well as a rich tonal texture that is quite inviting.

Good dynamic shading and bass definition create a sound that is faithful to the musician's performance, which makes for strong listener involvement.

Treble information is detailed without being offensive, but somewhat lacking in sparkle and openness against its rivals ●

NAD £239.95
NAD Marketing Ltd.,
Adastra House,
401-405 Nether Street,
London N3 1QG
Tel: 081 343 3240



Your pounds buy a large box from Pioneer, one that is held together by numerous copper-plated screws on the base plate and rear panel. This curious practice is meant to minimise eddy-current induction. The RCA phono sockets look dull plated, but in fact they have a special tin plating said to be better than gold. The speaker terminals accept 4mm plugs.

The A-300X has typical Japanese styling - it's large and intrusive - and while there is nothing wrong in that, it does look a little gross in comparison to the more aesthetically pleasing Europeans, at least, to my eyes.

The controls are a little on the large side, with a big dual-concentric volume control at right and two slightly smaller rotary controls for source and record selection. The Pioneer accepts three line level inputs and two tape systems, whilst vinyl is taken care of by an MM phono stage. A large chunky (and clunky) button controls power.

A fluted channel across the lower portion of the fascia helps to break it up a little visually, but the gold lettering and swirling script do make me a little wary.

SOUND QUALITY

This was the first amplifier up for listening, due to its position in the budget amp market as the one to beat and as a bench-mark against which all the others can validly be gauged.

It's easy to see where this amp got its reputation, as what issued forth was an airy, spacious sound with great mid-range projection and presence. Listening to the title track of Steve Winwood's *Roll With It* album, its easy-to-follow 'walking' bass line gave the music a good foundation, sounding gently rounded, but with a fair degree of punch which, coupled with the crisp and free treble, gave the sound a profound cohesion across the frequency band.

Vocals were very good, easily intelligible with excellent differentiation of the reverb content within the mix. Using

the *Lemon Trees* album, recorded with a lot of treble energy, showed how pure and sweet the Pioneer could be, managing to reproduce masses of detail without resorting to over-emphasis of sibilance. However, all was not perfect as some vocal transients did become a little hazy and breathy, although this could also be an aspect of the recording.

The amp constructed a fairly wide soundstage, though not a massive one, and the central image was well bolted down with lots of space around the main characters. The Pioneer revelled in the creamy textures of Sade's voice on the *Diamond Life* CD, along with its tight percussion which, while having crisp transients on crash cymbals also showed delightfully ringing decay on ride cymbals. With all this life and sparkle in the upper mid-band and treble it wasn't surprising that the bass was slightly withdrawn, although it never became disjointed or detached from the rest of the mix.

The Pioneer was a little let down by the phono input which failed to reproduce the same glorious treble, although it still possessed a free quality that many amps don't even hint at.

SUMMARY

The Pioneer A-300X likes the finer things in life, possessing a delicate nature with a beautifully maintained mid-band and treble. The spacious sound of this amplifier is very alluring and the bass also has a pleasantly warm character with a fair degree of speed, although dynamically it isn't what you'd term jaw dropping.

So, there it is, a very good amp with some outstanding qualities and a decent disc stage. It sets a high standard for others to follow ●

Pioneer A-300X £229.95
Pioneer Hi-Fidelity (GB) Ltd.,
Pioneer House,
Hollybush hill, Stoke Poges,
Slough, Berks. SL2 4PQ
Tel: 0753 789789

MEASURED PERFORMANCE

Although massively built, the A-300X turns out only 50watts, less than rivals, but still plenty enough to go loud, especially with today's sensitive speakers. It handles low and reactive loads without a murmur, so speaker matching will not be a problem.

This amplifier has a wide bandwidth on both CD/tuner/tape and LP. However, subsonic extension down to 7Hz with the latter will amplify warps strongly, leading to cone flap with reflex loudspeakers - not a good thing. I'd expect this Pioneer to have an open sound with solid bass from CD.

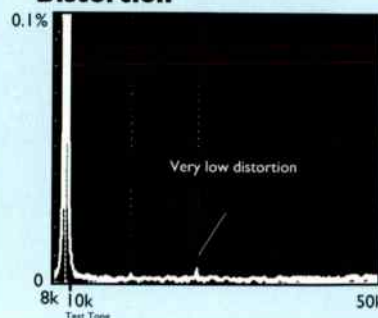
Distortion was very low at all frequencies and power levels, suggesting both good basic design, but also liberal use of feedback, which constricts apparent stage depth. There should be no treble roughness, however.

Sensitivity via CD was high at 170mV; the A-300X will match even low output items. Disc (MM only) was extremely quiet, sensitivity normal and overload threshold high. This is a well designed amplifier. **NK**

Power 50watts

	CD/TUNER/TAPE	DISC
Frequency response	5Hz-73kHz	7Hz-50kHz
Separation	80dB	79dB
Noise	-95dB	-83dB
Distortion	0.002%	0.002%
Sensitivity	170mV	2.7mV
Overload		150mV
dc offset	17/13mV	

Distortion





MEASURED PERFORMANCE

The RA-935BX produces 50watts into 8ohms and 80watts into 4ohms. It handles reactive loads well, so it is not loudspeaker sensitive. Rotel have engineered a wide bandwidth, joining Harman in this respect. Even though this practice runs contrary to current popular wisdom, it does not blight sound quality so much as give it a slightly different character, one that is open and clear, cool and sometimes a little bright. Precise character depends upon many other factors of course, so this can only be a generalisation.

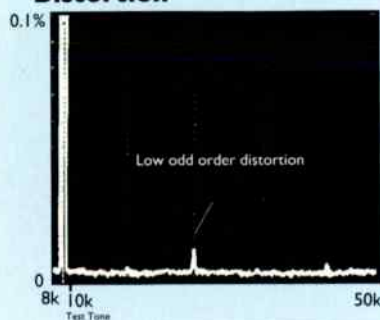
Distortion was very low at all frequencies and power levels, always an interesting property. It suggests smooth treble free from harshness, but (possibly) compressed perspectives from heavy feedback. Only listening tests can be a judge of this, however. Sensitivity, at 250mV, was a little lower than usual these days, but adequate all the same.

The RA-935BX is a well designed 50watt amplifier, without a disc stage. **NK**

Power 50watts

	CD/TUNER/TAPE	DISC
Frequency response	8Hz-134kHz	none
Separation	60dB	
Noise	-103dB	
Distortion	0.005%	
Sensitivity	250mV	
dc offset	-21/-18mV	

Distortion



Definitely the most stylish amplifier in the group, this Rotel has an air of high-end minimalism about its design.

The fascia is well constructed, as is the rest of the amp, appearing solid, hefty and built to last. The brushed metal finish and fluted end caps add a touch of class. The front is dominated by a large centrally mounted dual-concentric volume control which allows channel balance to be adjusted, as well as output level. On the right hand side of the amp are two rotary selectors used for the selection of listening sources and recording sources.

Unfortunately, the Rotel has only three source inputs with no phono stage, so this is not much of a bargain for vinyl lovers, who would need a separate head amp. However, provision is made for two cassette decks.

The left side of the fascia has the power switch and the speaker selector; the Rotel can run two sets of loudspeakers and headphones too.

Rotel provide gold-plated socketry for the CD input. However, the other sources must do without such luxuries and both sets of loudspeaker terminals accept 4mm banana plugs or bare wire.

SOUND QUALITY

A striking, neutral mid-band was the Rotel's most obvious feature. This helped create a sense of space and tangibility to musical instruments, indicating that low level detail was being effectively recovered. In this respect the RA-935BX was similar to the Pioneer.

The bass had a fair amount of warmth and was rounded out nicely, but it lacked the rich, punchy quality of the NAD. The kick drum present on 'Agolo', a track from Angelique Kidjo's Aye album, certainly went deep, with a good softening of the transient's punch so that, although the bass had lots of presence, it lacked a little musical verve.

Jangling acoustic guitars prevail on

'The Way I Feel' by the Lemon Trees and these were superbly portrayed by the Rotel which captured the whole envelope of sound well, creating real snap to the strings, emphasising the percussive drive that the instrument gives to the song. The main vocal was solidly placed within the deep soundstage, although it was a little withdrawn in comparison to the projection of the Denon.

The Rotel was good at preserving the decay of notes such as on the sustained chords from a Hammond, or the sparkling ride cymbals used by the Lemon Trees, managing to hang on where other amps throw in the towel.

Dynamically, the RA-935BX was quite competent, with a pretty powerful rendition of the Toms that make such an impact towards the end of Dire Straits' 'Private Investigations'. This was carried over into the mid-band, which helped relay some of the emotion aroused by the varying attack on the playing of the acoustic guitar.

SUMMARY

A neutral mid-band with lots of ambient detail is what the Rotel is all about. The balance of the amp does tend towards that of the Pioneer, having the ability to reproduce upper mid-band and treble information with delicacy and sparkle.

Even taking this into account, Rotel haven't forgotten about the music; this amplifier has a fair share of dynamic ability, with a bass output that seems to go down a long way. Pace and excitement aren't quite in the NAD or Denon league, but the Rotel is still a long way from being bland ●

Rotel RA-935BX
Gamepath Ltd.,
25 Heathfields,
Stacey Bushes,
Milton Keynes,
Bucks. MK12 6HR
Tel: 0908 317707

£225.00

4240 Integrated Amplifier



* 40w per channel, Bi-wireable * Plug-in phono stage * Pre/Power connection
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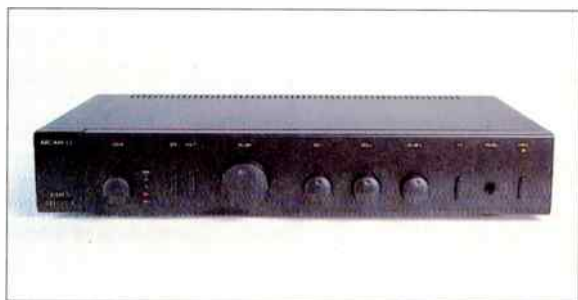
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We also have the Arcam, Creek, NAD, and Rotel amplifiers reviewed in this issue.

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CONCLUSION

This turned out to be a most enjoyable group test, during which I spent many days involved in the different perspectives that each amplifier gave to music. Using a system based around two very good sources, the Arcam Delta 250 CD transport sync-

although still smooth enough to prevent listener fatigue.

The Alpha is a real beauty sonically and visually. The finish and styling are very clean, and the phono stage is well engineered and sounds very good, especially as this facility seems to be

persuasive the longer you listen to it. Along with the Arcam, the NAD has a very quiet disc stage and runs neck and neck with the Alpha in sound quality produced from the vinyl medium.

The complete performer of this group is, for me, the Aura. I found this amp's ability to re-create the natural acoustic and complete timbral envelope of sound quite enthralling. The fullness of sound and tangible stereo images really stood out, placing the Aura in a class of its own. Bass extension was the best in the group and the quality of timing and dynamic punch was also very good.

All the budget amplifiers on test were very



locked to a Black Box 50 DAC and a Systemdek IIXE 900/SME 309/Goldring 1042 vinyl system, the amplifiers were listened to through a pair of Heybrook Sextets, which present quite an easy load, but are extremely revealing.

Broadly speaking the six tested can be grouped into three distinct classes. The first containing the Pioneer and the Rotel, as these two amps both have a delicate, sparkling treble and clear neutral mid-range. The Pioneer in particular is very sweet and possesses an upper mid-band that belies its solid-state origins and, although externally the Pioneer looks a little dated, sonically it's still up with the rest of the pack. Where the Rotel scores is its neutral mid-range and recovery of subtle ambient clues. This makes it an excellent amp if you like listening to minimalist acoustic recordings.

The dynamic ones are the Denon and Arcam, as both have an exciting and lively attitude towards recordings. The Denon really is an out-and-out power house with quite stunning punch on drums and percussion and wonderful presentation of vocals, which are forward and immediate,

becoming overlooked in this modern digital age. Sound quality overall is excellent, the Alpha having that rare ability to focus all the musical strands into a coherent, meaningful piece. Treble is detailed and informative, although not as

good. This test shows just how far the budget arena has progressed in the last couple of years or so. However, we should not get carried away here, as all these amps are easily bettered by slightly more expensive ones, such as Mission's



airy as the Pioneer and the mid-band has a presence and verve that really sings.

Both the Aura and the NAD can be defined as very natural sounding performers. Both have the ability to present vocals in a complete and eloquent manner with heightened emotional expression. The NAD, although being quite coloured in the lower mid-band, has a rich beguiling character which becomes more

Cyrus III and the Audiolab 8000A.

In spite of all the hype surrounding the so called Japanese 'super amps', to my ears they were not as musically interesting as similarly priced British alternatives. Therefore, although all six are certainly recommended, depending on your specific view on how reproduced music should sound, the ones that I would single out as particularly impressive are the Arcam Alpha 5 and the Aura VA-50 ●

PHILIPS COMPACT DISC

PURE, PERFECT SOUND-FOREVER.



NOT FADE AWAY

Are your CDs developing a pretty red hue? Hi-Fi World investigates the phenomenon of 'CD rust' with Philips Du Pont Optical, who have pressed disintegrating discs.

Perfect Sound - For Ever' - a wonderful slogan if ever there was one, so wonderful Philips have been pilloried for using it ever since! A frustrated executive once told me: 'We stopped using it a long time ago - it

caused too much trouble'.

The moral might be: don't make a promise you can't keep. CD never was perfect - few things are - and with distortion levels of up to 40% it wasn't difficult to prove. But when CDs started

'rusting' as well, even the second part of the promise began to look doubtful. Britain's tabloid press in particular waded in, suggesting that CDs may in due time rust away.

Nonsense? Our chance to investigate



◀◀

How a disc should look. This is our Level 42 control disc which has an even silver colour. A tissue over the disc helps highlight the property.

this phenomenon came about when a reader, Robert Jeapes, sent in two 'rusty' discs for us to look at. One was Johnny Mathis & Deniece Williams, That's What Friends Are For, unfortunately labelled 'Collectors Choice' by CBS. The second disc was Level 42's Running in the Family.

In truth, CDs cannot actually rust. The term seemed a little melodramatic when applied to these discs, because they had a smooth, reddish bronze hue, most pronounced on the label side, which the laser doesn't play of course. It plays the underside, from the inside outward. Undemeath, the discs had a faint red hue - it looked quite pretty! The question was: would this mild discolouration affect the laser sufficiently to be audible? Were the discs merely changing colour yet

▶▶

The reader's Level 42 disc which clearly has a red hue.



◀◀

The reader's Johnny Mathis disc strongly bronzed at the outside edge.

The expected Block Error Rate (BLER) for a good modern disc is 50. Philips Red Book Standard quotes 200 as a worst case maximum. Anything above this, PDO told us, was unacceptable and they would be prepared to replace such a disc. Both of Robert's discs exceeded the critical 200 figure near the edge of the disc, where the bronzing was heaviest. They were candidates for replacement.

Of our discs, the Johnny Mathis performance - the disc we bought new - had become effectively useless. It sent Philips' test equipment mad, as it had ours,

remaining playable, or were they deteriorating? And how could we tell?

Test them - that's how! Amongst our test equipment we have a Cambridge Audio CDI CD Quality Assurance unit, capable of measuring CD quality. All we needed were two new 'control' discs, to give us an idea of how a good disc should measure. That's where the fun and games started.

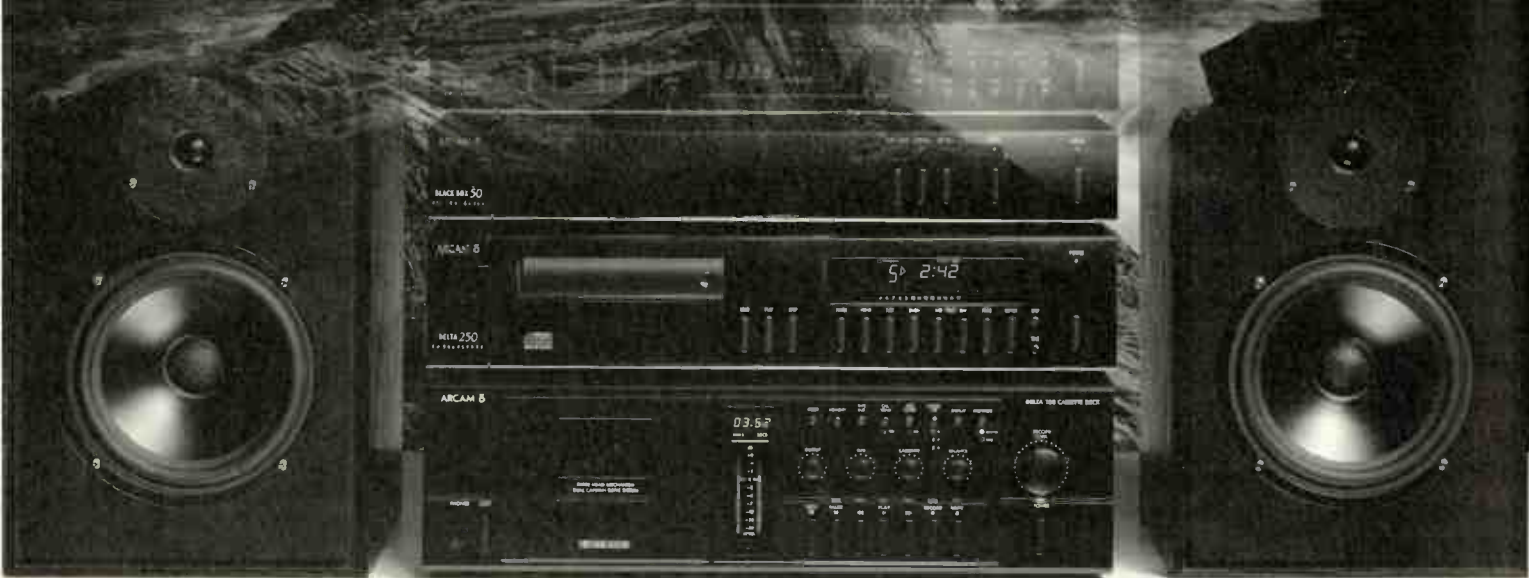
In a nutshell, one of the 'new' discs we bought off the shelf at Virgin Megastore in Oxford Street, Central London, was itself discoloured. But the real shock was that it

▶▶

Our Johnny Mathis control disc, purchased new April 94, strongly bronzed all over.



close your eyes and see



the Arcam Delta system

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

Ignore the fact that the Delta 290 is our finest integrated amplifier, the recipient of a coveted Design and Engineering Award from the world's pre-eminent consumer electronics show, the Chicago CES. Don't be swayed just because the UK hi-fi press agree, giving it "a compelling and enthusiastic Recommendation"¹ and describing it as "an amplifier with real clout, able to deal with virtually any level of musical complexity".²

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

Then, visit your scepticism on the Delta 270 CD player. "Solidly built", it "strikes a balance between smoothness and punch" to gain a class leading, 5 star recommendation.⁴

If that's not enough, take a sideways look at our remarkable two-box CD player, the Delta 250 CD transport and Black Box 50 DAC. "To justify their significant cost, two-box systems really have to offer that little bit extra in terms of sound quality; but Arcam's combination does just that - and more".⁵

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

Finally, muster up your best disinterest for the "extraordinarily well engineered"⁷ Delta 2 loudspeakers, "a firm, positive sounding design with bold bass and mid and a firm grip on the musical architecture".⁸

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

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

1. Hi-Fi Choice, March 1993. 2. Audiophile, February 1993. 3. Audiophile, April 1993. 4. What Hi-Fi? Awards issue 1993. 5. What Hi-Fi?, November 1993. 6. Hi-Fi World, April 1992. 7. What Hi-Fi? Awards 1991. 8. Hi-Fi News Buyers Guide, November 1993. * CIR2000 System Remote Control handset to operate all the electronics listed here is an optional extra.

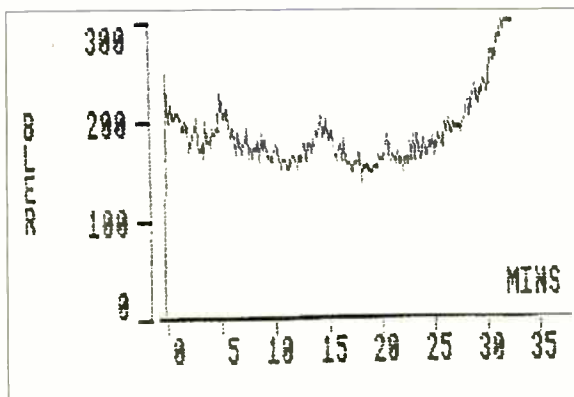
ARCAM

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

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JOHNNY MATHIS & DENIECE WILLIAMS**That's What Friends Are For****READER'S DISC**

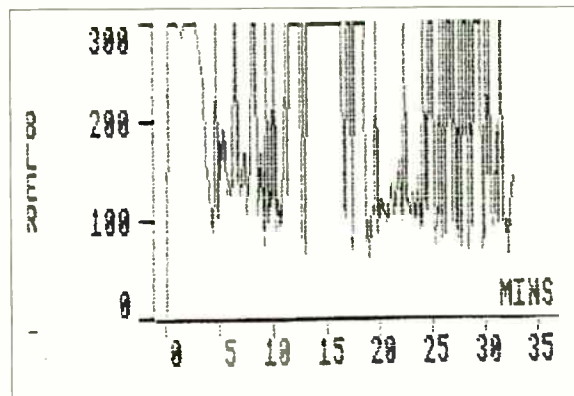
Appearance - bronzed,
mainly at outside edge.

Mean BLER - 168

Max BLER - 360

PDO Comments -

Outside specification at
edge

**HI-FI WORLD****'CONTROL' DISC**

Appearance - uniform
level of bronzing

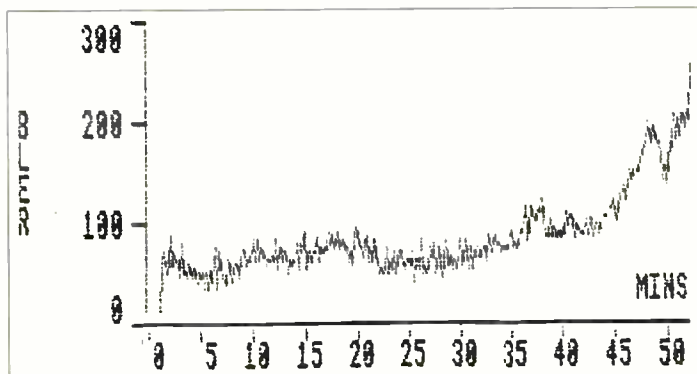
Mean BLER - 1098

Max BLER - 1415

PDO Comments -

Outside specification
throughout disc

**NOTE: BLER = Block
Error Rate. Discs are
outside specification
when BLER exceeds 200.**

LEVEL 42**Running In The Family****READER'S DISC**

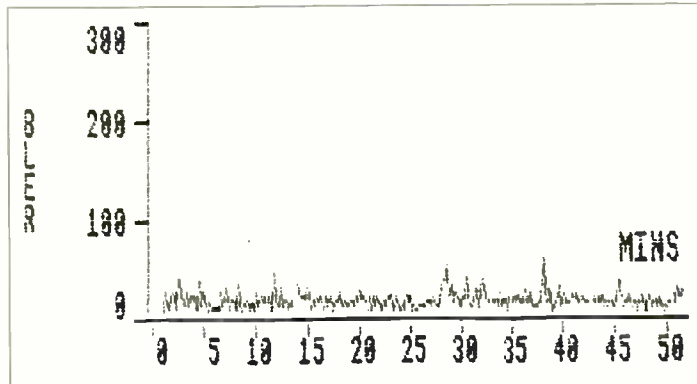
Appearance -
severe bronze
effect at outside
edge

Mean BLER - 71

Max BLER - 258

PDO Comments

- digital errors
above
specification at
outside edge

**HI-FI WORLD****'CONTROL' DISC**

Appearance -
no defects

Mean BLER - 13

Max BLER - 65

PDO

Comments -

within
specification

with a BLER of over 1000. It too was a candidate for replacement. Our Level 42 disc was in fine condition, however, having a mean BLER of 13.

So three out of the four discs sent to PDO were, on their own admission, sufficiently below standard to warrant replacement. A 75% failure rate seemed serious. I asked Dave Wilson at PDO for an explanation.

"The rusting problem affects only discs manufactured at PDO Blackburn over a certain period", he told me. Their explanation was that the nitrocellulose laquer they once used reacted with sulphur in the packing sleeves of singles, tamishing them. However, not one of our discs was a single, and all were packed in the usual plastic jewel case, so this explanation doesn't hold up. PDO do now admit that 'a small number of albums were also affected' too, which presumably includes all of ours. We can only hope this is so and that our sample was peculiarly unrepresentative.

New laquer

A new laquer, based on acrylics, is now being used by Blackburn, and it resists tamishing, PDO told me. However, a technical expert at another pressing plant said that some other plants had also used cellulose laquer, so not only PDO were to blame. Both Nimbus and EMI CD pressing plants assured me over the telephone that they had only ever used UV acrylic lacquers, which were harmless, so their discs could never suffer such a problem.

Is 'rusting' too strong a term? Hardly. The reflective coating does not just discolour, it steadily corrodes. So, as far as anyone can tell in the absence of very long term tests, discoloured discs are on their way out. The disc we bought must have been old stock: it had corroded to the point of being useless.

PDO told us that discolouration was highlighted by putting a tissue over the CD. This is a simple test owners can use. Good discs look white, discoloured ones are very clearly a buff colour. The tissue cuts down reflections and highlights differences of colour.

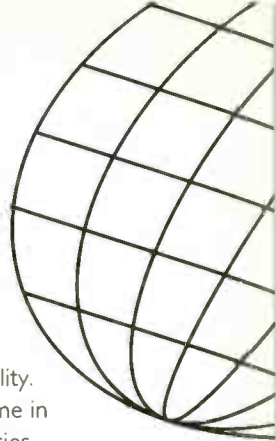
Our conclusion, at present, can only be that discoloured Compact Discs are in a state of corrosion and that, sooner or later, they will become unplayable. Furthermore, such discs are in the shops, corroding - and on sale. Contrary to what we have been told, cardboard sleeves are not necessarily to blame; all our discs were in normal plastic 'jewel' cases. It may well be that our small sample of four discs was unrepresentative. But the problem is real and it can be severe. What we don't know is how widespread it may be ●

**PDO have set up a Helpline for
worried owners.**

Call (freephone) 0800-387063



World



THANKS FROM THE COLONIES

I wish to thank you so very much for such a fine magazine. We look forward to each issue, although it takes rather a long time to arrive over here.

In the December 1993 issue (page 55) Mr. Baker makes the statement: "a CD input is no different from a tape, or tuner, input". This is not entirely correct! In an integrated amplifier I built in 1990 (designed by the staff of Electronics Australia in 1988) a separate CD input was offered. This input (as originally designed) takes only 250mV (as do all the other inputs). However, provision was made (on the circuit board) to add resistors so that the "normal" 2V output of a CD player could be reduced to 250mV. So you see, my amplifier has a dedicated CD input!

Anyway, thanks again for such a fine magazine. We particularly like the

construction projects as there is not a great deal to do over here in the Colonies, but "play radio" and listen to the B.B.C. (as short-wave reception permits!).

**Terry Robinson
Victoria,
Australia.**

Many thanks for spotting my error. I can see how my comment could have been misleading. What I actually meant was that the signal from a tape deck or tuner, like CD, needs no equalisation to give a flat frequency response. As you point out CD has a much higher output level than most other sources. There is good reason to attenuate its signal - and some designers do this with a resistive attenuator network. The idea is to eliminate sudden volume level changes when switching between sources **DB**

CLASSICAL PROBLEM

Before the advent of rock and pop music, almost all purchasers of expensive, specialist equipment were classical music and opera enthusiasts who required something special to replace the ubiquitous radiogram. They wanted something that would reproduce in the home a convincing representation of a symphony orchestra in the illusory acoustic of a concert hall, or the spacious realism of a live opera performance. The emphasis was always upon

sound quality. Stereo came in the late fifties, separating orchestral instruments and performers to enhance the impression of realism.

Equipment reviewers of the time concentrated upon the finer degrees of instrumental and vocal timbre, texture, delicacy and overall sonority, and also the degradation of nuances of sound caused by enclosure colouration and various forms of distortion. Stereo imagery

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Letter of

SUCCESSFUL TWEAKS

I was particularly inspired by the February letter of the month from Simon Linton.

I am much in the same position as Simon, having purchased a system several years ago (Quad FM4/34/405-2, KEF C80, Thorens TD166 and Philips CD104).

My hi-fi appeared to be suffering from depression (dull and withdrawn!). I was reluctant to throw it all away and start all over again, because the products may come back into fashion (like early Quads, Leaks etc.) and it has all been very reliable.

I was therefore inspired to try some of the newer speaker cables and interconnects. On visiting my local dealer (Northwood Audio of Aylesbury) we came up

with a sensible shopping list of upgrades. These were:

- 1 - Cable Talk Concert 2 for the speakers
- 2 - Gold plated solder-type banana plugs for speaker and amp.
- 3 - New interconnect cable for CD to pre-amp, and pre to power amp.

Could I tell the difference? Yes! The sound is definitely more up-front and sweet.

I was very sceptical at first since, having been trained as an electronics engineer, I can appreciate the need for lots of copper and good low resistance connections, but I'm still not so sure about skin effect at audio frequencies and cable direction.

So at the end of the day I have spent well under £100 and have seen some good results. Even though my equipment is fairly long

Send your letters to Hi-Fi World Letter Page,



writes

was never mentioned or considered, because it was of less relevance to the reproduction of the sound of a large and dispersed orchestra.

The introduction and popularisation of pop and rock music has brought radical changes to the perception of hi-fi, though whether these were intended by designers or have been made in response to exhortations by reviewers and others, or simply evolved,

is not known. At demonstrations by dealers and manufacturers of loudspeakers the sound of modern equipment, even before CD, often seems stark and lacking natural instrumental tonal colour. It has more affinity with synthetic, electronic music than natural instruments. CD and some modern cone materials may have further widened the gulf between 'natural' and synthetic.

That departure from the original concept of hi-fi has

been marked by other changes, especially the replacement of sound quality by stereo imagery as a mark of excellence. This has brought about a change in the method of loudspeaker placement, from wide separation with acute toe-in, to a relatively narrow separation of barely six feet with minimal toe-in.

These changes have been gradual and surreptitious, and as a result, a system which obviously favours the more popular types of music has

been imposed upon all, regardless of whether it was appropriate for, or detracted from, the enjoyment of classical music.

Widely separated and acutely angled 'speakers were first advocated by Hugh Written, in an article published many years ago and could offer several advantages. Orchestral instruments are more separated and therefore, more clearly defined; there is an increased sense of spaciousness the stereo listening area may be appreciably enlarged and remove the necessity for a central position and the 'speakers may be out of view and less distracting when listening to music.

Regular readers of loudspeaker reviews are rarely left in any doubt that the majority of reviewers concentrate upon their suitability for rock and pop music, while the interests of classical music receive only perfunctory attention. Most reviewers now seem to be obsessed with stereo imagery, dynamics and clarity, but fail to mention sonority and instrument tone as though of no consequence to the enjoyment of music.

**G A Jolly
Essex.**

(edited for reasons of length)

Reviewers, including myself, do tend to concentrate more on rock music than classical. But then there is some justification: 70% of music sold is in the former category. Furthermore, over the last decade or so there has been a strong

the Month

in the tooth, I do regularly attend hi-fi shows, but am holding back like many others on DAT, DCC, Mini-Disc etc, since I've had my fingers burnt by Betamax and BSB equipment. Although technically better than its rivals, the public did not buy 'en masse' and they were therefore doomed to failure.

What's the next purchase? I keep looking at the new Quad CD player, but as my Philips CD104 is still working well, and now I have a wife who is keen to change only when things go wrong, wear out or there are major differences, I guess I shall keep on looking in the windows.

**A.D.Ralph,
Aylesbury,
Bucks.**

I'm glad of your new found enjoyment with your system. All to often quality

equipment such as yours is thrown on the scrap heap without even a thought, yet often what has just been ditched may have been better than the new midi system it has been replaced with. There are a few other things though that you could usefully do to your system to further enjoy the music, especially as you confess to being an engineer.

Make sure that you have a good multi-element aerial, preferably roof mounted so that radio reception is at its very best. The FM4 is an excellent tuner and it'd be a shame if you weren't using it to its full potential.

You don't mention what arm or cartridge you have with your Thorens TD166, but if you haven't already done so, pop along to Northwood Audio and get them to check out the

stylus under a microscope. If it is worn, replacement will bring about a faster, crisper more lively sound from vinyl.

Now, as you are an engineer, and have heard the difference good cables can make, I'd suggest you do a little work on the KEFs. Just replacing the internal wire with good quality speaker cable, silver soldered instead of crimp on terminals, will bring about an improvement. Whilst you're at it, you could replace the capacitors in the treble arm of the crossover with polypropylenes. Solens sound especially smooth and sweet, and will definitely improve detail and openness. Solen capacitors are available mail order from Falcon Acoustics, Tel: 0508 578272. We'll make a tweaker out of you yet! **DB**

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

continued on page 45... ▶▶

From the first few opening bars of Primal Scream's new album, *Give Out But Don't Give Up*, I knew that I was going to get on well with Rogers' new Studio 5s. Big Jet Plane had a suitably large and open soundstage with a deliciously detailed and sweet treble. The

bass was a little too dry, but I hadn't even started experimenting with positioning, so I was confident that there was more to come from these new £699.90 stand mounters.

Moving them around, I found the balance that best appealed to me was

with them positioned around two feet from the rear wall; in this position they didn't have especially deep bass, but it was full and solid all the same. It certainly suited the acoustic guitar on *Free*, which had a wonderfully reverberant, woody bloom to it and Denise Johnson's vocals

A Studious Approach



Dominic Baker finds Rogers have put a lot of thought and care into their new Studio 5 loudspeaker.

were so rich and silky smooth she could have been auditioning for a chocolate advert.

The Studio 5s are extremely fast and detailed, not in an intense or forceful manner, but with a deftness of touch that makes them musically involving and enjoyable. They don't image particularly well, members of the band could tend to drift a little, but they do conjure up a large and free soundstage with plenty of atmosphere and ambience.

Sad and Blue was relaxing and open, with good depth and dimension to the soundstage. The Studio 5s can really open up a recording, and rarely sound closed in or stifled, even with poorer quality recordings. In this respect they have an almost cold clarity to them, the midband is very clean, free from the artificial richness or warmth that many two-way polypropylene coned loudspeakers can suffer from.

Moving on to Magnapop and their Idiot Song, the cleanly plucked electric guitar leapt out of the mix and into the room. This ability is normally commendable in a loudspeaker of the price, but in this case it leapt a little too far to be realistic. This highlighted something I'd been suspicious of earlier: the Studio 5s are forward, perhaps a little too far forward for certain types of music. I must say though that I didn't have a problem with this and in most cases they added a spaciousness and crispness to music that was refreshing to hear, and certainly far better than the other, enclosed sounding extreme.

Linda Hopper's vocal chords were in fine form on Emergency, with the 5s having a crystalline clarity to them,

impressive considering the mediocre quality of the recording (good music though). In this respect the transparency of the Studio 5s is a great attribute, one that many listeners will fall for, I suspect. I

“They are fast, crisp and musically very expressive, with an open and spacious soundstage.”

can imagine them suiting most types of acoustically recorded music extremely well, but perhaps becoming a shade too hard with electronic pop.

Rogers have made a very cohesive loudspeaker in the Studio 5. These speakers hold a piece of music together well, all in sync, bass in time with the rest. This speed and tunefulness in the bass I suspect is partly due to the Studio 5s being a tightly ported design. I'm also sure they benefit from the soft dome tweeter, which forms a more seamless combination with the custom designed polypropylene bass unit than the metal dome tweeter used in the LS range does, good as it is.

Interestingly the Studio range are bi-wired as well, Rogers adopting single wired terminals in the more affordable LS

range to free up funds for better crossover components.

Finally into the draw of the CD player went The Blue Aeroplanes new album Life Model, which once again fared well. There was just a hint of polypropylene colouration which revealed itself as a richness in the upper bass, combined with a little boxiness from the quite lightweight cabinets, but nothing too severe. The crispness and their snappy, lively presentation tended to draw my attention quickly away from this though, so the Studio 5s certainly shouldn't be dismissed for this small blemish.

In summary, the Studio 5s are all about a tonally neutral midband and treble. There is a firm and punchy bass underlying it all, albeit not a very deep one, but enough to give balance to the sound. They are fast, crisp and musically very expressive, with an open and spacious soundstage.

This loudspeaker has competitors though. The TDL RTL3 offers much deeper bass and greater attack, the ProAc Studio 100s a more precise image. But if you want a musically enjoyable performance, don't miss deep bass or the preciseness that the ProAc's offer, the Studio 5s provide a relaxing and open presentation. They're a highly enjoyable listen ●

Rogers Studio 5 £699.90
Swisstone Electronics,
310 Commonsides East,
Mitcham,
Surrey.
CR4 1HX
Tel: 081 640 2172

MEASURED PERFORMANCE

Rogers loudspeakers are always well engineered, or at least the ones I've measured recently have been. Designed by Andy Whittle, the Studio 5s are no exception to this. They display a very flat frequency response, and more importantly, any lifts and falls in the response are well positioned to give good subjective results. Down at low frequencies there is a slow lift which will add speed and power to the bass, the small lift in the upper mid-band will push vocals forwards out of the box and the slight dip in the treble should ensure a smooth sound, free from harshness.

As with most British designed and built loudspeakers, the Studio 5s have a high overall impedance. I measured 11.7Ω, so they will demand relatively little current from an amplifier. The impedance curve is reasonably smooth as well, but the dive in impedance in the treble may produce a slightly warmer sound than usual from low,

or zero feedback amplifiers. Any modern transistor design should have no problem at all driving them though.

In addition the Studio 5s are quite sensitive. Using a nominal watt (2.83V) of pink noise they produced 86.5dB at 1m, a little higher than average. This, combined with their high overall impedance, makes them suitable for amplifiers of 20-30watts or more.

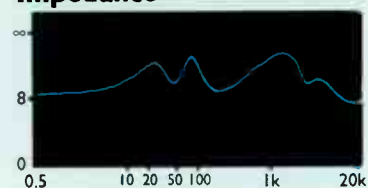
Rogers' Studio 5s are a well thought out and engineered loudspeaker. They will work well with most amplifiers, but for the final verdict, subjective tests still reign supreme. **DB**

Frequency Response



An even, flat response

Impedance

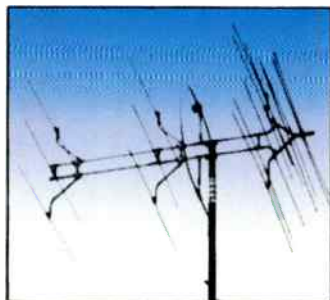


High overall impedance

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...continued from page 41

demographic shift in consumer spending as post war 'baby boomers' who grew up in the sixties and seventies continue to pursue their musical interests. They're now affluent, active and continue to want music - mainly rock music. The old notion that family, house mortgage, children, etc killed off such interests has all but evaporated. The rump of our readers lie in the 25-45 age bracket.

However, I have to say that I still believe a good loudspeaker should be able to reproduce rock and classical with equal ability. As you fear, many modern loudspeakers and amplifiers do seem to be optimised to reproduce pace and rhythm at the expense of tonal colour, making for an arid sound. It's also true that certain ardent rock listeners like this sort of presentation, but equally, many do not, because whilst it handles the rhythmic side of things well, an imperative found only in rock, it doesn't compliment vocals or the many acoustic instruments often used in rock. We're sceptical about it too, but World appeals to a broad church; I feel we should be able to review such amps and describe their properties clearly and succinctly.

The rising interest in valve amplifiers is testament to people's appreciation of tonal colour. I feel we all sympathise with your fears about hi-fi systems that sound "stark and lacking in tonal colour". But it isn't necessary for us all to go back to mono to maintain a balance in these matters, only make sure we keep a wide and balanced view of what is required of an amplifier or loudspeaker. **NK**

MEASUREMENT SPEAKS

Regarding Kaleidoscope in the February edition on one of

the big questions in audio, that of the correlation between objective measurement and subjectively perceived sound quality, I would like to put forward a personal opinion on this matter from the other side of the fence, that of a consultant loudspeaker designer.

My experience has been that if a loudspeaker is judged to have a subjective fault, e.g. a colouration, I have always been able to reveal an engineering reason for it, using instrumentation. Therefore I believe that the concept of objective audio measurement as a predictor of subjective quality is not itself specious, but it is in the way measurements are made, interpreted and presented which can lead to a lack of correlation with subjective impression.

In other words, the question that designers, reviewers and informed purchasers need to ask is: which measurements correlate with subjective impression of sound quality, and how? Here are just a few of the guidelines to which I work with loudspeakers.

The most common measurement made and published is the frequency response curve, in the dB versus log. frequency form. When evaluating a frequency response curve, it is necessary to take into account how it was arrived at, as, for example, averaging the response can smooth the curve, masking a lot of detail which may be very audible indeed. It has been accepted for many years that very high Q anti-resonances dipping tens of dB can be entirely inaudible on programme material, yet high Q resonances which are just 1 dB above the average level can be very audible. Also, a shelf in the frequency response of as little as 0.25 dB across a bandwidth of an octave or more can completely change the timbral balance of the sound. An argument can be

made that smoothness of response is very important, as it can infer an impression of clean sound, but not always.

At this point, I would strongly recommend that Hi-Fi World change from showing third-octave curves to either true swept sinewaves, FFT'd impulse response or at least 1/12th octave resolution, with a more precise published frequency scale. This should cost you no more, it will allow readers to reach a much more informed opinion of the loudspeaker and many reasons for reviewers' subjective impressions will be evident.

Time domain measurements can also help predict subjective impressions. A very useful measurement of a loudspeaker is the impulse response, as this can be used to derive a quasi-anechoic frequency and phase response, it can reveal delayed resonances and reflections inside drivers, cabinets and at cabinet discontinuities.

The area of non-linear distortion has been heavily researched, and it is accepted that minimizing all forms of harmonic and intermodulation distortions is a worthy goal. Harmonic distortion measurements, however, give misleadingly low results when the distortion is of a low-level, modulated spiky nature, such as crossover distortion in early solid-state amplifiers, and quantization noise. Research is on-going into the audibility of this type of distortion.

In conclusion, I agree that objective measurements do not always correlate to perceived sound quality, but I believe that this is because we as reviewers and designers may not be making enough of the right measurements in the right way, and more research needs to be done in this area. After measuring my designs I listen, for weeks, on all types of material, using solid-state equipment and valves, and I

get opinions from everyone I know.

Having possibly committed professional suicide, I will leave any designers reading this with a valedictory warning: several years ago, the owner of a very large loudspeaker manufacturing company once said to a colleague of mine 'Oh, we don't bother listening to our loudspeakers any more, our computer systems tell us everything there is to know'. The company went bust.

M.J. Lawrence M.Inst S.C.E.

Selly Oak, Birmingham. (edited for reasons of length)

Conventional measurements do have their uses, but the point I was trying to make is that they have on the whole been devised to describe behaviour in a world of largely linear electrical and mechanical models that engineers use to understand and describe functional behaviour, so that they can design a better product. Attempted correlation to the human listening experience is retroactive and often of dubious value. Some measurements correlate well (e.g. frequency response) whilst others - like channel separation - have a psycho-acoustic impact quite opposite to that expected. Bizarre!

The same can be said for distortions - some are horrid in small doses, some benign in large doses. So what use are distortion measurements as indicators of sound quality, unless they are hopelessly wrought about with explanations and qualifications? Otherwise they can be positively misleading.

I'd suggest that to better understand and develop audio equipment we need a better understanding of what

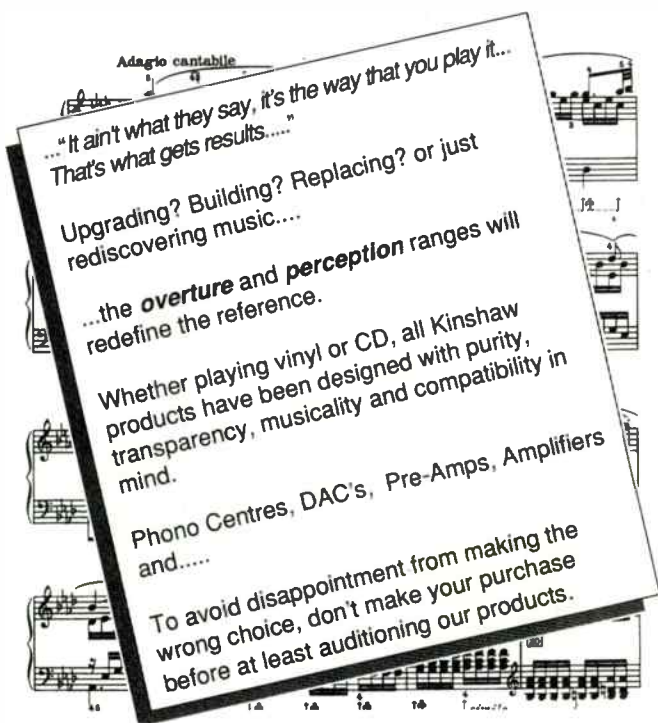
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we should be measuring and why. Measurements need to be devised that are specific to this end, instead of being adapted imperfectly from engineering modeling.

My fascination with Sensaura and OM3D was the way that they did just this - that is, rely on psycho-acoustic research. Both use complex phase and amplitude cues to 'fool' the brain. And look at the results - complex in some areas (e.g. signal processing), amazingly simple in others (just two speakers needed for surround sound). I suspect that this is the way forward for audio if it isn't just to buzz around in circles, like a bee in a jar.

Moving on to your observations about our published loudspeaker test results; they are consistent with my own reservations on measurement in this regard. I have rejected showing high definition impulse convolutions because they are far too complex for readers to interpret. We use such analyses to measure frequency response and delayed resonances whilst developing our own loudspeakers, but revert to third-octave analyses within the magazine to better illustrate simple trends.

These analyses might convey less to the trained engineer's eye, but in effect, by being understandable, they convey more to the typical reader's eye. **NK**

ORTOFON SPU

Disappointed was I with NK's response to Gerald Sartin's excellent letter in February's magazine.

Noel, what do you have against the glorious Ortofon SPU? What has this heavy weight transducer done to you? I think we should be told.

I don't know if the sample you had was faulty or by

accident it was plugged in to the wrong arm. After all the key to taming an SPU is to use a very heavyweight arm. I do not believe Mr Sartin is operating his cartridge 100% in a series II SME. He should try to find an earlier Mk I arm, sometimes referred to as the 'prototype'.

My own front end is based around an SPU Gold Reference in a Fidelity Research FR64S arm mounted on a Garrard of course. I have never had any of the problems you have had Noel.

In my opinion Hi-Fi World is the most open and free minded of all the major hi-fi press. So I was really disappointed to read Noel's prejudiced response based on a distant meeting.

I demand a re-trial of this most glorious cartridge. You can keep your Ortofon MC2000, as good as it is. It can in no way provide the authority the SPU can.

After all, how long was your 401 stuck up in the loft?
Haden Boardman
Wigan,
Lancashire.

Wow! No 401 jibes below the belt please! At least I kept my 401, in the firm belief that one day it would run properly and prove itself - as it did. But on to Ortofon's SPU.

Many moons ago, on a visit to the Ortofon factory in southern Denmark, I was presented with an SPU as a reminder of the length of time Ortofon had been in the business of manufacturing serious cartridges. But a senior engineer quipped that whilst it was revered by some enthusiasts, it really wasn't so good. This comment set up doubts.

I seem to remember unbolting mine from its massive headshell, putting it into an ADC magnesium shell, measuring it and then using it. Tracking was so-so and tip mass resonance

occured at around 10kHz I seem to recall, a low value. The treble was very sweet. However, suspicion about its abilities and fear of damage to my record collection from mistracking took a hold and persuaded me to part with it. This was Decca London paranoia setting in - I feared encountering another fantastic sounding cartridge that would desecrate my records. So the spiders in the loft never got to hear an SPU, even if they did do the Fandango on my Garrard.
NK

PAST CREATURES

Thank you for publishing my letter in the February issue. However, the note of scepticism in Noel Keywood's reply suggested that the SPU, although fine in its time, is a creature of the past, and, in his opinion, should stay there. I don't intend to challenge Mr Keywood's personal appreciation of this cartridge, but would just like to point out that this is not the view of Ortofon themselves. Not only is the SPU the only hi-fi product that has been in continuous production since 1958, but there is a range of SPU cartridges (marketed in Asia) from Classic, Gold, to Reference. The manufacturer still evidently considers the SPU a state-of-the-art product, with a price to match. The SPU Gold, the only model available in the UK, has a suggested price of £600. Not just for the romantics then!

The resonance Mr Keywood cites was probably due to the head shell. I have noticed a marked improvement to the performance of my SPU when I pushed black tack around the cartridge between the head shell to eliminate any sympathetic resonance. Current SPUs come encased in non-resonant solid head shells.

Perhaps this extra information will help convince

that all of those out there with obsolete Garrard 301s and 401s, 12 inch SMEs and Leak valve amps aren't straying towards soft headed nostalgia if they went so far as to try out an SPU!

Gerald Sartin
Paris,
France.

Alright, you win. We'll review an SPU as soon as possible! **NK**

PUTTING BACK THE INTEREST

Having become a new reader of your magazine it was a pleasure to see, for me, a refreshing approach to hi-fi was taken, in that old equipment holds an equal priority with new equipment.

I have a deep love for music and gradually building up and upgrading my system to what it is today has given me much enjoyment over the past couple of years. My system as it stands is a Marantz CD 52 MkII SE CD player, a Marantz 6100 turntable, a Marantz PM50 amplifier, a Nakamichi BX100E cassette deck and B&W DS4 twin drive speakers with Supra cable. An interest of mine has always been to build my own valve amplifier as I have had twelve KT88 valves in my possession for some time and I now have the opportunity to do this by coupling the idea with my University project, I am studying Electrical and Electronic Engineering specializing in electrical machines, it could provide an interesting comparison to the Marantz !

I plan to design a power transformer for the supply stage by determining the necessary core size and constructing my own primary and secondary windings. Due to a little early research, as my project is not until the next year of my course, it has become apparent that a

continued on page 55...

Marantz have been renowned for their budget and mid range CD players almost from the conception of compact disc itself. The CD-63 follows in a long and illustrious line of forebears. Effectively it replaces the hugely successful CD-52, which itself was preceded by Marantz's first budget bitstream player and rather unsuccessful CD-41. If you go back still further the multi bit CD-50 and CD-65 were, rightly or wrongly, legends in their own lifetimes, especially in souped up Special Edition (SE) form.

An SE version of the CD-63 is promised for the near future, but here we take a look at the standard model priced smack in the middle of the cut throat £200-£300 market, at £249.00.

Marantz may have an excellent reputation for value and sound quality, but their cheaper machines' aesthetics have often left something to be desired. In

an effort to rid themselves of this stigma, they have developed an entirely redesigned range known as "Softline", which runs alongside the flat fronted models.

Being from the Softline range, the CD-63 is slim at only 8.5cm high (in part due to the CDM-9/12 transport shared with other anorexics such as the Aura CD-50) and has a rounded front panel. Otherwise it's fairly lightweight, with gold buttons ringing overtones of tackier Japanese brands. Another break from tradition for Marantz is that the player is actually made in Japan rather than being of Dutch origin as previous budget machines have been.

Being Japanese usually means a surfeit of features, and here the CD-63 is no exception. Electrical and optical digital outputs, a thirty key remote handset, automatic music search, A/B repeat, a numeric key pad, editing features for

recording, and a remote volume control for the output and headphones are all there. Many of these features are unnecessary, and it did make me wonder how much the technical merit of the player would suffer as a consequence.

The internals are, sure enough, Philips based and pretty unexceptional. But proudly announced on the front panel are the initials (in gold of course) HDAM. HDAM transpires to mean high quality audio grade op-amps, rather than the nasty 20p jobs that are usually found lurking at the back of CD players. Its aims are similar to Rotels' Discrete output (reduced noise and harshness), but without going to the extent of building a discrete output stage.

With the four stage dimmer set to its minimum setting, I connected the CD-63 up to my system with a selection of interconnects (but definitely not with the bits of "string" provided). Whatever my

SOFTLINE SUCCESS

Will Marantz's new Softline CD-63 be able to follow on from the success of the CD-52?

Dominic Todd and Robert Wilson look for the answer.

MEASURED PERFORMANCE

With their well established reputation in CD players, Marantz can be expected to tread carefully - and they have with the CD-63. It has a sensibly flat frequency response that rolls off gently at high frequencies (see our response analysis), which will avoid sharpness in the sound.

Distortion was low at all music levels. The distortion spectrum analysis clearly shows a complete absence of distortion harmonics - a fine result for a budget player. Only lower down in the dynamic range did distortion rise a little above the norm., but this is unlikely to be of great consequence. A dithered -90dB signal generated around 10% second harmonic, whereas rival Sony players, for example, manage around 2%. However, low level distortion does not have a major affect upon the sound of player.

Channel separation was high and output normal, at approximately 2.3volts. Both spurious outputs above 21kHz (aliasing products), and high frequency distortion proved low for a budget design. Dynamic range was a satisfactory 105dB.

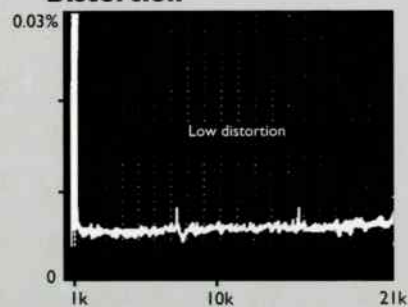
The CD-63 is very well engineered,

being essentially blemish free. Low distortion and a smooth frequency response in particular suggest a smooth sound is likely. **NK**

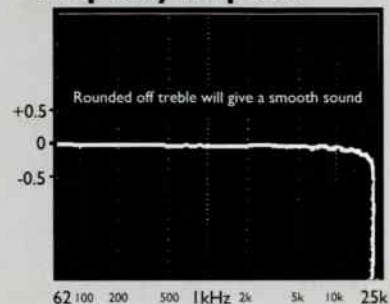
TEST RESULTS

Frequency response	3Hz-21kHz	
Distortion %		
-6dB	0.005	0.005
-30dB	0.007	0.007
-60dB	0.6	0.6
-90dB	40	37
-90dB dithered	15	10
Separation dB	left	right
1kHz	133	134
20kHz	127	128
Noise	-116dB	
with emphasis	-116dB	
Dynamic range	-105dB	
Output	2.28V	

Distortion



Frequency Response





reservations about the new styling, the sound quality more than makes up for it.

I was immediately struck as to how much cleaner at the top end the player was than budget Marantz of old. Suzanne Vega's "99.9°" was tightly focused with her vocals kept firmly under control. Excessive sibilance and splashiness, that could grate with previous CD-52/-72s, were notable by their absence.

Those who enjoyed the Marantz vigour and upbeat presentation can rest assured though. The CD-63 still has all the Marantz hallmarks of good dynamics and fine detail in the treble. However, the latter of these talents does come somewhat at the expense of treble integration, which can sound detached and forward from the rest of the mix. This is emphasised more by poorer recordings and brighter sounding loudspeakers so, unlike many other budget machines, careful system matching is required.

With Fraser Chorus' "Cloud 8" the Marantz compounded the impression of control still further by showing a bass quality that was a match for the treble in terms of clarity, with useful bass extension and depth for the price. This was tainted, though, by a hardening at higher volumes that could become uncomfortable to listen to. Sympathetic interconnects, such as solid core DNMs or even pure silver cables, help, but don't totally alleviate the problem.

An old favourite of mine, Steely Dan's "Haitian Divorce" demonstrated another change of tact for Marantz. This is the first bitstream budget Marantz player I've heard with which piano doesn't come across as hollow and synthesized. Instead it was produced with realism and a greater degree of solidity, although still not quite in the league of, say, the Rotel 965 which really majors here. Other than this there was very little to carp at; the track had all the punch and vitality it should.

Clannad's "Sirius" was given sufficient Celtic atmosphere and warmth. The sound stage was only average in width and depth, but had surprisingly good height, and was open enough to be free from cloudy colourations, allowing vocals to sear from the loudspeakers.

It's rare for any CD player, regardless of price, to combine truly exceptional sound quality, and combine it with solid build quality and desirable looks as a complete package. The Marantz CD-63, like most machines of this price range, is flawed. The greatest disappointment has come with the new style casing which offers no ergonomic improvement on previous models (track and speed advance are still easy to mix up, for example), and dubious aesthetics. Despite being built in Japan, where the solidly built CD-72 originates from, there also seems to be no gain in build quality or finish over the Dutch built CD-42/-52.

Crucially, the sound quality has taken a step forward though, which is no mean feat when you consider Marantz's high standing in the first place. Whether or not this is to do with the new HDAM op-amps is impossible to say, but it seems quite likely seeing as the rest of the components are pretty straight forward.

The CD-63 still upholds the Marantz tradition in sounding lively, exciting and, above all, involving, but in this case is usefully smoother and more refined, especially at higher frequencies. This does fall apart at higher volumes and the refinement still can't match that of a Rotel or even a Denon. Clearly, if you seek an easy going, inoffensive machine, look elsewhere. If it's realism and excitement you seek, though, the CD-63 only has two real problems. The first is the NAD 501 at £180, and the second is Marantz's own Special Edition model which, if past experience still holds true, will be well worth the wait. Roll on the CD-63SE!

ROBERT SAYS

When listening to heavily structured polysynth rhythms which form the basis of Trevor Horn's production work with Grace Jones' "Slave to the Rhythm", the Marantz reconstructed the rigid sequencer patterns well, maintaining machine-like order to percussive arrangements. However, listening to a more natural arrangement, like Steve Winwood's title track from the album "Roll with it", the Marantz lost some of the music's looseness and feel, allowing less of the creative spirit to shine through.

Treble detail is initially impressive, being bright, but reasonably well controlled. It coped well with the excessively sibilant mix of the Lemon Trees album very well, it's just that the budget limitations of the CD-63 could be found when listening for the finesse and clarity of detail that prevails in well recorded cymbals, for instance the initial crash and metallic ring.

The most noticeable facet of the Marantz's balance was the dry bottom end, which I felt took some body away from the overall sound. The midrange is very clear and articulate, with good stage width that remains solid and stable through to the outermost edges, even if this is offset by an unfortunate compression of the actual image depth.

For a budget CD player, the Marantz is very good. It has a lively, clear and concise mid allied to a top end that can be impressive. However, the lack of richness and dynamic shading may not be to some peoples liking, although it could calm down some of the overblown speakers that are around ●

Marantz CD-63 £249
Marantz Hi-Fi UK Ltd.,
Kingsbridge House, Tadbury Oaks,
575-583 Bath Road, Longfield,
Middx. UB7 0EH
Tel: 0753 680868

BUILT ON THE KLYDE

Scots wae an LPI 2 - and love it - now have a new cartridge, the Linn Klyde, to consider. Sassenachs Eric Braithwaite and Noel Keywood take an interest as well.

The new Klyde moving-coil cartridge is likely to warm the cockles of Linnies' hearts. All those with £449 to spare will latch on to this one with the enthusiasm of monster spotters sighting Nessie.

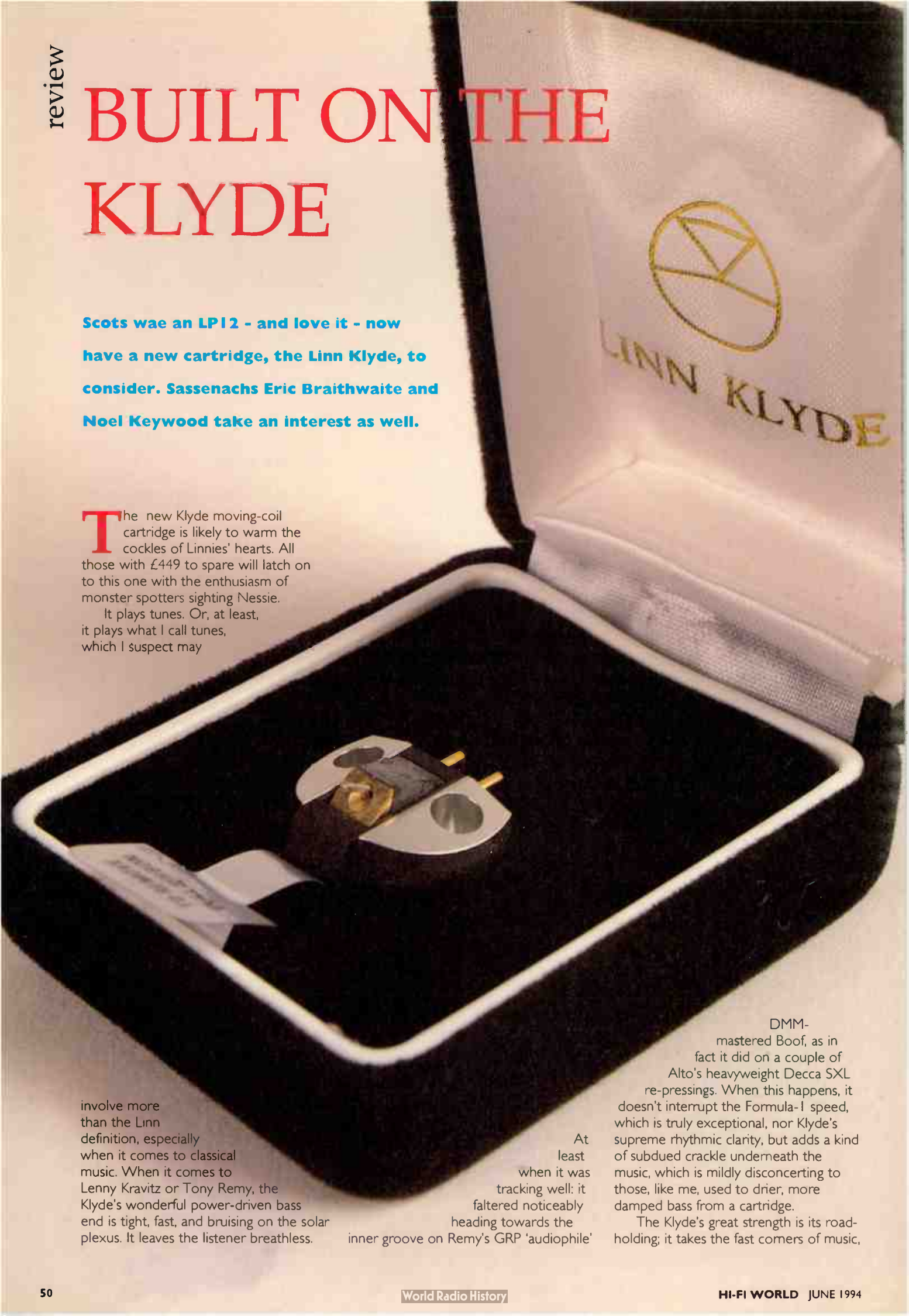
It plays tunes. Or, at least, it plays what I call tunes, which I suspect may

involve more than the Linn definition, especially when it comes to classical music. When it comes to Lenny Kravitz or Tony Remy, the Klyde's wonderful power-driven bass end is tight, fast, and bruising on the solar plexus. It leaves the listener breathless.

At least when it was tracking well: it faltered noticeably heading towards the inner groove on Remy's GRP 'audiophile'

DMM-mastered Boof, as in fact it did on a couple of Alto's heavyweight Decca SXL re-pressings. When this happens, it doesn't interrupt the Formula-1 speed, which is truly exceptional, nor Klyde's supreme rhythmic clarity, but adds a kind of subdued crackle underneath the music, which is mildly disconcerting to those, like me, used to drier, more damped bass from a cartridge.

The Klyde's great strength is its road-holding; it takes the fast corners of music,



like serious bass or rhythm-guitar-picking, with consummate ease, weaving through the chicanes of drumming with the spot-on clutch changes that, until they were banned recently, racing drivers needed an on-board computer to manage.

Acoustic guitars, for example, have an unusual 'bigness', an endearing body, well to the fore of the Klyde's rivals. And none of this is achieved at the expense of the kind of insight to be expected at £450. Backing vocalists slot in from a deathly silence as another track is patched in through the mixing desk; instrumentalists and vocalists take up a defined space between the speakers, although

sometimes with a less expansive or more constricted width than the Ortofons or Lyras reproduce at this price level. But it doesn't half concentrate attention on the rhythm.

Where I was much less happy was playing Elgar's Violin Concerto or Ravel's Tzigane.

Neither Perlman's violin in the former on DGG, nor Ricci's on Alto-Decca SXL in the latter, soared in the upper reaches of the score. Like cymbal work, the harmonics were there, but truncated. Tzigane should sound Gypsy-ish and in Ricci's hands, a virtuoso piece. It came across more as a clever, but unimaginative test-piece out of a Suzuki school demonstration. DGG's downright ordinary recording quality was, on the plus-side, laid horribly bare; but on the minus side dulled further so as to make Elgar's violin writing near-anonymous. It was only on replacing the Klyde with my Morch da Capo (a Lyrac-clone) that a visiting listener said 'Ah, Elgar'

Beethoven's Triple Concerto (with the equivalent of a Williams team, Oistrakh, Rostropovich and Richter) had a strong piano below Middle C, but a touch boxy and recessed; plenty of air, space, surprising depth and recorded ambience, but while the piece was eminently recognisable, the distinctive playing of the individuals in this threesome was much less so, the subtlety that makes up the style somewhat dissipated.

A mixed bag, this one. Through my Iso, the treble was, by comparison with the superb bass and clear midrange, simply anaemic. With 100 ohm loading (via a Sota head-amp, the only one I could lay my hands on that gave me the option) the gap between the extremes was smoothed over; most of my listening was done with this loading. There lies the rub. The Klyde conforms to Linn's

stated aims in music reproduction in a way no other cartridge can match. But others are more equably balanced. Linn owners: go and buy! The Klyde is likely to complement an LPI 2 supremely well. Others: listen and compare first. **EB**

NOEL SAYS -

Having greatly enjoyed using Asakas in the past, I looked forward to getting hold of a Klyde, Linn's new 'budget' moving coil cartridge. By budget, I mean £449, which to most of us is quite a lot of money of course, even if it does pale into insignificance against esoterica like the Kiseki Lapis Lazuli, van den Hul

Grasshopper and such like. Generally though, the Linn moving coils could be relied upon to deliver rock music with superb dynamics: tight, thunderous bass, a super-clear midband with great projection and satisfactory treble, if not of the sweet, sonorous variety that comes from some upmarket MCs. Could the Klyde bring back this magic? Would it blow my socks off?

Presented in a compact grey carton, from which slides a neat clamshell container finished in black velour, the Klyde looks striking. Its distinctive semi-circular body appears to be hewn from a solid lump of metal - and it feels like it too. Finished in camera chrome, with black Linn logo, this body does, however, possess two minor drawbacks. It doesn't have a headshell alignment face, unlike straight-sided Ortofons for example, and the fixing screws must be inserted from below, putting the nuts and protruding screw threads on display above the headshell, which is ugly rather than anything else.

The Klyde body is, however, compact, arm compatible (it weighs a normal 8gms) and very rigid. I'm sure Linn would like this last point emphasised, because it does contribute to sound quality. However, I suspect it is not the only feature to give the Klyde its dynamics - others are more hidden.

Whilst the Klyde will fit most arms and they will, in turn, be able to balance out its 8gms weight, output proved so low that only very low noise preamps should be used. Stick to Linn, Michell, DPA and Audiolab amplifiers for this purpose; the MC stages available on some budget amps often hiss badly and will not be suitable.

Another unusual point worth bearing in mind is that the Klyde needs a load

greater than 50Ω. I found even 40Ω upset its performance slightly, but 100Ω would be ideal. This means it may well not suit step-up transformers - I'd advise a listening test first.

I installed the Klyde into an SME 309 sitting on a Systemdek IIXE900. Although my own preference of head amp is an EAR834P it seemed not to like an Ortofon MC7500 the other day, which surprised me. Wary of the fact that on MC the 834P has input transformers and that the Klyde may not suit, I kicked off using an Audiolab 8000C preamp for its high quality MC stage, feeding our own 300B feedbackless valve amplifier in final prototype form (it'll be in production soon!), driving sensitive Heybrook Quartet loudspeakers. This was a fabulous set-up, it turned out, just right for the Klyde. The Quartets have a lot of bass weight and plenty of vigour in their sound, plus a clear midband and easy treble.

I found the Klyde's great strength almost straight away by putting on 'The Hunter Gets Captured by the Game', from Grace Jones' Warm Leatherette. Sly Dunbar's drums slammed out of the speakers with such impact and so much resonance to their body I was taken aback. Jones snarled powerfully from centre stage - I was struck by the forcefulness of the sound, by its dynamic power and pace. The Klyde showed it had a tight, controlled and muscular presentation, but one without tizzy or searing treble. And without sibilance, I began to notice - and without much high treble at all, it slowly dawned on me as listening continued. Cymbals would crash, but they would not ring. Generally, metallic percussion instruments like

“Linn moving coils could be relied upon to deliver rock music with superb dynamics”



The Klyde's solid metal body takes screws from below. The cantilever is short and stiff.

triangles, hi-hats and cymbals lacked sonority, sounding a little bleak in their harmonic structure.

With a fine bass and midrange performance, the Klyde showed it suited classical music well, picking out individual instruments clearly and reproducing tonal colours nicely. It's a cartridge without brightness or thinness in its sound: violins

didn't shriek, yet timpani thundered. The cartridge brought its reproduction of dynamic contrasts as much to the orchestra as it did to the rock studio, lending weight and authority, whilst at the same time always sounding smooth and rich. Although Linn products are more associated with rock music than classical, I felt the Klyde was actually more impressive with the latter, although it gives a perspective a little more distant than is true.

With rock music, however, I was aware that the Klyde, whilst not sounding dull, certainly lacked sparkle. This balance was acceptable in light of the cartridge's strengths, except where it became severe on inner grooves where, I felt, the Klyde often became just too dull. Fleetwood Mac's 'Go Your Own Way' highlighted the problem; the whole performance sounded positively muffled.

Changing preamps had little effect. The Klyde didn't really benefit from the 834P's laid back fluidity of presentation.

It sounded more balanced tonally feeding a Linn Majik amplifier, although this inevitably lacked the sheer neutrality of a 300B amplifier, but this is only to be expected from a production solid-state unit against a highly specialised valve design. I feel that the Klyde best suits the bottom end welly and top-end brightness of solid-state amplification and can see how it is best complemented by a Linn system.

If there's anything that underscored the sheer control and scale of the Klyde's sound, it was a listening session with the Ortofon MC10/20/30 Supremes conducted at the same time. Whilst these cartridges consummately outperformed the Klyde in measured performance, the Klyde's show of sonic strength had them quaking in their boots. It's a remarkable cartridge subjectively, and certainly one that will light the fire of any Linnie; the Klyde made CD sound comparatively weak and anaemic.

My test results might appear to suggest this cartridge is enhanced, being all bass and no treble, but I suspect there's more to it. The cantilever is short, stiff and heavily damped. All these things are likely to enhance dynamics, at the expense of tracking and vertical tracking angle, so the Klyde may not measure well because of its strengths.

Personally, as much as I found myself in awe of the Klyde's sound, I wished for a just a little more treble. I think Linn could usefully tease just a little more out of it. At the same time it would be churlish to say anything other than this cartridge is a stonker - listen to it ● **NK**

LINN KLYDE £449.00
Linn Products Ltd.,
Floors Road,
Waterfoot,
Eaglesham,
Glasgow G76 0EP
Tel: 041 - 644 5111

MEASURED PERFORMANCE

The Klyde possessed an unusual measured performance. Nearly all pickup cartridges, especially moving coils, have a treble peak caused by tip mass resonance, where the effective mass of the tip acts in conjunction with the compliance of the record vinyl. Because moving coils do not have innately falling treble caused by generator loss, this peak can loom large. Audio Technica's OCS and Goldring's Elite are two MC cartridges that come to mind as obviously bright-sounding because of the phenomenon.

In contrast - and unlike most other MCs - the Klyde possesses no treble peak whatsoever. As our frequency response analysis shows, its output falls steadily from around 600Hz to become -2dB down at 12kHz. Above this frequency output falls away, especially on inner grooves, where tracing loss of the 'Vital' caused treble to measure -4db at 12kHz. These sort of treble losses will certainly be audible as a warming of the sound at least. On inner grooves I'd expect obvious dullness.

Tracking was mediocre at low frequencies and in the midband; the Klyde was easily bettered by moving coil Goldrings and Ortofons in this respect, at any price. Distortion was acceptably low on centre-stage images (lateral modulation) at 0.75%, mainly third harmonic. The cartridge's vertical tracking angle measured a high 30 degrees, producing no less than 6% second harmonic on vertical modulation, which will affect left and right images. Luckily, second harmonic only lightens timbre so, subjectively, its presence is not easily discerned.

Channel separation was unbalanced, indicating a misaligned generator assembly. By tilting the cartridge heavily, I found I could lessen this, but it's not a solution, because the tip does not then contact the groove properly. Our Klyde needed more

careful assembly I suspect. Output was very low at 0.25mV at 5cms/sec rms; Ortofon moving coils manage double this, for example.

The square wave performance of the Klyde showed a well damped cantilever, and the mediocre tracking figures suggest likewise. I wonder whether Linn have optimised the cartridge to sound well damped and tight in the bass, at the expense of much else. **NK**

TEST RESULTS

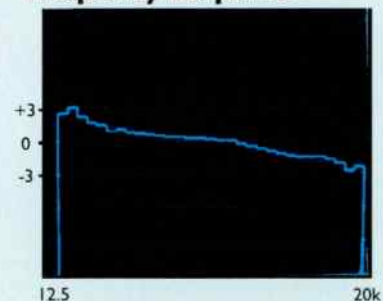
Tracking force (gms)	1.55-1.75
Weight (gms)	8
Vertical tracking angle (degrees)	30
Frequency response (2dB)	20-12k
Channel separation (dB)	24
Tracking ability (300Hz)	
lateral	60µm
vertical	45µm
lateral 1kHz (cm/sec)	15
Distortion,	45µm (%)
lateral	0.75
vertical	8.5
Output, 5cms/sec rms (mV)	0.25
Channel imbalance (dB)	0

Square wave

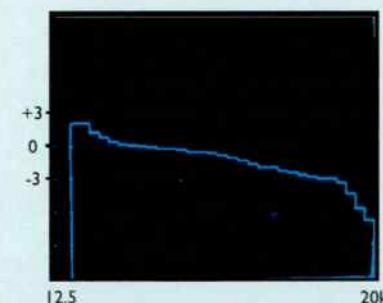


Absence of overshoot and ringing on a square wave shows that the Klyde cantilever is mechanically well damped.

Frequency Response

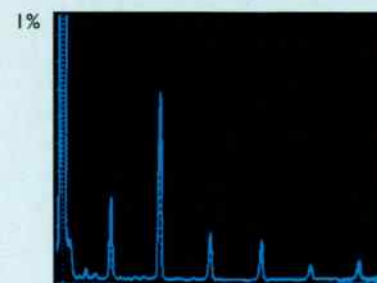


Frequency response on outer grooves exhibits steadily falling treble.



Frequency response on inner grooves exhibits strong upper treble loss.

Distortion



Third harmonic distortion dominates, measuring 0.75% at 45µm, 300Hz here.

Indoor aerials are commonly offered as a cheap technological fix for a minor ailment - poor reception - in the same way the Victorians peddled their potions and lotions. The bad news is - they're usually no more successful. Indoor aerials possessed of magic powers are nothing other than electronic hokum, at present at least. But then, you never know when someone might succeed; after all, the ferrite aerial used on medium wave seems magically small compared to its ideal equivalent, a long length of wire strung down the garden. So when Maxview recently released a new, powered indoor aerial exclusively for FM radio, I was keen to review it.

The Profile FM antenna takes the form of a slim, dark grey plastic case measuring 26cms high, 21cms wide and 5cms deep (max). Although it can free-stand on its narrow base, it has been designed to fix unobtrusively to flat surfaces like walls and windows. Maxview supply fixing screws and masonry plugs, suction pads for glass and 2 metres of lead, but no batteries. It takes two size AA batteries of the sort used in Walkmans to power its internal amplifier and they have a life of 1000hours,

or 41 days, if the device is left on. It can be switched off, however, from a front panel button and, when on, a little red LED flashes every ten seconds or so as a warning. Price is a mere £19.95, pretty reasonable considering there's even a signal amplifier inside.

It's common to test an aerial against a benchmark reference dipole type, noting how much better or worse is the unit under test. I use a rigid aluminium dipole bought for a tenner a few years ago and made by - guess who - Maxview.

This reference and the Profile were in turn used with a Hitachi FT5500MkII tuner possessing a digital readout of signal strength in dBs. The site of the tests was Central London, an area of mediocre signal strength.

Starting down at the bottom end of the VHF band I tuned into Radio 2 at 89.1MHz. There was some hiss, modulation distortion and birdies on stereo with the Profile, but the programme was intelligible; signal measured 50dB. The dipole gave noticeably less hiss, no birdies and good reception; signal measured 38dB. The dipole was clearly better, no matter how I arranged the Profile.

Up a little at 91.3MHz, with Radio 3, the situation reversed. The Profile put up its best performance here, with 55dB of signal and a very quiet, birdy-free background (i.e. no warbling). I listened for hours and noticed only occasional bursts of static interference.

That Radios 2 and 3 should differ was a little unexpected, because both come from London's distant Wrotham transmitter, South East in Kent. In contrast, GLR on 94.9MHz comes from Croydon, which is closer and due South. Both the Profile and the dipole gave good, quiet reception from GLR, but its signal was strong, the dipole showed, so any aerial should have worked well.

Tuning around at the bottom end of the band I found generally that with major stations or weak community radio signals the two aerials were broadly matched in their ability to provide low hiss reception, providing for the Profile was optimally positioned. The dipole was obviously less position sensitive. The Profile did show a tendency to produce birdies too - warbling or whistling on stereo. Its amplifier is likely to be the cause.

The situation changed at the top end of the band, around and above 100MHz. On Jazz FM the Profile was hissy and poor, whilst the dipole was reasonably quiet. Classic FM on 100.9MHz whistled with the Profile and was hissy, but it came in well on the dipole. Melody on 104.9MHz was hissy and suffered birdies on stereo with the Profile, but was quiet and stable with the dipole. Distant and weak BBC Three Counties radio on 103.8MHz came in well with the dipole, with the tuner switched to mono, but the Profile was unable to capture it in useable form.

What these tests show is that the Profile is tuned to the bottom end of the FM band, where it favours traditional BBC stations. I wasn't surprised to find that here it could not convincingly improve upon Maxview's own simple alloy dipole. Its advantage lies not in improved reception, but in convenience, particularly small size and ease of placement.

At the top end of the FM band, the Profile proved unimpressive, giving significantly poorer reception with all stations than a normal dipole.

So the Profile offers no magic improvement in reception, I'm sorry to say. Flat dwellers should instead rely upon ingenuity to get better results. For example, the Profile could be made to score if it was fitted with a longer lead and positioned up high, or perhaps at the other side of the building, if it faces the transmitters there. Then the internal amplifier will earn its keep by compensating for lead losses. Otherwise, it just amplifies noise and weak stations equally, giving a higher indication on a tuner's signal strength meter, whilst offering no improvement in reception quality. In fact, frequent birdies on stereo appeared to be a problem with this aerial. The magic indoor aerial capable of curing poor reception has yet to be invented ●

Aerial Magic

Can Maxview's new Profile indoor FM aerial cure reception problems? Noel Keyword looks for the magic.



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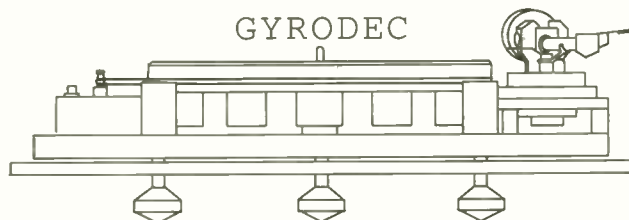
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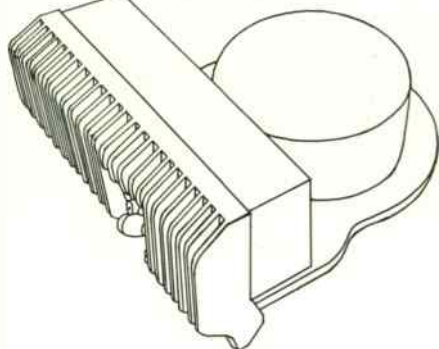
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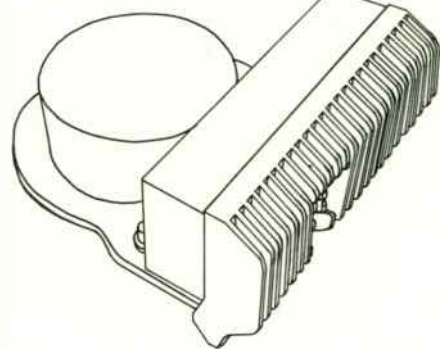
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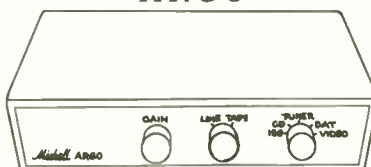
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Tel: 081 953 0771

Fax: 081 207 4688

...continued from page 47

circular cored transformer has significant advantages in sound quality over the conventional square cored versions. Please could you be of assistance in three areas? Do you know of any supplier of transformer core laminations that vary in width and thus would stack together to give a circular core? What would be the specifications of the secondary windings in terms of voltage and current requirements? And do you please know of any circuit diagrams for the KT88 valve? I know that a 6.3V secondary is needed for the heater element and a stepped up secondary for the anodes, but that is about all!

Any assistance that you may be able to give would be very much appreciated.

**David Cope
Salford,
Manchester,**

A mains transformer is a critical component in any item of electronic equipment because effectively it is the only thing between you and the National Grid. Any mistakes can have disastrous results. For this reason I recommend you speak to your lecturers and research the subject thoroughly before even considering winding a mains transformer. Unfortunately it is very difficult to get non standard laminations, the reason being that the standard "waste free" E-I laminations are very hard to beat, giving a large core area for a given external dimension. I am not sure if, when you say "circular core" you mean a toroidal transformer or a stack of E-I laminations of varying sizes to give a circular core cross section. Toroidals can suffer from insufficient core volume and to build an E-I stack into a circular cross section needed for a KT88 amplifier would require about 250 laminations of 125 different

sizes and it would have a far greater external size than the standard E-I for the same V.A. rating. **AG**

HAPPINESS IS A WARM 5-20

Well, I finally finished my Mullard 5-20 amp after many months of trying to locate the perfect parts, tweaking, etc. I decided to do it from scratch rather than starting with your kit as I wanted to make it operate in parallel push-pull, and wanted to put it all on one chassis. I also wanted to have the pleasure of hand picking all the components, although it turned out to be quite a chore to find everything. The final weight ended up at 25kgs!

I used oil-filled motor-run capacitors (large, they barely fit inside the case) for the power supply, figuring that they would have a lower internal impedance for better bass response. They seem to work very well, don't heat up, and sound good, so I think that was a good choice.

It was also necessary for me to wind my own mains power transformers as I couldn't find the proper ones to use. I think I made a bit of a mistake here (in addition to not realizing the agony involved) in that they run hot, while only giving me 320V AC (360V DC out of the 10H choke). I may decide to replace these at some point if I can find better ones that will give me something closer to 450V DC. I'm not sure if the low voltage is causing the tubes to operate in a non-linear region, but the sound is fine, so I figure probably not. As for brand names, I used the Sovtek 5881 and 12AX7 tubes.

I live a couple of blocks from some radio towers and was getting a lot of interference. After getting rid of a number of ground loops (I had wrongly used the chassis as my ground) by changing to a star-configured ground, I was able to cut the interference

down, but not get rid of it completely. I then put an RC filter on the input grid of V1, an LRC filter at the input jack, and shielded cable on a number of the more sensitive lines. The radio is still slightly audible if you put your ear right up to the speaker, but it is very tolerable and inaudible under normal listening circumstances.

As for the visual touches, the case is aluminium (painted black), and the front plate is polished copper. Lights on the two switches are the old red jewel type. It took me a while to locate a nice volume knob, and I finally found a company that was nice enough to send me a sample. Since I only needed one, that was that. Engraving the front plate finished it off.

I measured the frequency response with a test CD & oscilloscope, and it is as close to perfectly flat as can be seen on the display. I tried several configurations before deciding on the final one: with and without overall negative feedback, with and without the 0.1uF input capacitor, with and without the RF filters, etc. The best response, and best sound, was with negative feedback, and without the input capacitor (since my only sources are CD & tuner); I'm very happy with it.

I use my amp with some old AR-2a speakers that I like, but am not quite sure if I'm missing something. I think that I'll probably stick with these speakers, but have some concern that I'm just deluding myself into thinking that they sound good.

Anyway, thanks for providing the excellent DIY articles, opinions, etc, and although I decided to stick with the original pentode input/ultra linear design rather than the modified triode input/low-feedback one, thanks to Dominic Baker for providing the phone help and sending me his latest schematics for the amp.

**Steve Safarik
Seattle, WA
USA.**

P.S. I read Peter Qvortrup's letter several months ago about his opinion on various amplifier designs, and I honestly don't see how he can get any sleep at night.

The 5881 and EL34 are quite different valves; the 6L6/5881 beam tetrodes give a brighter, clearer sound than an EL34. However, many people like the superbly soft, easy sound of the latter in ultra linear operation. If you look at the graphs of the two valve's characteristics it can be seen that the 6L6 has a sharper "knee" than the EL34 and in this respect it behaves quite like an ideal pentode, while the EL34 "knee" is less well defined and the curves gather up at low anode voltages. We are looking here at conditions with the screen voltage at 250V; the gathering effect gets worse as the screen voltage goes up when going for extra power. This means that when used as plain pentodes and optimally load matched the 6L6 will produce less odd order harmonics and generally lower distortion than the EL34. For example, with similar supply voltages and at 55W output EL34s produce 5% distortion while 6L6GCs produce 1.8%. When comparing the two graphs take note that the grid voltage of the 6L6 is shown up to +15V, a region which is not normally used, only the lines up to 0V are relevant. In the 5-20 application your 5881s will work with the output transformer, but may need re-biasing to keep the dissipation within limits. Check the anode currents and change the cathode resistors if necessary. Also get a proper mains transformer or you may come home one day to find charred remains where your house used to be! **AG**

Products from Scandinavia do seem to possess an assured solidity. Take automobiles for instance. They conjure up images of that much maligned brick out-house. Hence the characteristics of these Swedish Sentec Aurora speakers, admittedly reviewed here in battered post-demonstration guise. Finished in an extremely hard-wearing light grey epoxy (they are also available in wood veneer) and tipping the scales at 22 kilos, the Sentecs emanate from the 'solid' school of loudspeaker design thinking.

Their weight is largely due to the use of 25mm MDF throughout the enclosure, this measuring 840 x 230 x 280mm (hwd) and being bass-reflex loaded by a fairly large diameter rear port. Experience suggested that these speakers would need to be placed in free space away from walls. The main reason for the sizeable bulk of the boxes is the need to be able to accommodate the three drive units that Sentec employ for each channel. These are a one inch, coated fabric, soft dome tweeter placed within a tuned chamber and two 6.5 inch cast magnesium chassis, polypropylene bass/mid drivers. The designer has made use of thick felt matting, installed around the tweeter to minimise diffraction problems.

Sentec quote a 92dB measured sensitivity rating and a 4 ohm impedance which should enable them to work well with a decent valve amp using a four ohm output tap.

To gain an initial impression of the Sentecs, they were wired up to the resident Audiolab monoblocks in order to run them in a little.

The first thing that hits you about the sound is the bass, and I do mean that literally. These Sentecs pack a punch that you really feel in the mid-riff as they reproduce bass with a menacing grumble.

The second immediately noticeable quality occurs in the image presentation which was squashed and low down, indicating that these speakers need to be raised about 6 inches, so that the centrally mounted tweeter is positioned at ear level.

Before the listening session began in earnest, I decided to use the Sentecs with a pair of World Audio Design K5881 valve monoblocks. This seemed to be the logical thing to do, as the speakers are a very sensitive design and the 5881s have a gloriously tight and fluid bass. I hoped this would tame a little of the Sentecs' low frequency exuberance and add some more definition to the overwhelming bass grumble that was noted earlier.

With the title track of Steve Winwood's album *Roll With It* an exciting, if not strictly accurate

room.

The sound varied quite considerably, the vocal projection was much better defined and the top end took on a sweeter nature. However, the bass, while being more restrained and balanced with respect to the rest of the frequency range, still tended to be marginally diffuse and at times difficult to pin down.

Michael Stipe of REM was positioned tangibly in the room and the music became livelier in character due to the treble being blessed with the ability to resolve transient information much more

quickly. In fact, it really began to sparkle in some instances. 'Everybody hurts' from *Automatic For The People* produced guitars with a warm, rich tonal quality, the organ also sharing this full-bodied sound. The use of an acoustic guitar to add a percussive element into the track was very obvious, the

sound of the plectrum 'clicking' on the strings crisp and dynamic. From an engineers point of view the positional differentiation of Stipe's main vocal from his rendition of the backing part was excellent, panned slightly to the right and pushed back a few feet into its own space within the soundstage.

John Paul Jones' string arrangement on the track was beautifully fluid, ebbing and flowing with the emotions expressed in the music and in complete contrast to the sharp snap of the snare drum.

The sweeter treble that the Sentecs had gained due to the change in environment was evident with Peter Gabriel's 'Mercy Street' from the acclaimed *So* album. This song uses a simple but incredibly effective triangle fill which tingled brightly with the Sentecs, as did the use of ride cymbals on other tracks. Vocal projection was explicit, if a little overblown and slightly darkened.

'Salisbury Hill', another Gabriel track, is one I know can really move along at a pace. This seemed a little lack-lustre with the Sentecs, again probably due to the lack of tight, rigid bass which gives the track its rhythmic drive. The DPA amps

“ Although these speakers aren't perfect, they are seductive. ”

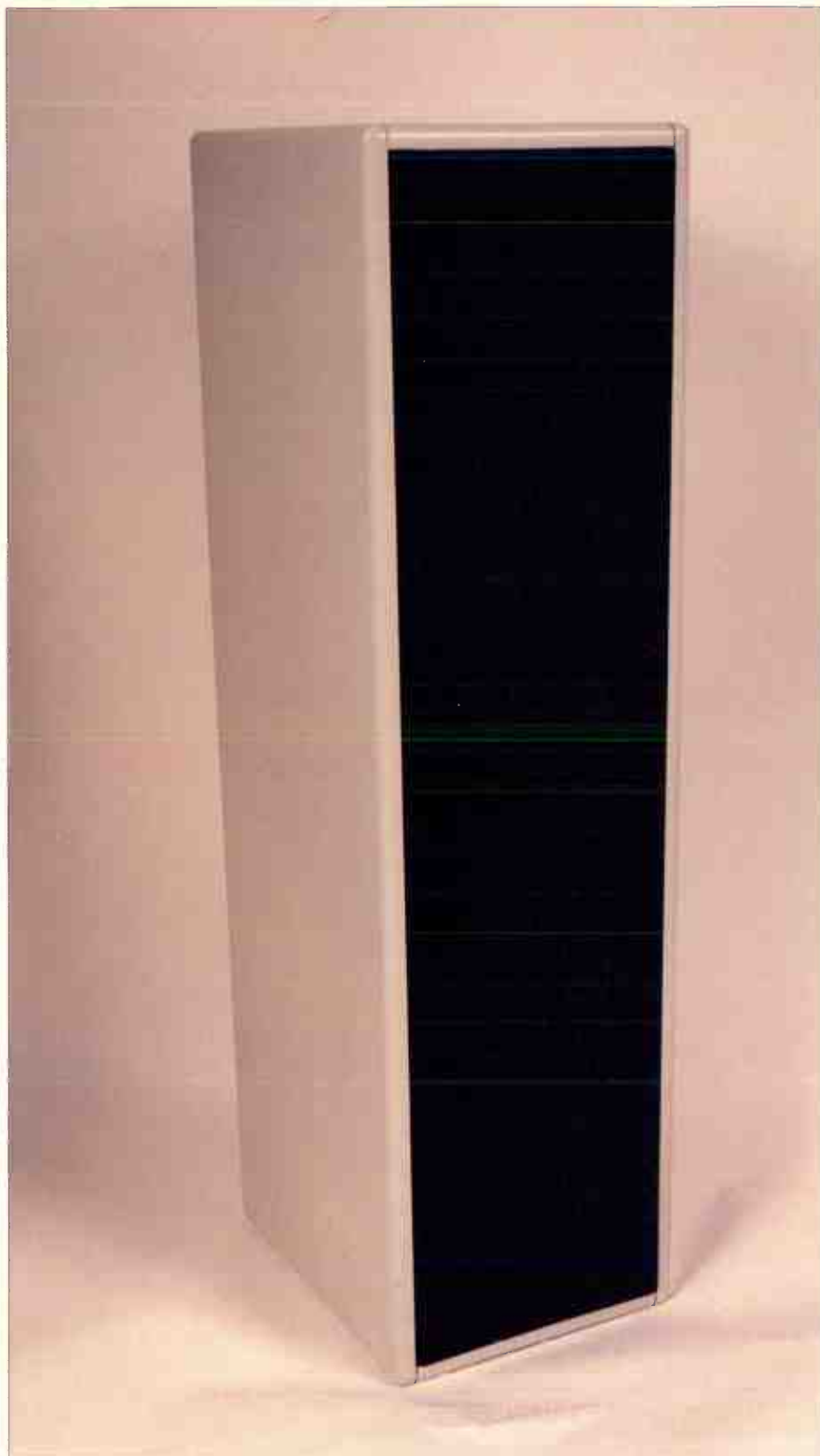
presentation was observed. The drum intro was packed with power and energy, but the speakers couldn't quite define the timbral characteristics of the 'skins' as impeccably as the Heybrook Sextets that I had heard the K5881s with originally. During the track there is a subtle mix on the snare, which layers it with a hand-clap and a tambourine beat. This was difficult to ascertain using the Sentecs as they tended to mask the mid-range in their desire to encapsulate the room in copious amounts of bass, which caused both myself and the sofa to resonate in sympathy.

Using other music, such as Pink Floyd's *The Wall*, confirmed the wonderfully rich quality that the Sentecs give to the sound, the deep bass being matched by an equally deep soundstage. Although these speakers aren't perfect, they are seductive, this being the reason why I decided to take them round to Dominic's flat and give them a chance in his larger listening room which seems to accommodate bulkier loudspeakers quite well.

Raising the Sentecs by about 9 inches brought the tweeters to the right height for listening to in this different

Northern Light

Robert Wilson test drives a Scandinavian heavy weight and finds it a safe bet.



that Dominic uses are notable for their excellent neutral quality and lack of euphonic enhancement in the bottom end, suggesting that the Sentecs need an amp of amazing quality to regulate the bass drivers.

This final statement, luckily, goes without saying, as anyone contemplating an investment of £1500 in a pair of loudspeakers should already possess a system with excellent capabilities. At this end of the market, system synergy is extremely important and only the purchaser will be able to determine the Aurora's true worth within a specific location. If you have a very large listening room and are looking for a big sound

with loads of presence, then the Sentecs are worth searching out. They are a solid, well constructed design with an equally solid performance and go about their business with a genuine lack of pretension. To use an automotive analogy, a bit like a Saab Turbo ●

**SENTEC'S AURORA
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43 Henneker Point,
133 Leytonstone Road,
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Tel: 081 - 555 122**

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MEASURED PERFORMANCE

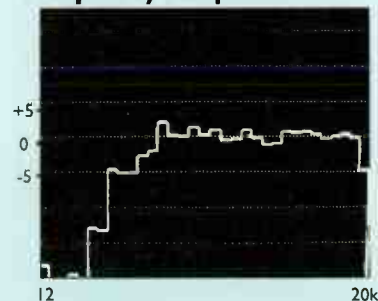
The Sentec Auroras are an interesting loudspeaker. They use two small polypropylene bass drivers mounted either side of a SEAS soft dome tweeter. The three units are time aligned, so the tweeter sits back in a recess where its voice coil is in the same plane as that of the bass units. The hard edges of its recess would degrade image sharpness because of reflections, so the designer has packed layers of soft felt around the tweeter to absorb them and partially overcome the problem.

The frequency response shows good engineering; it is flat and very well tailored. The lower bass does, from the oscillogram, appear to be at a lower level than the rest of the response, but when positioned on the floor within a listening room this will be bolstered up.

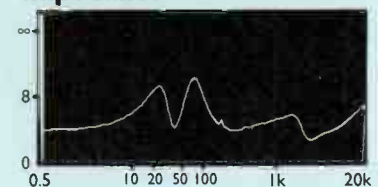
Measuring sensitivity with a nominal watt of pink noise, I thought some trickery was going on. I measured 91dB, and knowing the units that Sentec have used quite well, I was surprised. Looking at the impedance curve explains this unusually high figure though: the speaker's have an overall impedance of 5Ω so, although sensitive, they are not efficient, demanding twice as much current from an amplifier as a typical British loudspeaker. The impedance curve itself is quite well mannered, and good results may be possible using the 4Ω tap on a valve amplifier.

As I said at the start, the Sentecs are an interesting loudspeaker. They measure flat, demand a lot of current to drive, implying the need for a good amplifier, and are sensitive. **DB**

Frequency Response



Impedance



The VOIGT LOUDSPEAKER

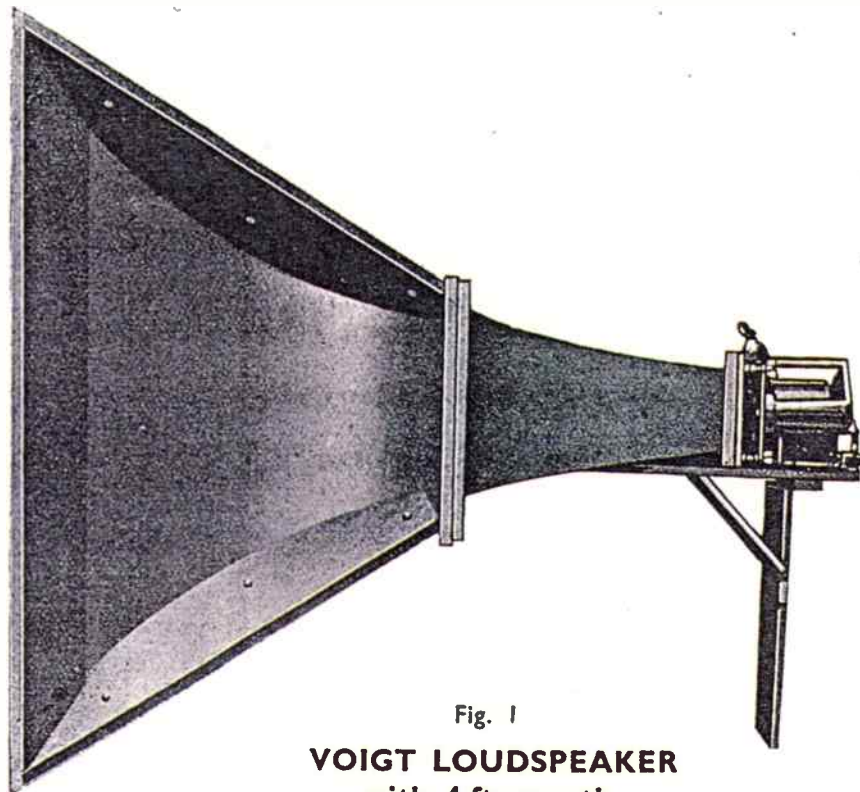


Fig. 1
**VOIGT LOUDSPEAKER
with 4 ft. mouth
STRAIGHT "TRACTRIX" HORN**

August, 1936

I got a call from a chap telling me there were a couple of horn loudspeakers in a dance hall in Selsdon and was I interested, because otherwise they'd be thrown out". The British Vintage Wireless Society grapevine was working well. Enthusiast John Howes didn't know it at the time, but he was about to encounter something to make his heart beat faster - very fast - a rare version of the Voigt Tractrix horn.

Like many BVWS members, John has a great affection for the past and its pioneers. This includes a reverential and well documented knowledge of Paul Voigt and his many audio inventions and designs, including the massive Tractrix horn loudspeaker. John already has a standard pair, played at every BVWS meet at Southboro Town Hall. The second pair made came with a 'bass bin', a square forward-firing tunnel that nestles

undemeath the main horn, as our pictures show.

The Tractrix was an early straight horn meant for cinema and dance hall work. Voigt, Klipsch and others produced folded horns later on as music moved into the home, today's equivalents being the Tannoy Westminster and Living Voice Air Partner. However, back around the turn of the century tiny electrical or acoustical signals were amplified (efficiently



◀ ▶
Rear view of the horn, showing construction and the configuration of the bass tunnel.

▶ ▶
Voigt's own twin diaphragm drive unit with sturdy forged iron frame.





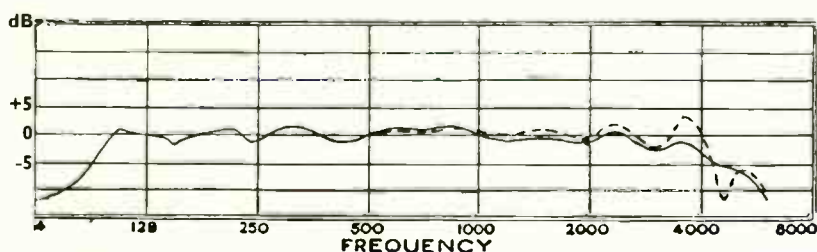
The newly discovered Tractrix horn being readied for use. It has a four foot square mouth and this version also has an additional forward firing bass tunnel slung underneath.

transmitted in fact) by straight or gently curved horns, usually in public address applications. Remember that sound reproduction in the home hardly existed then, a crystal radio with headphones being most common. Television and hi-fi reached the public at large only after World War II.

Horn theory was first expressed mathematically by Webster, a U.S. mathematician, around 1920. Until Voigt developed the Tractrix flair shape in 1926 by geometric means (rather than pure maths), exponential and conical horns were used. The Tractrix flair gave a shorter horn with better dispersion at the mouth. In its time it was acknowledged,

by those who knew about it, as unusually effective. So Voigt, a Briton born in 1901 of German parents and educated at Dulwich College, South London, helped pioneer the horn loudspeaker, amongst many other things in audio, bringing to it a very effective form of flair. Curiously, the Tractrix remains little known or written about, even today.

Given plenty of space to breathe in Southboro Town Hall, and driven by a replica Williamson 0.1 valve amplifier (designed in 1947), the rescued Tractrix was in fine fettle according to our ears. Like all good horns, it was able to reproduce large dynamic changes in an easy, effortless fashion, quite beyond that



Characteristic curves of Voigt Loudspeaker with 4 ft. mouth wood horn and standard diaphragm.

of normal loudspeakers. With relatively crude early drive units designed and fashioned by Voigt, it may not have displayed quite the frequency range we are used to nowadays, but yet this hardly mattered in view of its other great qualities.

The horn itself is fashioned from curved plywood panels, bolted together with wing nuts, for easy assembly and disassembly; later versions were fashioned from metal. Like all true horns, the Tractrix is very efficient, needing just a few watts of power to fill a small hall, a great benefit in the days, prior to World War II, when valve amplifiers had difficulty producing much more than 15 watts or so. Voigt produced his own electro-magnet and permanent magnet drive units for the Tractrix and in fact filed a patent application for the moving coil principle of working just two months after Rice and Kellogg, in 1924. He was disappointed to find that these U.S. engineers, working for General Electric, had just beaten him to it, the patent being refused as a result. The Tractrix was patented, however, in 1927 and Voigt went on to start his own company, Voigt Patents Ltd, situated in Sydenham, South East London, in 1933. With a staff of nine people the company produced the Tractrix and, later, went on to make the Voigt corner horn for domestic use; it stood five feet high!

PATENT SPECIFICATION
 Application Date July 5, 1926. No. 16,794/26. 278,098
 Complete Left: March 2, 1927.
 Complete Accepted: Oct. 5, 1927.

PROVISIONAL SPECIFICATION.
Improvements in Horns for Acoustic Instruments.

1. I, JOHN HOWES, of "Borden House", 121, Honor Oak Park, London, E.H. 23, British subject, do hereby declare the nature of this invention to be as follows:—

This invention relates to horns for loud speakers, gramophones and the like. According to this invention, the main shape of a straight circular horn is as nearly as possible such that the distance between any point on the surface and the axis measured along the tangent at that point is constant. This gives a curve known as the "Tractrix".

At the flare this tangent becomes the radius. The flare diameter is therefore twice the tangent length.

If the horn is to be square, I prefer to make the square so that it will fit over the imaginary circular horn, touching it along the middle of each side.

If the horn is not required to project sound downwards, as for example in a table gramophone, only the upper half may be used, a flat surface forming the lower boundary, this flat surface should be continued in front of the flare if possible.

For convenience near the small end, the horn may be merged into a greater section of the same area at the previous section would have had at that point.

In practice it is nearly always necessary to bend the horn. At all bends the inner radius should be large compared with the width. If a sharp bend has to be made where this is impossible, the sound travelling round the inner radius will be out of phase with that travelling round the outer radius. This kills the wave front, and reduces the sound intensity near the inner radius.

These defects may be overcome by dividing the horn into several parts, each of the same length, which are joined together after the bend.

For example in a cabinet gramophone with a reasonably long mouth the 90° bend up to the tone arm may have to be so sharp that a considerable phase difference is produced. In such a case, I would divide the bend into, say, two parts: one, the inner path being of one third the original width and the original inside radius, while in the outer path the inner radius is now greater than before and the width is two thirds. Thus the ratio of inside radius to width is increased in both cases.

Each path should be separately tapered (as if it was a "lamination" of a straight horn bent up). The inner path should be bent round further than 90° and then joined back so that the extra length due to the loop equals the reduction due to the shorter path in the bend. The length of both paths is thus made the same and the phase difference becomes negligible.

Dated the 3rd day of July, 1926.
 P. G. A. H. HUGHES.

So it is likely that the wooden Tractrix horns John Howes rescued had been in use for sixty years. Listening to one of them, I noticed only a lack of top end sparkle as an obvious point of difference against today's loudspeakers and, interestingly, its published response curve does show a roll off in output above 2.5kHz (-10dB at 6kHz). Otherwise the response curve stays within 5dB limits right down to 80Hz, below which bass rolls off - not bad for the 1930s!

Needless to say, John was pretty excited at the prospect of listening to a stereo pair of Tractrix horns. His estate agent must equally be excited at finding a house big enough for both of them as well - or was that a bed in one corner of Southboro Town Hall?

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IN THE JULY ISSUE

Spring is here! Outside your window the sun's shining and lambs are bouncing. Our July issue will be breathing new air onto the bookshelves too! We hope to have -

DPA PDM Ten Twenty-Four 1024 CD convertor.

Yep - we've promised it before, but this complex £6000 top technology convertor is now definitely ready, and fate permitting, will appear in our July issue.

Linn Majik amplifier

A new remote-control amplifier from Linn that has attracted diverse comment. We apply extended tests to discover the truth.

Ortofon Supreme moving coil cartridges

No fewer than three new, high quality cartridges from Ortofon, for all those with a treasured vinyl collection.

Professional Monitor Company TBI loudspeaker

Designed by ex-BBC engineers and supplied to broadcasters, the TBI claims to be a super high quality monitor. But is

it a good value hi-fi monitor too? We measure and listen.

Bookshelf Loudspeakers

Short of room? Dislike intrusive cabinets? Then buy a high quality bookshelf speaker instead. We look at the theory then measure and listen to six models.

Mission CD player

Better late than never! At last we get the new Mission CD player, complete with PSX power supply upgrade. We measure and listen to a fine piece of engineering.

Metal Tapes

Cassette is still alive and recently many new metal tapes have appeared. Hi-Fi World reviews a group of the best to see just how far cassette has been improved.

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Although the common perception would have it that Britain doesn't make hi-fi any more, it does - and there's a healthy amount of business going on at this moment, between Britain and the East. In the long term, if it can be built upon, it could benefit us by focusing attention on the need for valuable vocational training, sharpening up our educational syllabus and providing jobs that prove valuable and secure.

There might appear to be great disparities between Britain and the East. We industrialised in the nineteenth century, building our might on coal and steel, forging railways, ships and arms to help establish Empire. And that empire stretched its tentacles through the East, to Singapore, Hong Kong and parts of China.

It seems a pity that, on relinquishing power after the war, we did not leave much behind that could contribute directly or immediately to the future prosperity of the countries occupied. Basic government structure perhaps, a few colonial schools also, mining by foreign companies and rudimentary local agriculture. But no shipyards, aircraft factories, car factories, technical colleges or, of course, electronics factories.

Whilst Britain wasn't the only colonial power in the region, it did have a powerful defence and consumer electronics industry after World War 2, some of which may well have been transferable in basic form at least. But, that's history. Britain had its own problems after WW2.

Under MacArthur and American oversight Japan re-built after 1945, but it didn't re-arm. The Japanese turned instead to electronics, amongst other things, the first we knew of it being the arrival of intriguing miniature radios in the Sixties. As the book *Setmakers* relates, it was all over by the late Seventies. The British consumer electronics industry had

been decimated by Eastern ingenuity which, amongst other things, brought much needed reliability.

An alternative view, one I have a lot of sympathy for, and strongly hinted at in *Setmakers*, is that our industry collapsed as much through its own stupidity as anything else. Perhaps we should blame the Cold War and the projects it spawned, like Blue Steel, TSR-2 and the disastrous Nimrod airborne early warning system. Not only did they funnel national wealth down an open drain, they may well have robbed



Reflections from Noel Keywood kaleidoscope

industry of the managerial and engineering skills it needed to perform efficiently in a changing and modernising world, a world that was turning to computers and information technology, as Macluhan predicted.

I do know from my own experience that during the Seventies, when Sony amplifiers worked perfectly and were taking over, we could barely design and build such things - at least, not competitively. What a sad indictment, and what an irony too. If Britain had taken its technologies eastward, everything might have turned out differently. Instead the East, led by Japan, has largely found its own way forward in this field, leaving us struggling to catch up.

Now, industrialisation in the East is creating wealth and markets. Interestingly, they're also markets more sensitive to, and knowledgeable about electronic products than ours. Singaporeans are aware of hi-fi and electronics in a way Britons are not. "You should set up your magazine here" some have told us. I know why.

Meanwhile, competition

plus recession in Britain has left companies lean and mean, if not yet in a state to be declared unequivocally fit. Britain's hi-fi manufacturers export more than they sell locally. They've survived the Japanese onslaught and that, I believe, is now receding, as prices go up under pressure from the rising Yen and as Japanese audio technology starts to stagnate. British companies have learnt the hard way, they're still alive and they are slowly, but inexorably re-grouping and re-building.

So what's going on now between us and the East? Whilst Japan remains effectively a closed market, the other countries do not. There are good links with Singapore, Hong Kong, Malaysia, Taiwan and the like, and those countries are open and receptive to our products. The demands of industrialisation, the apparent metamorphosis of China into a market-led economy and the hand over of Hong Kong are all having an impact.

Demand for quality hi-fi products in the East is healthy and has helped UK companies to ride out the

recession at home. Wealthy Hong Kong businessmen are shrewdly transferring their wealth out of Hong Kong in case the hand over to China goes awry; KEF and Celestion were bought in the blink of an eyelid by Gold Peak batteries, for example. And recently I learnt that Tomei, another Eastern electronics giant, has a substantial share in Verity plc, who own Mission, Cambridge, Leak, Wharfedale and many other well known names. How is it that Mission have one of the most advanced hi-fi factories going, and that

Wharfedale can be resurrected so quickly and forcefully? Part of the reason is down to confident and substantial inward investment from the East.

Happily, the trade here is bi-directional (whereas with Japan it is uni-directional; why do you think Clinton's giving them hell?). Wharfedale, with all their knowledge, are now helping set up a loudspeaker manufacturing plant in China.

And, whilst I'm listing these links, let me not forget ground-breaking NAD, who back in the Seventies decided to design in the West (Finchley!) and build in the East, where their senior engineer spends much of his time. It is no coincidence, I'm sure, that the man who started NAD, Malcolm Blockley, was recently asked to head up Wharfedale. What goes around, comes around.

Britain's hi-fi industry might be small, but it is tenacious and talented. As the country pulls out of recession I believe it will grow, bolstered by these strengthening links with the East. For those who know their business, the outlook is good ●

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World Radio History

The fashion of minimalism in audio electronics might be neatly summarised as the principle of seeking to ensure the precious audio signal passes through as few electronic stages as possible on its journey from the microphone to the loudspeaker. Since every electronic circuit must inescapably introduce distortions of one sort or another, the aim is laudable enough and is a view with which I have a great deal of sympathy. Nevertheless, in the field of professional audio, it is often the case that, of necessity, there is a long and circuitous route from microphone signal to final master tape, where minimalism must take a metaphorical back-seat.

An example of this is a recording I made a couple of years ago as a result of a commission to produce a dance piece for children for the Rainforest Foundation. The recording involved spoken word, a children's choir, sound effects and backing involving a standard rock-band plus, amongst other things, pan pipe samples and Spanish guitar. The piece, *Hey Bulldozer* is based on a two-bar musical quote (and I mean a quote, not a sample!) from the fade out of *Hey Bulldog* by The Beatles. This two-bar ostinato underpins the whole thing whilst other ostinato phrases build up on top, first four-bar, then eight-bar and finally sixteen-bar.

The problem was, none of the pieces' component parts - the choir, the band, the narrators etc. - seemed to be able to be at the same place at the same time! Genuine sound effects were promised from South America, but these arrived only just in time for the final mix and then on a standard analogue cassette. The narration excerpts and pieces of choral annunciation were recorded in a dance studio in central London (complete with a very live acoustic and traffic noise) and arrived on un-edited quarter inch

analogue tape recorded at 15 inches per second. The skeleton of the backing tracks were prepared as MIDI tracks and therefore existed only on floppy discs and the choir were rehearsed and waiting somewhere in deepest Surrey. It began to look as if personally lying in front of the bulldozers might be a simpler way of saving the rainforest!

Once the realisation set in that the whole project would have to be put together "collage" style, the first step involved making a



recorded message

Left by Richard Brice

gash mix from the original MIDI files and dubbing this onto a multi-track tape as a working cue track. The multi-track was then loaded into the back of the car along with an array of microphones, mixer, power amps and fold-back speakers, then driven down to the choir. The children recorded several different "takes" whilst listening to the backing via several fold-back loudspeakers carefully set so that they were loud enough to be heard, but not so loud as to cause too much "spill" of this signal onto the final choir microphone signals.

Back at another recording studio a week later, after the final tweaks to the MIDI sequencer data and samples were finished, the complete vocal track was formed by selecting the best bits from the various "takes". The narrated speech and choral speaking excerpts were then carefully edited and "topped and tailed" using a trusty razor-blade and splicing block (yes, some of us can still do this) and

spun-in to a track on the multi-track by hand. The two acoustic guitar tracks were then added, then the electric guitar track and then a backwards electric guitar which involved turning the multi-track tape over on the deck and having the guitarist play along to the other tracks running backwards - something you can do only with an analogue multi-track machine.

After that, all that was left was to add the sound effects, which involved a combination of real jungle sounds (from cassette - arrgh!) and library FX. Oh, and the mix down: sixteen tracks of MIDI, four guitars, four stereo-pairs of choirs, two of narration, four of sound effects. Not having the budget for a studio with fader automation, it took me six goes, but I got it in the end.

It still intrigues me when I listen to the finished song that the children who say, "Leave the forest alone" and the children who sing, "Don't let them bulldoze the

rainforest away", immediately afterwards are not only different children, but were recorded twenty miles and a month apart. It's a tribute to modern parametric equalisers, noise gates and digital reverberation equipment that the choir, recorded direct to master tape with spaced omni microphones in stereo, doesn't sound too different from the chorus who were recorded in a noisy London location in mono onto analogue quarter-inch tape with different microphones.

So there we are. The whole track turned out to be about as minimalist as a Midi-System, but I believe - in this case - the end justified the means. Despite its tortured genesis, I am really proud of this track. It starts with an eerie prediction from an Indian chief which still sends a shiver down my back.

There is so much smoke, all the animals are being killed, the rivers too. My spirit is warning me that when the forest is all destroyed there will be no shade, there will be very strong winds, the sun will get very hot and it will be difficult to breathe. Then everybody will die, not just the Indians - everybody will die. I am warning you - leave the forest alone.

Hey Bulldozer received several performances during the summer of 1991 and has been performed several times since in different versions. Sadly, since then, the destruction of the rainforest has continued apace ●

For the first time in six years, Harman Kardon have launched a new range of pre and power amplifiers, in the form of the AP2500 pre-amplifier and the PA2100, 2200, and 2400 power amplifiers. The lowest-powered amplifier of the series, the 45watt per channel PA2100, was the one we chose to test with the AP2500 pre-amp as it is the combination which - at £849.98 - is the most affordable.

Although marketed as the 'Signature' series, only the pre-amplifier bears a facsimile of Sidney Harman's signature on the fascia. Strangely, the power amplifier does not share the same graphics or carry Sidney's inscription; maybe he wasn't so impressed with the power amplifiers and chose not to re-ink his pen!

The pre-amplifier is a well-specified beast, having MM and MC phono, CD, video, aux, tuner, and two tape monitors, as well as two sets of outputs, all gold-plated. The front panel has just three knobs, for volume, source, and tape monitor, and two buttons, for power and gain, which can be used to attenuate signals from high output CD players.

The rear panel of the power amplifier has, apart from the input sockets and cheap-looking 'speaker binding posts, a switch for bridged mono operation, another for defeating the 'auto standby' mode, and another for selecting 4ohm or

Signing On....

Simon Cooke goes autograph hunting for the 'Signature' series of pre and power amplifiers from Harman Kardon.

8ohm impedance 'speakers. The front panel is bare except for the power button.

The chunky, matt black fascias of these amplifiers are designed to impress the ruggedness of the beasts upon the owner, the design team seemingly wanting a kind of sophisticated, muscled look for what are, effectively, just the usual thin black pressed-steel fabrications. The feel of the controls enhances the illusion, since they are all well-weighted and comfortable to use, and do not feel 'tacky' in the least.

The sound quality was not, in fact, the expected grind and graunch that the look of these amplifiers had led me to expect. If anything, my first impression of the sound was one of an almost delicately effete quality, since the amplifiers seemed warm, verging on slow, without any real slam in the bass.

Take 'Roland the Headless Thompson Gunner', for example, From Warren Zevon's latest Learning to Flinch album, which starts out with helicopter-mimicking

MEASURED PERFORMANCE

The PA2100 power amplifier turns out a goodly 72watts into 8ohms and nearly double into four ohms, or 132watts. This is typical of Harman's approach to power amplifiers, fitting a walloping power supply with good regulation, able to shrug off the extra load imposed by low impedance loudspeakers. Perhaps it is due to the fact that they design as much for the U.S. market, where 'speakers commonly have a 4ohm nominal impedance. Such 'speakers reach down to 2ohms, so a pulse power test into this low impedance is valid. As expected, the AP2100 handled this situation well, producing 11amps with a tone burst, so peak current delivery is very high. All this means the PA2100 should go loud with any speaker, regardless of its impedance characteristics.

Harman consistently design their amplifiers to have a very wide bandwidth, reaching down to subsonic bass frequencies and up almost to Long Wave radio frequencies. This combination was no exception; I measured a -1dB response of 4Hz-142kHz. In my experience, wideband amps do sound clear and clean if well engineered in all other areas. To me, wide bandwidth is more an indicator of basic character than a yardstick of goodness. These days, amplifiers are more commonly band limited in fact, since there are good theoretical arguments for doing so, putting the Harman combo into a minority grouping.

It was reassuring to see the distortion content comprised second harmonic, since this should be subjectively innocuous. The maximum level I measured was 0.03% for full output at 10kHz, a small amount that should not be problematical; it can be seen in the distortion analysis.

The preamp has a peculiar sensitivity button that at 'Normal' setting gives a very high sensitivity of 90mV, but at '-10dB' gives a more normal 300mV. Irrespective of the setting used, however, input overload remained higher than 3V, a satisfactory condition, since the maximum likely output in practice will be 2.5V or so from CD.

Both MM and MC disc stages were wideband too, which is less sensible, since by reaching down to 4Hz they amplify warp signals. An optional warp filter should have been fitted. The MC stage was hissy too. I suspect that Harman have incorporated the simplest stage possible here and that too

much should not be expected of it.

This amplifier is wideband, powerful and capable of driving any loudspeaker to high volume levels. LP lovers should beware of the disc stages though, for hiss on MC and warps through MM and MC. **NK**

TEST RESULTS

Power 72watts

CD/tuner/aux.
 Frequency response 4Hz-142kHz
 Separation 72dB
 Noise -94dB
 Distortion 0.01%
 Sensitivity 90mV
 dc offset -1/57mV

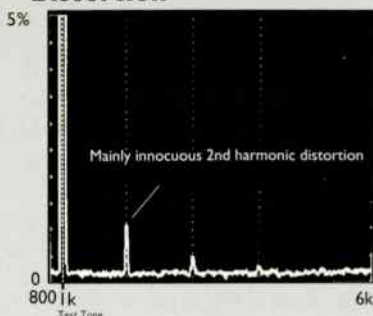
Disc (MM)

Frequency response 4Hz-76kHz
 Separation 73dB
 Noise -70dB
 Distortion 0.01%
 Sensitivity 4.5mV
 Overload 55mV

Disc (MC)

Frequency response 5Hz-92kHz
 Separation 69dB
 Noise -63dB
 Distortion 0.01%
 Sensitivity 0.3mV
 Overload 10m

Distortion





percussion, falling into a dark, brooding, Teutonic piano line. Through the Signatures, the percussion was more 'Thomas the Tank Engine' than Bell Huey, and the lower notes on piano failed to really resolve into the solid stomp that I had expected. I skipped a few tracks on the CD and tried 'Worrier King', but the grind and graunch of the steel guitar just wasn't there.

Some of the dirtiest, low-down blues I know was emasculated and tossed casually back by the Signatures. I toyed with a little Tom Waits, but he almost sounded musical and rounded. I threw down the gauntlet with Eberhard Weber's latest double bass extravaganza 'Pendulum', but the lowest bass tones just fell out of the bottom of the image, and the heart-rending squeak and squeal which starts 'Delirium' was just too bland for words. I threw in the towel.

Yes, I stopped looking for that exciting 'edge' which I always like in a

product, and tried listening to what the Harmans were actually playing. For all that, there was little really deep bass to boast of, and what there was in the upper bass seemed rather slow and confused. The Harman Kardons had a nice, rounded tone which suited mainstream jazz and classical works down to the ground. They won't slam a bass line out at you, because they're just that bit too polite. Instead you can look forward to hours of warm, cosy, listening, and you might even doze off

every now and then. It's a very comfortable, and comforting, sound.

The midrange frequencies were as rounded as the bass and, in not being forward, integrated well with both the bass and treble. The detail here could still be a little fuzzy at times, although this again was due to the lack of real speed rather than an inability to deal with complex pieces of music, which it did in the most flattering manner possible. It had warmth enough to mask problems in a recording, and yet never really became overly soft in tone, due mainly to a very slight graininess in the midrange and treble. For instance, Scott

Hamilton (Scott Hamilton Quintet in Concert) retained all the breath and air usually associated with his work, and his instrumental tone was impeccable, but just a little lacking in excitement, and not as raw as he would sound in reality. Riggs' drumsticks, on the solo that I've mentioned in other reviews, sounded as though they really were moving through air between striking each other. There was

atmosphere in plenty on every track played through the Harmans. Very civilized.

Up in the treble, the Signatures really did start to sing. The roundness of tone prevented the treble becoming overly astringent, and detail in alto and treble lines held and decayed with awe-inspiring liquidity. From the delicacy of plainsong to Talitha MacKenzie's haunting vocals on Mouth Music's eponymous album, the upper ranges were the domain of impressive detail and atmosphere. The

only time the treble let me down was when I was tempted to try the glass harmonium on Tom Waits' Swordfishtrombones album. A bad idea, since the sound was simply muffled and washy, floating vaguely around the soundstage rather than consolidating into a believable image.

The soundstage did seem impressive on 'civilized' classical and mainstream jazz music, but it fell apart with raw and jagged-edged live recordings, where the audience seemed confined to the edges of the image, rather than washing out forward of the 'speakers to engulf the listener. 'Raw' musicians such as Waits, Zevon, and Weber, all became ephemeral beings, seemingly loose and undefined in space. Give the Harmans the North German Radio Symphony Orchestra playing Brahms' 'Hungarian Dances', however, and they pinned the stage out admirably well, perhaps not defining all of the instruments perfectly, but staging solidly enough to be believable.

Strange to say after this, I liked the Harman pre/power. Perhaps they were a touch too warm in their presentation, and they were definitely unable to cope with dissonance and syncopation adequately, but they had an easy, comfy sound, that could really appeal. If you like easy, neat, but not entirely unchallenging hi-fi, and something relaxing to listen to, these are almost ideal amplifiers. They just don't like my music, that's all!

HK AP 2500 Pre Amp £499.99

HK PA 2100 Power Amp £349.99

Harman Audio,

Harman International Industries Ltd.,

Mill Street,

Slough, Berks. SL2 5DD

Tel: 0753 576911

*“ Detail in alto
and treble lines
held and decayed
with awe-
inspiring
liquidity.”*

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capable of producing gut wrenching bass.

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The 105/3s use the Uni-Q driver with similarly sized lower mid-range drivers positioned either side. The baffle

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Both the 101/3s and 105/3s are masters of their class. With so much engineering expertise behind them, you can expect these speakers to perform well in almost any system.

To enter this fabulous competition for five pairs of KEF Reference loudspeakers, simply complete the questions opposite.

Please send your entry on a POSTCARD, or the back of a SEALED ENVELOPE, and completed in block capitals, to arrive no later than Tuesday 7th June 1994 to:

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

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

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

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

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

COMPETITION ENTRY QUESTIONS

1) For how many years have KEF been making loudspeakers?

- | | |
|-------|-------|
| A. 11 | B. 22 |
| C. 33 | D. 44 |

2) How many drive units does the 105/3 use in total?

- | | |
|------|------|
| A. 3 | B. 4 |
| C. 5 | D. 6 |

3) The 101/3 is part of which KEF series?

- | | |
|-------------|-----------------------|
| A. Q series | B. Constructor Series |
| C. C series | D. Reference Series |

4) What kind of bass loading is used in the 105/3?

- | | |
|-------------------|--------------------|
| A. Bass reflex | B. Isobarik |
| C. Coupled Cavity | D. Infinite baffle |

THE TIE BREAKER (OBLIGATORY)

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loudspeakers to be won

competition

APRIL ISSUE COMPETITION - PINK TRIANGLE DA CAPO CD CONVERTOR

Only one lucky winner out of the thousands that entered will take home one of the very best CD convertors available today. That lucky winner is:

Mr Andrew Stowell of Brighton, who's now the envy of everyone in the office here at Hi-Fi World. Many thanks for such an excellent response to all of you who entered, and please keep trying.



I've always felt it a great shame that so many good books of the past are nowadays unavailable to the majority of hi-fi enthusiasts. There are numerous books on valve amplifiers for example, most written between 1930 and 1965, that can only be found second hand, and even then in limited supply. The Radio Designers Handbook is a good example. This is possibly the definitive book on valves and their practical application. But as people become aware of such books, their supply diminishes. The Radio Designers Handbook is reportedly now so rare, that latest edition copies are changing hands for anything up to £200. I'm glad I got mine a few years back from a second hand bookshop for £9, but saddened that anyone now wishing to purchase a copy has to have a considerable amount of money with which to do so.

Other examples are the Mullard Audio Amplifiers book (- the one with the 5-20 and 5-10 amongst other designs in it), Electrostatic Design and Construction, an amazing book that actually goes through the steps of constructing your own DIY Electrostatic loudspeaker, and Gilbert Briggs' Loudspeakers - The Why and How of Good Reproduction, which is a must for anyone interested in constructing their own loudspeakers. So, when I found out that there was a company in the States that reprinted some of these unique titles, an idea we'd been toying with, but hadn't had the time to implement, I knew we had to make them available to you.

This month sees the start of the Hi-Fi World library. We've selected a range of books, some reprints, some new, covering electronics - valve and solid state, loudspeakers - including electrostatics - and a general audio book that covers most areas in enough detail to get the mind ticking. For a full list of what's on offer see page 15

of the Supplement.

There are still many books not being reprinted at present. The Radio Designers Handbook and Scroggie's Second Thoughts on Radio Theory to name but two, but we'll be working on that. For now, we've selected nine books that we believe to offer unique and authoritative views in the areas they cover.

Two modern books selected are The Art of Electronics and The Art of Linear Electronics. The former is a general electronics book, but it



Dominic Baker

dB on the level

offers a very thorough insight into solid state electronics. The first chapter is a foundation chapter which explains all of the basic components, how they work and their symbols. Also in this foundation is an explanation of voltage, current, power etc. The book then continues with transistors including FETs and their operation right through to digital electronics and microprocessors. Each chapter starts at a very basic level and finishes with suggested circuit applications for what you have just learnt about.

This is just the kind of approach to electronics needed for the beginner. I used this book throughout my A-level and Degree course and still use it today as a valuable reference book. However, for the complete novice, the practical side is also very important. If you are keen to learn though, I'd suggest using this book in combination with simple electronic kits from Maplin. So, as you finish the chapter on Transistors, have a go at

building a circuit that uses a transistor. Maplin provide kits that are quick and easy to build, and putting the theory into practice is where you really start to learn and understand about electronics.

Even if you never manage to design a circuit yourself, it will at least teach you enough to build circuits published in our DIY Supplement and those found in other publications. It isn't as hard as you think, and it's very rewarding to be able to build something that works and sounds good, let alone saves

you money.

You might have noticed that we are trying to encourage people to have a go at building things. The Cable Compensated Passive pre-amp in this Supplement uses very simple components and is free from danger of electric shock. It sounds good too, so just because it's not complex, it doesn't mean that it's not worthwhile. The 211 lamp is another easy one to build, and a bit of fun as well. This does expose the builder to mains voltage, so don't have a go unless you're experienced

enough to attempt it, but it is extremely simple to build.

We'll be doing more of these easy-to-build projects in future Supplements, but don't worry, they'll also be plenty more loudspeakers and amplifier projects too. Hopefully, if you read some of these books, and build up simple circuits to test your knowledge, pretty soon you'll be able to have a go at a valve amplifier or something of similar complexity. The satisfaction of building something yourself is well worth the effort ●

EDITORIAL ASSISTANT

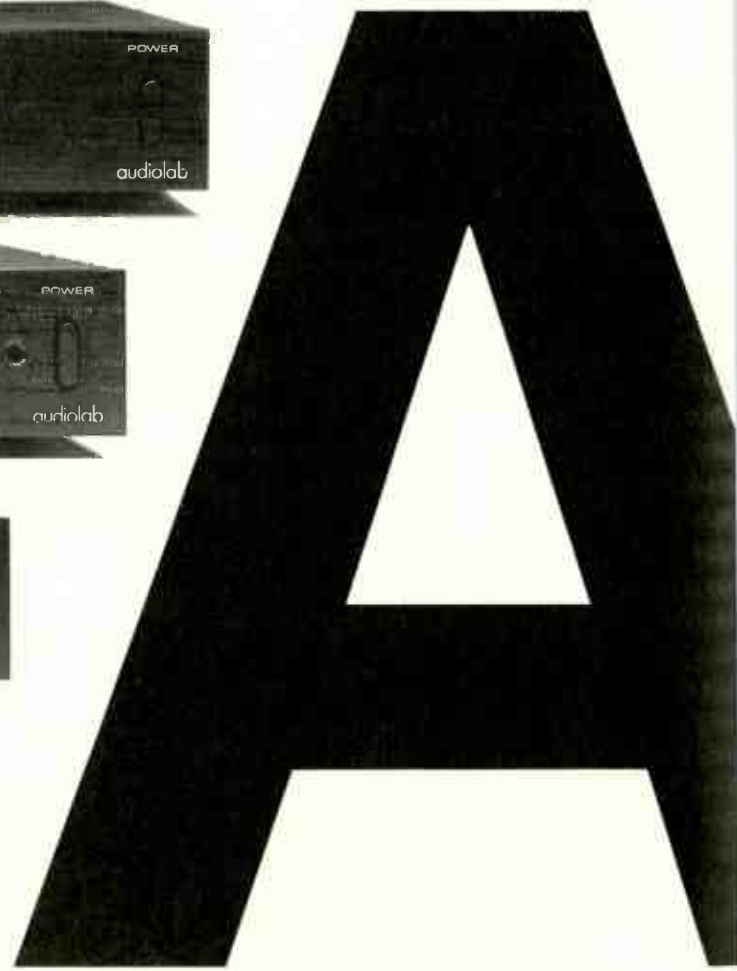
Getting busier and busier daily, we are looking for another editorial assistant. A good background of experience in hi-fi is needed, plus respectable educational qualifications, particularly in English. We want someone who can listen and write, as well as organise. If you can handle a professional camera,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

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World Radio History

Hardly a week goes by without us being questioned about 'speaker positioning. What would appear to be one of the simpler sides of hi-fi is in fact fraught with variables, and further investigation into the subject reveals there's more to 'speaker positioning than meets the eye. It's simply not possible to cover the entire subject, in detail, in a thousand words or so, but here's a rough guide.

The first concern has nothing to do with the speakers themselves, but the room in which they are placed. Very few people are fortunate enough to have a dedicated room for hi-fi, but fine results can be obtained by spending a little time in an ordinary domestic environment.

The 'speakers need to be placed on a firm surface. A concrete or quarry tiled floor is ideal, but not always available. If you're stuck with wooden floor boards there are a few tricks that will help alleviate the bass bloom that can result. The room may have a concrete fire surround, if not (or if it's too small) then placing the 'speakers on a stone or concrete slab can help.

An alternative for those with springy wooden floors is to insert screws into the floorboards and place the 'speaker, or 'speaker stand directly on top. Also, note in which direction the floor boards run. It's advisable to have the floorboards running in parallel with the front of the speaker. In this way, sensitive electronic components and turntables placed between the speakers are less likely to be affected by bass resonances through the floor boards.

For the best bass response, the loudspeakers really need to be placed near an outside wall rather than an internal one. There is no ideal size of room, as it varies from 'speaker to 'speaker. Something to consider if you're buying a transmission line speaker, though, is that they work differently from

conventional speakers in that they actually pressurise the air in the room. Therefore, too large a room can leave smaller transmission lines struggling to produce bass, whilst too large a 'speaker in a small room has the reverse effect. The obvious conclusion is to try before you buy.

Once you've found the best place to position your speakers, try to arrange the furniture so that they have plenty of space between and around them. Furniture should also be



Fair Views

- from Dominic Todd, our man in Scarborough

placed roughly symmetrically in the room and of balanced densities around the room (try not to have all the soft sofas on one side of the room and hard wooden furniture on the other, for example). Also, place a rug or some form of soft material on the wall behind the listening position to damp standing waves caused by hard surfaces. This will help create an even and balanced sound stage. Room acoustics can be optimised by using test discs with frequency sweeps and flutter echo tests, leaving further fine tuning down to experimentation.

The huge variety of speakers available on the market dictates that there's no hard and fast rule to speaker positioning. However, for the majority of box speakers (i.e. not panel speakers such as the Quad ESL which are a law unto themselves) there's reasonable uniformity.

Speakers should be placed between six to ten feet apart and parallel to the same rear wall. This last point may sound

obvious, but it never ceases to amaze me how many people still position their speakers across a corner. The distance apart is dictated somewhat by the distance the listener is from the speakers. The distance between the speakers should be between one and two thirds that of the speakers to the listener.

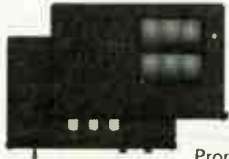
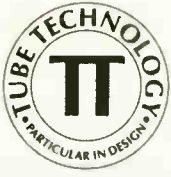
The distance from the wall is down to the individual speaker. Most are happiest at between one to two feet out from a wall, but some prefer to be placed right against a wall. Start with the speaker about a foot out from the wall, and adjust distance to create the best balance between bass weight and imaging. Pulling the 'speaker away from the wall will usually mean losing a little bass, but the trade off will be a wider and "freer" sound stage. One point often overlooked, is that the speakers should be the same distance from the side walls (sometimes difficult in smaller rooms with chimney breasts or bay windows).

Toe the 'speakers in, so that from the listening seat (hotspot), neither side of either 'speaker is visible. You may find you prefer the sound with the speakers firing straight down the room, or even toed in to a greater extent so that the axes cross in front of the listener. In general, however, toeing in the 'speakers so that they directly face the listener lends an extra degree of body to images in the stage, compared with the straight firing position, whilst avoiding the muddle

sometimes caused by toeing in the speakers too much.

Tilting the 'speakers rearward via use of stands or spikes is also beneficial. This subtly throws the sound stage upwards and reduces the chances of vocalists sounding as though they're singing on their knees! The high frequency unit (tweeter) should already be at about ear level when you are seated. To adjust the tilt from here, tilt the 'speaker backwards until the top is no longer visible. Hence the front panels of either speaker should be the only faces visible.

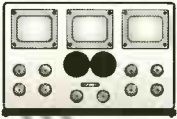
Finally, ensure, with a spirit level, that both speakers are perfectly level (adjustable via the spikes) in the side to side plane. Tighten the spikes firmly, and check that, if the speaker is supported via a speaker stand, it's squarely located with spikes, or Blue-tac. Upper spikes can give a slightly faster bass, whereas Blue-tac tends to increase bass presence. The correct fitting is, yet again, dependant on the speaker. Happy fiddling!



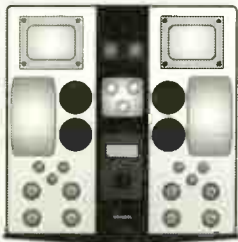
Prophet



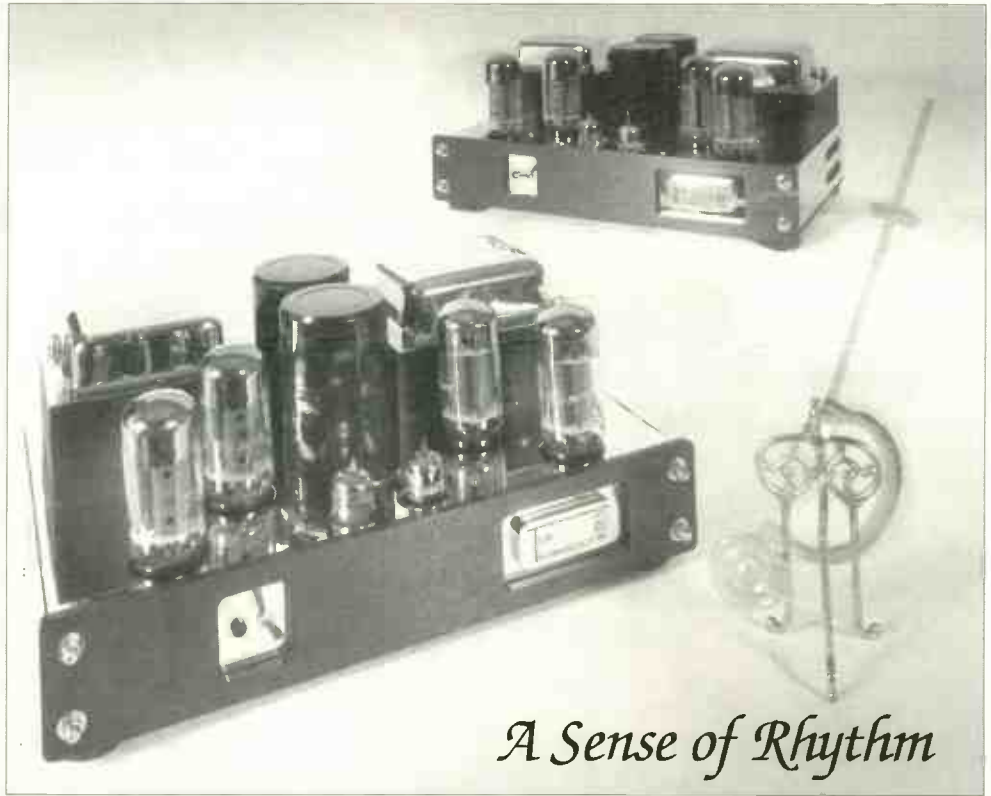
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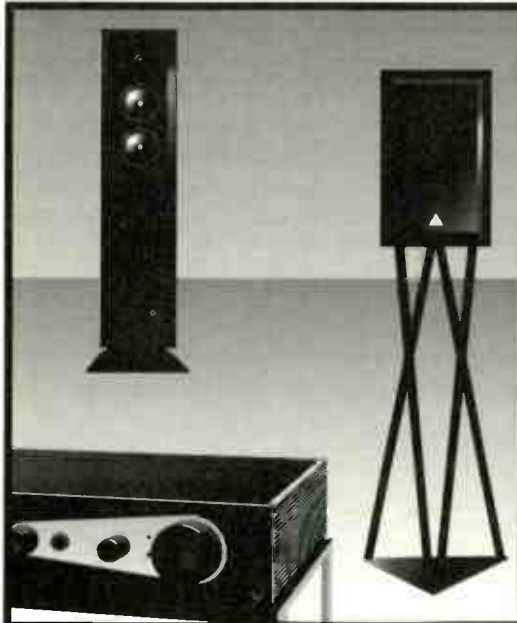


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0209-710777

Dublin
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Black Rock, Co. Dublin
0103531 - 2884612

Norwich
SOUND APPROACH
161 Unthank Road
Norwich
0603 - 622833

London
DOUG BRADY HI-FI
(See Dial-A-Dealer)
071 - 379 4010

Liverpool
DOUG BRADY HI-FI
(See Dial-A-Dealer)
051 - 7336859

Warrington
DOUG BRADY HI-FI
(See Dial-A-Dealer)
0925 - 828009

London
DIVA
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Patriotic Bldg., Wandsworth
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FRANK BLACK
Teenager of the Year
4AD DAD 4009 CD

● Frank Black got some rather cool reactions with his first solo LP last year. Heaven knows why – I thought it was brill and sounds just as good, and still gets played a lot, today. But then, maybe he needed to get a caning for breaking up The Pixies, a great band who made two, maybe three solid gold classic albums. That's a lot to live up to, and even Frank's old band couldn't always match some of their own best efforts. But so what? After all, nobody's brilliant all the time.

Anyway, the prolific gentleman's career continues apace with this 22-song double set, culled from more than thirty new Black compositions recorded over

the past year, a veritable feast for confirmed FB fans.

What I liked best about the old band was that, although they were wildly inventive in their playing and structures, their best work – 'Bone Machine', 'Monkey's Gone To Heaven', oh too many to mention – combined loopy inventiveness with muscular tunes that stuck in the head. Ditto Frank's solo career. On this outing he includes such mad delights as a song about a headache ('Headache' it's called, for some reason) to the dribbling madness of 'Whatever Happend To Pong?', pensive ballads, even one item – 'Calistan' – that sounds like a bastardised Dire Straits'. The guitaring, abetted by ex-Pixie Joey Santiago, among others, is as wildly inventive as ever, ditto the vocal performances and lyrics, some of which are as delightfully DaDa as anything ever dished up by the good Captain Beefheart.

Maybe twenty two cuts might be too much for some folk – there's always the possibility of indigestion with so-called feasts of entertainment. But, that's what programme buttons were invented for. Considering the sheer quality and staying power of the 'Frank Black' disc, the odds are good that 'Teenager Of The Year' can only continue to yield its many and varied pleasures with continued listening. I'd buy it – and I just love the title. I mean, have you seen Frank Black lately? But then he could hardly have called it 'Fat Balding B....d of the Year', now could he? Well...

RECORD OF THE MONTH

PULP
His 'N' Hers
ISLAND CID 8025

● Some of the more pointy-headed music jourmos have been driving about a Seventies revival, supposedly lead by Suede, and into which oh so convenient albeit hugely idiotic bin this Sheffield-born quintet have also been chucked. And I say, Yeah? But which Seventies - Bowie/Bolan? Sweet and the rest of the Chinnichap crowd? Buzzcocks, powerpop etc? And so on.

But I say, who gives a damn? Because, what we have here is a sublime pop disc, one that ties up sundry influences and inflections to produce something delightfully fresh and very exciting.

The songs are tight, wittily lyrical, and delivered with huge panache from all concerned. Pulp are led

by vocalist/wordsmith Jarvis Crocker, easily the most unique and charismatic frontman to have crossed my TV screen in a good month of Sundays. Crocker has the look of a slightly debauched young dandy, an image that could make him look just at home popping pills with

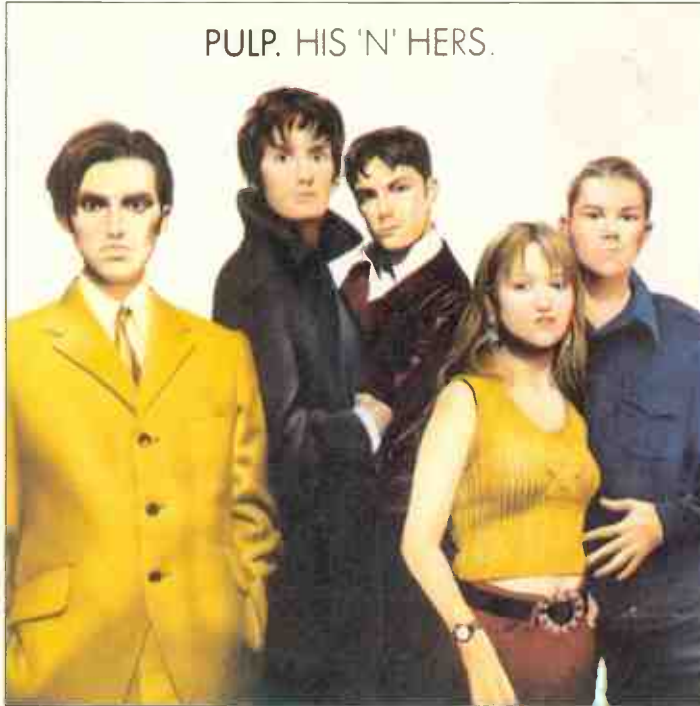
Brian Jones in The Speakeasy in 1968, or biting delicate necks a century before along-side one of Ann Rice's elegant vampire gents. More importantly, he can and really does SING, stretching his tonsils every which way, from plangent agony, across deep throat passion, to

drums etc., and Steve Mackey on bass. It's a very bright, joyously innocent sound, poppy in the nicest, cleverest way - Ms Doyle, for example, entertains us with everything from rink-dink Farfisa to grand piano and even the humble Stylophone, while drummer Banks' credits include a fire extinguisher, would you believe.

Pulp have been together for almost a decade, and it shows in the sheer quality of their songs, arrangements and performances. His 'n' Hers is just so goddam tight, classy and catchy, it sounds like a Greatest Hits package. The opening 'Joyriders' is a witty ditty about naughty boys who take cars; it also contains the first of many great lines from Crocker - "Hey you in your Jesus sandals / Wouldn't you like to come over and watch some vandals?" Then comes 'Lipgloss', with its sublimely irresistible chorus, ditto 'Babies' and many more.

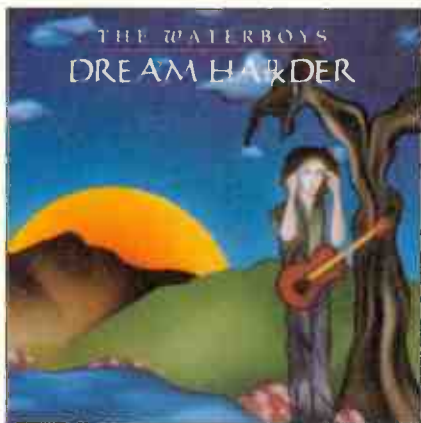
If Pulp have any flaws it's a tendency to wallow in the sort of high melodrama exemplified by the Ultravox of 'Vienna'. But thankfully such moments of bathos are few and far apart. Primarily this is a stunning, all but impeccable disc. English - so very English there's even a song about tea drinking! - Pulp do their country proud. Gold star stuff.

PULP. HIS 'N' HERS.



joyous hiccups of pure sensuality.

All this takes place over a broad sound canvas of guitars, courtesy of Russell Service, and keyboards, from the brilliant Candida Doyle, with a taut underlay of rhythm from Nick Banks,



THE WATERBOYS
Dream Harder
GEFFEN GED 24476

● It's long been a mystery to me that Mike Scott (who, to all intents and purposes is The Waterboys) isn't a bigger star. He's been making great records for

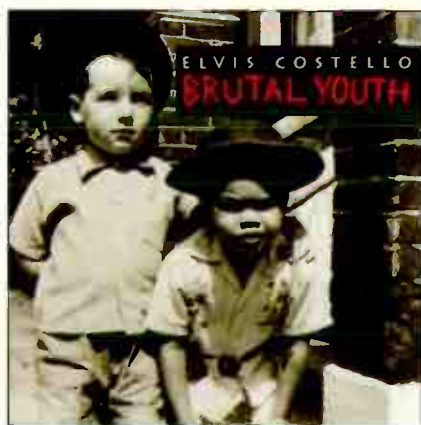
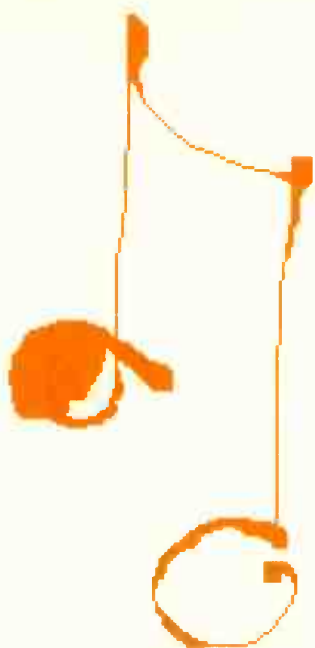
some fifteen years now, and his best work - 'Whole Of The Moon', 'The Return Of Pan', to name but two - has an epic quality that's joyful, uplifting, universal.

Well, this album, made principally in America with the usual shifting line-up of latter-day Waterboys recordings sounds like he's finally decided it's make or break time. Gone are the gentle, almost cottage industry Celtic sounds of Scott's 'Fisherman's Blues' period. Instead the bulk of this latest record is Scott in expansive mood, all thundering guitars, shiny-shiny production values (Scott with Bill Price) yet without entirely relinquishing the man's penchant for a touch of the mystical. 'The New Life' or the aforementioned 'The Return Of Pan' are the kind of songs and performances that seem guaranteed to seduce the Americas.

At his best Scott sounds like a fresh-faced inheritor to the most inspired moments of the young Dylan, Lennon or

Phil Lynott, giants one and all. It's more than obvious here, as on the soaring 'New Life', while Scott retains a gentler side - the delicate 'Corn Circles', the playfulness of 'Spiritual City', with its backwards guitars, forwards sitars and vocal assistance from Billy Connolly - which reassures us that if at times he sounds like an FM programmer's dream, there's no reason to suspect he left his integrity or imagination at the studio door. Can't you just see him back on the cover of 'Melody Maker' under the inevitable 'MM' headline, 'GREAT SCOTT'? They could be right for once.





ELVIS COSTELLO
Brutal Youth
WARNER BROS 9362-45535-2

● Thank God Elvis Costello's been to the barber's – he may have taken the odd wrong step in a primarily glorious career, but none as misjudged as growing that awful beard and hair. Having doffed the Rasputin look, Elvis is back doing what he does best and re-united with the people he does it best with, namely The Attractions and his old bass buddy Nick Lowe. 'Brutal Youth' sounds – as you might expect – like a great lost Elvis album recorded between, say, 'This Year's Model' and 'Armed Forces'. There are even a couple of things made partly at the tiny Pathway Studios in Islington, home of many early Stiff classics, Costello's earliest works included.

So it's all here: the dense, sharply wry lyrics, the acid-tinged (as in biting, not tripped-out) vocal phrasings, all set to snub-nosed rhythms that are poised against Steve Neive's majestically soaring organ (Oo, er, missus).

There's only one question and it's that famous old saw, what's the point? Does the world really need another classic Costello album? Well, considering some of the alternatives (2 Unlimited, Take That, 'new', Punk) I'd say yes indeedly, it surely does.



BECK
Mellow Gold
Geffen GED 34634

● Billed as a sort of weird youth prodigy cross between rap and a resurrected young Dylan, this young Yank sure is verbose. Some of it may be drivel, but it's inspired, amusing drivel. To my mind the man has more in common with the spoken word-meets rock tradition that traces back, via Jim Carroll and Lou Reed, all the way to the Beats.

But hey man, that's cool, and it's real cool when allied to thundering rhythm cuts, as on 'F...in' With My Head'. And, sure, there are times when it all gets too precious and pretentious for words. "She can talk to squirrels," Beck tells us in an awed whisper during 'Whiskeyclone – Hotel City, 1997'. But then a little pretension never hurt Jim Morrison or a thousand others. This is a fascinating debut. Hell, some of it's even catchy. He may talk dirty, but Beck's a cool dude, no mistake.

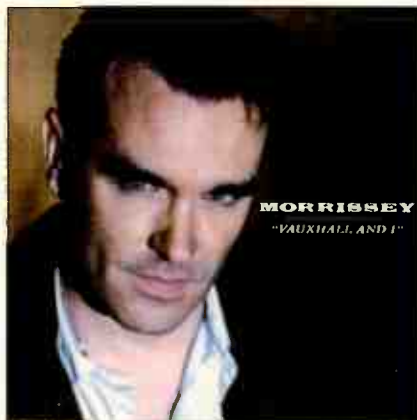


THE DYLANs
Spirit Finger
Beggars Banquet BBQCD 144

● No-one enamoured of the 'Nuggets' sound of commercial '60s pop-psychadelia (Electric Prunes, Seeds etc) or contemporary 'revivalists' The Fleshtones will be able to resist the dirty sweet sound of the Dylans' second album. Tongue firmly in cheek maybe, but 'Children of the Flame' is a fine stomper while 'Just One Big Plastic Hassle' has to be my Song Title of the Year.

MORRISSEY
Vauxhall and I
Parlophone 7243 8 27797 2 8

● He may never have got whisky, but Moz has taken the odd U-turn since The Smiths bit the dust.



This is his Smith-iest-sounding solo disc yet, except the words are cleverer, subtler, and the singing takes bigger risks. Does the world really need another Smiths LP though? See Elvis Costello review...



DIE, MONSTER, DIE
Withdrawal Method
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● If you like your girls riotous, then this hard-playin' group of young ladies from NYC could just be your cup of meat. Too raggedly desperate at times to bear much repeated listening – especially in a seated position. But, as we used to say in '77, they have bags of energy and enthusiasm. Bet they cut the mustard live, too.





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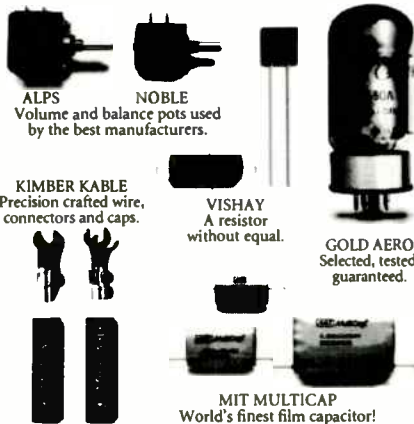
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K5881 KIT

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Designed for long life, low running costs and excellent sound quality, K5881 is sensitive enough to be used with a simple passive pre-amp. or our own line-drive pre-amp, and it matches modern loudspeakers well. There is a choke-regulated power supply and the channels can be paralleled to turn it into a 40W monoblock if desired.

K5881 costs just £395 as a kit of parts and £595 fully built from our own build service. The U.K./Europe version has a 240/220V transformer but 120/110V can be supplied as an alternative - see Overseas details on Order Form.

SPECIFICATION

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

VALVE LINE LEVEL PRE-AMPLIFIER

£295 ►

Constructed from heavy gauge steel with an aluminium anodised and polished front panel. This new chassis comes with the complete kit of parts necessary to build the valve line level pre-amp.

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



◀ HIGH DEFINITION LOUDSPEAKER

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The High Definition loudspeaker is ideal for low power, high quality amplifiers, transistor or valve. It goes very loud with just 1-5watts, having an enormous sensitivity of 94dB - that's 8dB more than most other speakers. It is also a very easy load for valve amps (8ohms) and it gives a terrifically dynamic and fast sound. This speaker is also unusually suited to low powered vintage amplifiers, such as Quad IIs, Radfords, Pye Mozarts and such like.

The High Definition loudspeaker is available in two forms; as a drive unit pack containing two bass units and two tweeters modified and tested, or complete with all crossover components, gold plated bi-wire terminal dishes, silver plated copper wiring and long haired wool.

KLS2 LOUDSPEAKER

Drive Unit & Crossover kit etc	£195
Drive Unit Pack	£145

See page 83 for order form...

WORLD DESIGNS

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300B VALVE AMP KIT

£750 ▼



This is a specialised amplifier based on the highly linear 300B triode valve. Our 300B runs in Class A, giving one of the most sweet, open and neutral sounds possible today. Matched with good loudspeakers, it is unsurpassed.

The kit comprises a strong 16-gauge mild steel chassis, fully

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

A fully built version from an approved build service is also available.

SPECIFICATION

Power	28watts
Frequency response	5Hz-36kHz
Distortion	0.2%
Separation	54dB
Noise (hiss/hum)	-100dB/-72dB
Sensitivity	240mV
Dimensions (mm)	405w,295d,175h
Supply	110/120V or 220/240V, 220W
Weight	20kgs(44lbs)

4W SINGLE-ENDED VALVE AMP KIT

£385 ▼



The 4W Single-Ended amplifier kit is a line level integrated amplifier. It comes with three line level inputs and a tape output. High quality components are used throughout, including polypropylene signal capacitors, Alps volume control, custom C&K gold plated selector switch etc. Valves are included.

SPECIFICATION

Power	4watts	Noise (hiss)	-100dB
Freq. Response	9Hz-64kHz	(hum)	0.7mV
Distortion	1.3%	Sensitivity	180mV
Separation	74dB		

DEMONSTRATIONS!!

By the time you read this we hope to have our K588I 20W valve power amplifier, KLP-1 valve pre-amplifier and 4W single-ended on demonstration at Hi-Fi Confidential, 34 Buckingham Palace Road, Victoria, London. Phone the patient and understanding Luigi on 071-233-0774 to check availability. He's a valve afficianado, knows Tim de Paravicini and is still sane, and stocks plenty of good products - including World Audio Design.

4W SINGLE-ENDED TRANSFORMERS

£190

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

- 1) Mains (1 off) Secondary: 0-210V a.c. at 150mA, 6.3V centre tapped. Primary: 220/240V or 110/120V - please state which on order form. Drop through fixing.
- 2) Output (2 off) High quality transformers with grain orientated silicon steel laminations. Secondary tapped 4/8/16Ω. Drop through fixing.
- 3) Choke (1 off) Compact 1.2H/150mA choke for under-chassis fixing. Frame mount.

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

K588I (20W CLASS A) TRANSFORMERS

£220

There are four transformers in all, weighing 12kgs.

- 1) Mains (1 off) Secondary: 0-360, 1 x 6.3V centre tapped. Primary 220/240 or 110/120 - please state which on order form. Drop through fixing.
- 2) Output (2 off) These transformers use high quality materials, laminations of thin and best quality grain orientated silicon steel. Output tapped 4Ω, 8Ω and 16Ω. Drop through fixing.
- 3) Choke For smoothing of the H.T. line to provide best sound quality, a 5H choke that fixes under the chassis. Frame mounting.

300B (28W CLASS A) TRANSFORMERS

£430

Seven transformers in all, weighing 16kgs (35lbs)

- 1) Mains (1 off) Secondary: 230V-0-230V, 5 x 5V, 1 x 6.3V. Primary 220/240 or 110/120 - please state which on order form. Drop through fixing.
- 2) Output (2 off) Designed for low distortion and broad load compatibility from the 300B. Cores with centre-hole fixing to avoid corner flux concentrations; laminations of grain orientated silicon steel. Output tapped 4/8/16Ω. Drop through fixing.
- 3) Intervolve/phase splitter (2 off) frame mounting.
- 4) Chokes (2 off) For smoothing of the H.T. lines, two 3H chokes that fix under the chassis. Frame mounting.

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Dvorák, romantic
Rachmaninov, memorable
Martinu and, if that wasn't
enough to whet the appetite,
it's a happy new year from
Richard Wagner!**



ANTONIN DVORÁK
Piano Quintet No2 in A Major
Op81 (B155)
BOHUSLAV MARTINU
Piano Quintet No2
Peter Frankl, piano; Lindsay String
Quartet
ASV CD DCA889 (DDD/69.51)

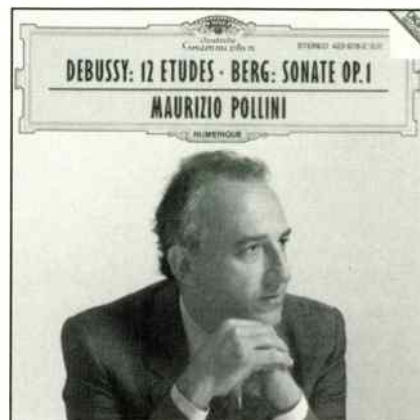
● The Lindsay Quartet's 'Bohemians' series simply goes from strength to strength. This is the sixth volume and each has been a triumph, whether it has been devoted to the quartets of Janacek

or Smetana or the diverse chamber compositions of Dvorák. I hope that, eventually, the series gets the accolades due to it, not just for its consistency of playing and recording, but for the sheer enterprise in bringing this wonderful music to a wider audience. Even the designer of those gorgeously colourful and intriguingly detailed CD covers deserves some sort of prize!

Here, for the first time in the series, we encounter the chamber music of Bohuslav Martinu, his Second Piano Quintet. It was a work new to me, but one whose acquaintance I am delighted to have made. Even on first hearing, the substance of the piece, its wealth of ideas, its ingenious development of them, the depth and range of its emotional undercurrents, are evident. Subsequent playings uncover yet more of a work which Martinu wrote while in exile in the United States in 1944. In his booklet note, Jan Smaczny recalls that Martinu was physically and emotionally exhausted at the time, yet the music never suggests any want for energy or passion. It is also richly melodic but it is the often surprising variety with which Martinu exploits these ideas, especially in the intensely involving slow movement, that makes the Quintet so compelling.

There is abundant melody, too, in Dvorák's Op81 Piano Quintet, one of the greatest of his chamber compositions. It is music of radiant good-heartedness and the poignant theme of the andante is beguiling even by the standards of the master tunesmith that Dvorák was.

The Lindsay Quartet is joined here by that most underrated of pianists, the Hungarian-born Peter Frankl, and the understanding between them is evident from the start. Both performances have the energy and spontaneity that you usually encounter at a concert, but without the unwanted distractions. The recording was made in a concert venue that will be familiar to Radio 3 listeners, St George's Brandon Hill in Bristol, and the production team of Alexander Waugh and Andrew Hallifax – a new name to me – have obtained first-rate results there. This is music-making at its best, engaging and enriching, polished without being precious; an early contender for chamber music recording of the year, dare I suggest?



CLAUDE DEBUSSY
Twelve Etudes for Piano
ALBAN BERG
Piano Sonata Op I
Maurizio Pollini, piano
DEUTSCHE GRAMMOPHON 423 678-2
(DDD/52.16)

● Debussy and Pollini. It looks an irresistible combination but the result is curiously disappointing. To me, Pollini either misses or ignores the subtle sensuality and poetry in these remarkable pieces. The Twelve Etudes were Debussy's last major composition for solo piano and reflect his admiration for Chopin. Yet they are anything but wistfully reflective; more, this is Debussy at his most musically exploratory and his most abstract, eschewing descriptive or programmatic titles for straightforward pedagogic headings.

The music, though, is far from straightforward with its finely-shaded textures and delicate interweaving of melody. Too often, this eludes Pollini whose air of nervous agitation is at odds with the music's inner mood. At one point in the Second Etude, *Pour les tierces*, he ignores Debussy's instruction to play softer and actually plays louder. The brilliance that you might expect in the faster music is also lacking and Pollini is wary of the exuberance which is surely implicit in some of the more extrovert pieces. It is a competent enough performance but one short on imagination, lyrical vision and rhythmic flexibility. The close, rather boxed-in sound doesn't help. Of the modern versions of the Etudes, that by Mitsuko Uchida on Philips remains the front-runner.

However, Pollini does offer the attractive and unusual bonus of Alban Berg's opus one, his only published piano work. Lasting some ten-and-a-half minutes, it is music of great density and

Multi-layered allegory replete with masonic, even revolutionary, sub-texts, or a colourful collage of quasi-mystical hocus-pocus. Whatever interpretation you place on Emanuel Schikaneder's bizarre plot for *The Magic Flute*, there is no denying that, in Mozart's hands, it miraculously metamorphosed into a truly wonderful opera, or – to be more exact – singspiel. Mozart composed three types of opera: opera seria, opera buffa (or comic opera, *The Marriage of Figaro* being the finest example), and the Singspiel. The last, too, was essentially light-hearted and included spoken dialogue as well as sung arias and choruses. It was also, as the name implies, performed in German rather than Italian.

Mozart completed *The Magic Flute* in the last year of his life, 1791, but those seeking portents of impending doom in the work, rather as in the *Requiem* K626, are badly misguided. Sadly, it became Mozart's last opera, but that was unknown to him when he was composing it.

WOLFGANG AMADEUS MOZART

Die Zauberflöte (The Magic Flute) KV620

Kristin Sigmundsson (Sarastro); Kurt Streit (Tamino); Sumi Jo (Queen of the Night); Barbara Bonney (Pamina); Gilles Cachemaille (Papageno); Lillian Watson (Papagena); Martin Petzold (Monostatos); Håkan Hagegård (speaker); The Drottningholm Court Theatre Orchestra and Chorus; conductor, Arnold Östman
L'OISEAU-LYRE 440 085-2 (2 CD SET) (DDD/155.56)

● Although he uses period instrument forces, there is nothing especially radical about Arnold Östman's view of *The Magic Flute*. Yet it is clearly a deeply-considered performance, with a refreshing clarity and lightness of texture and a firm grasp of rhythm and flow. Like Norrington on EMI, Östman acknowledges the essentially light nature of the Singspiel idiom; *The Magic Flute* as an apotheosis of the eighteenth century rather than a precursor of the nineteenth and all that implies. Norrington's tempos are generally very

Being generous, given its absurd plot – symbolism or no symbolism – *The Magic Flute* is best described as a superior pantomime. It is Mozart's music which elevates it to the status of a masterpiece. The writer and music critic, Compton MacKenzie compared the two arias of the High Priest, Sarastro, to the great speeches of Prospero in Shakespeare's *Tempest*. The music of Papageno, the bird-catcher, is lighter and an opportunity for any baritone to prove his worth. Indeed, all the characters are given opportunities to dazzle, not least the Queen of the Night who has two of the most difficult of all coloratura arias in all opera, music that delights and disarms with its heavenly beauty.

Recordings of *The Magic Flute* are legion: over twenty are in the catalogue, beginning with the 1938 performance under Sir Thomas Beecham which is currently available in first-class transfers on both the Pearl and Nimbus labels. There have been several other legendary

recordings of the work, not all in retrospect living up to their reputations. How ponderous Klemperer's exceptionally slow speeds now seem, for example; and the sonic jiggery-pokery of Marriner's version on Philips is now merely irritating, despite a star-studded cast. Karajan's 1950 Vienna recording – better than the 1980 Berlin digital taping – is a glorious reminder of the Viennese Mozart tradition. Haitink's 1981 recording on EMI has much to commend it, principally the voice of the late-lamented Lucia Popp, and – along with Solti's 1990 performance on Decca – is arguably the safest recommendation among what might be described as 'traditional' interpretations. But *The Magic Flute* has also benefited from the attentions of 'authenticists', Roger Norrington and – most recently – Arnold Östman among them. And, for me, it is Östman's Drottningholm performance which deserves to join the ranks of the great *Zauberflöten*.

fast, which can be either alternately exhilarating or exhausting. It can sound rushed and the cast can best be described as adequate. Östman – I think

a weak link, and it isn't much of one, it is the Sarastro of Kristin Sigmundsson and, on the technical side, the spoken dialogue is sometimes not as audible as one would wish. Otherwise, the recording, made in Stockholm in August 1992, is a model of clarity and balance, displaying the many qualities of the Drottningholm orchestra to the full. The choir, too, is in fine voice.

Above all, this Oiseau-Lyre production succeeds as a performance, a satisfying sum of its parts. Which cannot be said of many a more starry line-up. The fact that it was recorded over a ten-day span rather than a ten-month one, and in one location, doubtless contributed to the cohesion and unity of the interpretation. There are times when it can seem that there is a surfeit of recordings even of a work of the stature of *The Magic Flute* and it is unquestionably a distinguished list that stretches back to Beecham almost sixty years ago. But Östman's is a recording full of distinguished performances that deserves its place among the handful of great interpretations at the head of that long list.



wisely – opts for slower speeds, which brings a welcome spaciousness to the proceedings and, overall, he has the stronger cast, with Sumi Jo quite splendid as the Queen of the Night. Hear her in the act two aria, *Der Hölle Rache kocht in meinem Herzen*, and I'm sure you will be bowled over. If there is

inner tension, awash with yearning chromatic lines. As it moves inexorably towards its central climax, Pollini is heard at his commanding best.

Berg was just twenty-three when he

wrote the *Sonata* and the influence of Schoenberg is evident, with all the material being driven from a few motivic cells voiced at the start. It is a fascinating piece and – as far as I am

aware – unavailable on any other recording. So Pollini's superb execution of the *Sonata* is doubly welcome, but doesn't compensate for the distinctly lack-lustre Debussy.



WAGNER GALA
Excerpts from Tannhäuser,
Lohengrin, Die Meistersinger
von Nürnberg and Die
Walküre

Cheryl Studer, soprano; Waltraud Meier (mezzo-soprano); Siegfried Jerusalem, tenor; Bryn Terfel, baritone; Berlin Philharmonic Orchestra; conductor, Claudio Abbado

DEUTSCHE GRAMMOPHON 439 768-2
(DDD/76.29)

● Vienna has its new year's day gala, but in Berlin they go to hear the city's famous orchestra at its home, the Philharmonie, on new year's eve. It sounds an eminently civilised tradition, one which Karajan – although he did not found it – steadfastly maintained. Now the onus is on Karajan's successor, Claudio Abbado, and for the past three years he has elected to devote the occasion to the music of just one composer. He began in 1991 with Beethoven and followed with Richard Strauss; last year it was the turn of Richard Wagner, not a name readily associated with Abbado. In the event, as this recording amply demonstrates, it proved to be an inspired collaboration. Mind you, Abbado did line up four of the finest of current Wagner singers to assist him: the American soprano, Cheryl Studer; the German-born mezzo, Waltraud Meier, who has been associated with the Bayreuth Festival for over ten years; the superb Siegfried Jerusalem, often described as the ideal Wagner tenor of this generation; and the young Welsh baritone, Bryn Terfel, who demonstrates the breadth of his vocal talents by tackling the two quite different roles of Wolfram in *Tannhäuser* (a glorious performance of the evergreen *Song to the Evening Star*) and Hans Sachs in *Die Meistersinger*.

The Berlin orchestra gets the chance to enjoy itself in three of the best-known Wagner orchestral excerpts, the *Overture to Tannhäuser*, the *Prelude to act one of Die Meistersinger* and – as a rousing conclusion – the *Ride of the Valkyries*. But the highlight of this gala concert has to be a more substantial excerpt from *Die Walküre*, the intensely powerful act one duet between Siegmund (Siegfried Jerusalem) and Sieglinde (Waltraud Meier). Both are in glorious voice, as in Cheryl Studer who

takes on the roles of Elisabeth and Elsa in the *Tannhäuser* and *Lohengrin* excerpts respectively.

I'm normally no great fan of this kind of gala recording, feeling that it must have been wonderful to have been there at the time but that the impact dulls in the cold light of listening at home. Here, however, I couldn't but enjoy a feast of fine Wagner singing, orchestral playing and – for that matter – conducting. Will the experience tempt Abbado to tackle one of the operas? I'd be intrigued to hear what he would make of *Tristan* or *Parsifal*. The sound from the Philharmonie, I should add, is a product of DG's 4D system which I don't pretend to understand but which produces – given the 'live' conditions – a richly-textured and full-blooded result. Wholly appropriate, in fact.



SERGEY RACHMANINOV
Piano Concerto No2 in C
minor Op18; Piano Concerto
No3 in D minor Op30

Howard Shelley, piano; Royal Scottish National Orchestra; conductor, Bryden Thomson

CHANDOS CHAN 9193 (DDD/75.08)

● A generous coupling (I know of no other current recording which offers both these concertos on one CD) and a somewhat perplexing one. The recording details list the tapes as having been made in the Caird Hall, Dundee, in December 1989 and April 1990, and the sleeve offers a first publication date of 1990, where upon the CDs of all four concertos (Nos 1 and 4 were taped as well) appear to have been abruptly deleted.

Howard Shelley is one of the finest of contemporary Rachmaninov interpreters, witness his superlative series of recordings of the solo piano music for Hyperion. This Chandos issue shows that he is just as sympathetic to the concertos.

Rachmaninov's Second Piano Concerto is probably second only in popularity to Tchaikovsky's First; indeed, it is probably the quintessential romantic piano concerto. Inevitably Shelley faces formidable competition in this work, from for example Ashkenazy (the LSO/Previn version) and the classic Van Cliburn/Reiner recording on RCA/BMG; there is also the thrilling Earl Wild interpretation, with the RPO and Jascha Horenstein which also happens to be on Chandos.

Howard Shelly offers a scrupulous, thoughtful performance which avoids the mawkish sentimentality and self-indulgence that colours so many interpretations of this work. Yet his playing – like the Chandos recording – is brilliant and full-blooded. Unfortunately, Bryden Thomson does not prove the most imaginative of accompanists, though the playing of the Scottish orchestra is full of commitment.

The Third Piano Concerto, completed in 1909, displays greater compositional mastery than its predecessor, both in terms of structure and in the use of the orchestra. It is also decidedly more demanding of the soloist than the Second Concerto, so much so that the dedicatee, Josef Hoffmann, never played the work. Even Rachmaninov, one of this century's greatest concert pianists, complained about the technical hurdles he had given himself! Howard Shelley takes these hurdles in his stride in what is an eminently cogent performance, yet not one without panache. He responds eloquently to the music of the *adagio* and offers vigorous and commanding playing in the outer movements. All round, this is probably the better of the two interpretations and, again, the weighty Chandos sound is wholly consistent with the essence of Rachmaninov's score, and the balance between soloist and orchestra is nicely judged. A welcome addition – if a belated one – to the crowded ranks of the Rachmaninov discography.

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ROTEL	RC 970BX PRE	£150
	RB 970 BX PWR	£225
	RC 980BX PRE	£350
	RB 980BX PWR	£450

CD EQUIPMENT

(CDP = CD Player; CDT = CD Transport
DAC = D to A Converter)

ARCAM	ALPHA 5 CDP	£450
	DELTA 270 CDP	£800
	BL/BOX 50 DAC	£450
	DELTA 250 CDT	£750
AUDIO	DAC IN A BOX	£200
ALCHEMY	DDS2 CDT	£795
AUDIOLAB	8000D DAC	£750
AURA	CD50 CDP	£400
DPA	LITTLE BIT 2 DAC	£450
	BIGGER BIT DAC	£695
	T1 CDT	£895
MARANTZ	CD52 MK2 CDP	£230
	CD52 SE CDP	£300
MERIDIAN	506 CDP	£795
	500 CDT	£975
	563 DAC	£695
	508 CDP	£1350
MICROMEGA	STAGE 1 CDP	£450
	STAGE 2 CDP	£600
	STAGE 3 CDP	£800
	CDT CDP	£519
MUSICAL FIDELITY	FCD CDP	£1499
ORELLE	CD160.2 CDP	£749
	CD10T CDT	£799
	DA180 DAC	£599
PINK TRIANGLE	ORDINAL DAC	£790
QED	DACAPO DAC	£1450
	DIGT DAC	£139
	DIGITAL OPTICAL	£169
QUAD	67 CDP	£825

ROKSAN	DF2P CDP	£1495
	DF2 CDT	£1295
	DA2 DAC	£549
ROTEL	RCD965BX CDP	£300
	RCD965 DIS' CDP	£375
	RCD965SE CDP	£425
TEAC	VRDS 10 CDP	£770
THETA	DATA BASIC CDT	£1990
	DATA MK2 CDT	£3290
	COBALT DAC	£699
	PRO PRIME DAC	£1449
	PULSAR 1 DAC	£1195

SPEAKERS

A/ENERGY	AE1	£764
	AEGIS 1	£450
APOGEE	CENTAUR MINOR	£1345
AURA	SP50	£399
B & W	MATRIX 805	£845
CASTLE	CHESTER	£650
	HOWARD	£995
EPOS	ES11	£395
	ES14	£585
IMPULSE	H6	£1350
	H2	£2250
KEF	REF 103.4	£1199
	REF 105.3	£2295
MARTIN	AERIUS	£2222
LOGAN	SEQUEL 2	£3222
MISSION	760i	£130
	760i SE	£150
	780	£200
	751	£300
	753	£699
MONITOR	MA 201	£250
AUDIO	MA202	£400
PROAC	TABLETTE 3	£479
	STUDIO 100	£699
	STUDIO 200	£1850
	RESPONSE 3	£3069
QUAD	ESL63	£2860
	SV63 WOOFER	£1650
ROGERS	STUDIO 3	£499
ROKSAN	OJAN 3	£895
SONUS	MINUETTO	£898
FABER	MINIMA AMATOR	£1498
SPENDOR	LS35a	£539
TANNOY	605 MK2	£170
	607 MK2	£200
	609 MK2	£295
	611 MK2	£430
	D100	£650
	D500	£1470
	D700	£2100
THIEL	CS 1.2	£1219
	CS 2.2	£2679
	CS 3.6	£3809

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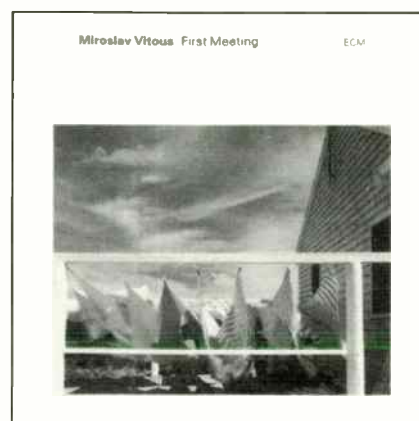
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Surman on soprano and baritone saxophones, bass clarinet and synthesizers.

In many respects, the record carries all the hallmarks of one of Surman's own beautiful, elegaic, pastoral solo records, but Phillips' compositions (and as with the Motian set, Journal Violone feature entirely leader-written material) are shot through with a crystalline iciness a million miles from Surman's essential warmth. This is fabulous stuff though, and its austere exterior easily rewards repeated in-depth listening.



MIROSLAV VITOUS
First Meeting
ECM 519 280-2

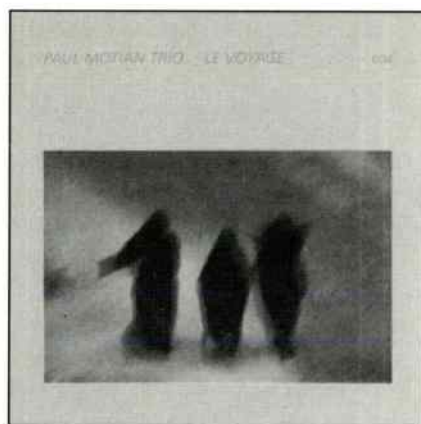
● Another bassist-led set, and again dating from 1980, First Meeting has many of the romantic-melancholy-pastoral leanings of the Phillips set, but is nonetheless far more conventionally jazz-ish in its approach to similar material (which, with the exception of a single group improvisation - the title track as it happens - is, again, entirely leader-composed).

The record features a more regular jazz quartet for a start: Vitous himself, one-time member of fusion superstars Weather Report and a bassist who easily melds rhythmic drive and abstract lyricism; drummer and percussionist Jon Christensen, another ECM mainstay and veteran of sessions with contemporary jazz legends like Jan Garbarek and Keith Jarrett; once again John Surman, here on just soprano sax and bass clarinet; and American pianist Kenny Kirkland, a fine and swinging improviser, if a tad staid for my own liking.

If the tundric harshness of the Phillips sets and the spontaneous abstraction of the Motian are still a hint alien for you, First Meeting ably bridges the gap between these extremes and more conventionally accessible contemporary jazz, a kind of bridge which I reckon is still one of the most lasting and significant bequests of the first half-dozen Weather Report records. Vitous may only have been with the group a short while, but he learned at least this from Zawinul and Shorter. A highly enjoyable listen.

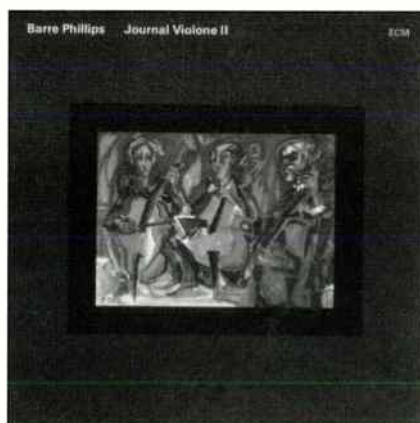
accessibility with unfettered, searching self-expression, he represents the very best that ECM has had to offer for over twenty years.

Le Voyage was recorded in 1979 and features a fine trio of Motian himself, bassist J.F. Jenny-Clark and the masterful Charles Brackeen on tenor and soprano saxophone. The album features five of Motian's own compositions and they're so perfect - in conception and performance - that it's hard to believe that Motian - bandleader, drummer and composer - kept on getting better and better, but he surely did, and remains one of all current jazz's finest, if most underrated talents. All of these ECM reissues are worthwhile and enjoyable, but Le Voyage is essential.



PAUL MOTIAN TRIO
Le Voyage
ECM 519 283-2

● First up this month, a quartet of CD reissues from the German ECM label. Pick of the bunch for my money is almost certainly the Paul Motian Trio's Le Voyage. Drummer Motian has been an ECM stalwart from the label's earliest days, both as a sideman and as a leader. His approach to both composition and playing has almost been the perfect summation - certainly the finest example - of the label's style and aims. He balances abstraction and romanticism perfectly, with pieces that range from driving post-bop to hypnotic tone poem, from achingly lovely folk tune to intense Free Jazz. In balancing virtuosity with carefree experimentation, and



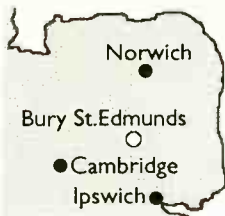
BARRE PHILLIPS
Journal Violone II
ECM 847 328-2

● If Le Voyage's bass-drums-sax line up is an unconventional one (though one which Motian has employed, always successfully, over and over), Barre Phillips gathered a - for him - characteristically odd group together for 1980's Journal Violone. The record features the leader on bass, of course, singer Aina Kemanis and the West Country's own superb John

Simon Hopkins

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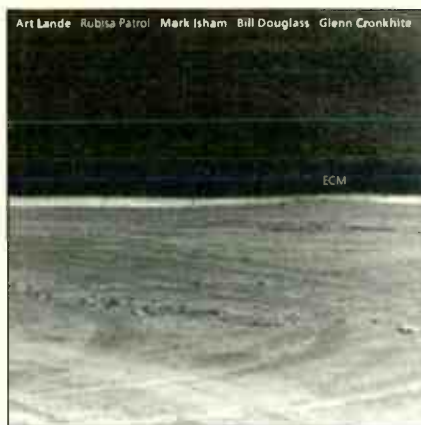


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ART LANDE
Rubisa Patrol
ECM 519 875-2

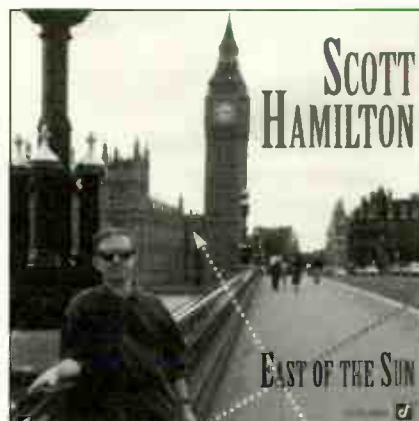
● But even more straightforwardly enjoyable - and perhaps the most straightforwardly enjoyable of all these ECM reissues - is pianist Art Lande's Rubisa Patrol, recorded and originally released in 1976. The record features a quartet of Lande, trumpeter Mark Isham (doubling here on Flugelhorn and soprano saxophone), drummer-percussionist Glenn Cronkhite and bassist Bill Douglass (who also turns in some fine flute, including some pretty gorgeous oriental bamboo flute).

Opening up with a stirring rendition of a traditional Chinese melody which unfolds delightfully into a cracking piece by Isham, the band work their way through a bunch of compositions by the leader, Isham and Cronkhite. They also bash out a driving, take-no-prisoners arrangement of a mind-numbingly complex, odd-metre Bulgarian folk tune, which in terms of sheer "did-you-hear-that?" potential is the album's stand-out track. A good dozen years before any marketing dunderhead dreamt up the odious term "world music", this group were among several weaving together indigenous ethnic musics and jazz improvisation in a highly accessible manner. Not groundbreaking stuff by any means, but you'd have to be a sour old sod not to enjoy this record a good deal.

tracks derived from that sax-driven amalgam normally found on American sitcom themes, but it's well played; just the thing to get you in the mood for the real jazz that comes next, as we enter an easy, modernist album including nods to jazz greats such as Gillespie, Hawkins and - stone the crows! - a Glenn Miller - on acid riff on track six!



Track seven's the disappointment, as Mintzer hasn't the guts in his sax to do slower mainstream jazz well, and I found Kennedy's cymbal-work too forward and irritating at times, but I have no real complaints, as there's a better range of talents, styles and instruments on show than you normally get on MOR-jazz albums. Recommended.



SCOTT HAMILTON
East Of The Sun
(CCD-4583)

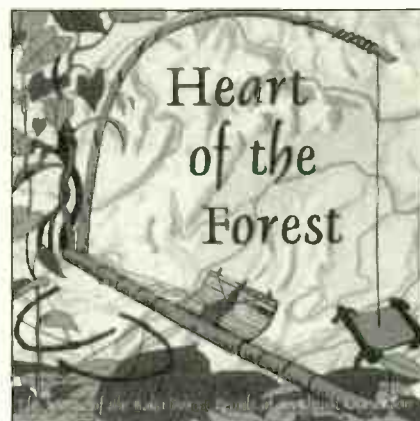
● Concord jazz continue their work with another album of well recorded Jazz from Hamilton, who consistently finds fresh, new ways with half-forgotten tunes. Some tracks in this selection - Carmichael/Parish's 'Stardust', Cahn/Styne's 'Time after time' and Hammerstein/Kern's 'All the things you are' - were recorded by the Scott Hamilton Quintet in Tokyo in 1983, and make for interesting comparison.

The intervening decade has barely touched Scott's playing. Perhaps the sound is easier, more mature now but that may be because the frisson of a live recording is absent on this studio

set. What shines through is Scott's masterful touch, a living, breathing line to classic jazzmen from the golden age who have long since fallen silent

Here, Scott is playing alongside three of Britain's finest; Brian Lemon on piano, Dave Green on bass, and Allan Ganley on drums. This group compares well with the Scott Hamilton Quintet as Scott's Zelig-esque ability to play in any setting is reciprocated by this excellent trio. It's been a long time since I have heard a group which bounces phrases around with such ease and confidence.

If you thought that the days of swing were gone - beautiful tunes and easy rhythms with tonal quality preferred to prestidigitation - then it's time you discovered Scott Hamilton. For those in the know this is up there with Scott's best. That should be recommendation enough.



HEART OF THE FOREST
The Music of the Baka Forest
People of Southeast Cameroon
(HNCD 1378)

● So called "World music" rather than jazz, but as close as you'll get to the roots that spawned jazz, blues, and the whole gamut of modern music.

This CD presents a good slice of weird and unearthly Baka music, atmospherically recorded, and with instructive notes. If you want to know where jazz came from, hear this. It may be your last chance before the Baka become 'civilised'.

Simon Cooke

YELLOWJACKETS
Run For Your Life
(GRP 97542)

● This album looks derivative, even down to the sub-Zappa facial hair, shaved chromedome and 'serious muso' dress code on the group photo inside. Run for your life? Surely these guys never even had to run for the bus! The thanks list even begins 'All our families' and ends with 'the memory of Richard Tee'. Can the music really be as formulaic as the album looks?

Hell, no! it begins with a couple of



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



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INPUT

It's here that Audio Technica's micro engineering skills can help, starting with the **AT6078 CD Lens Cleaner**. Deep

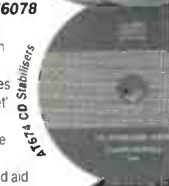
inside your player the lens attracts dust, smoke and other debris, an industry acknowledged problem.

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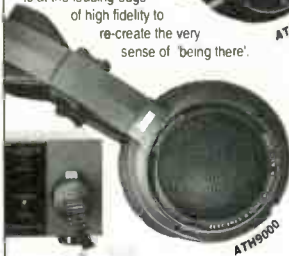
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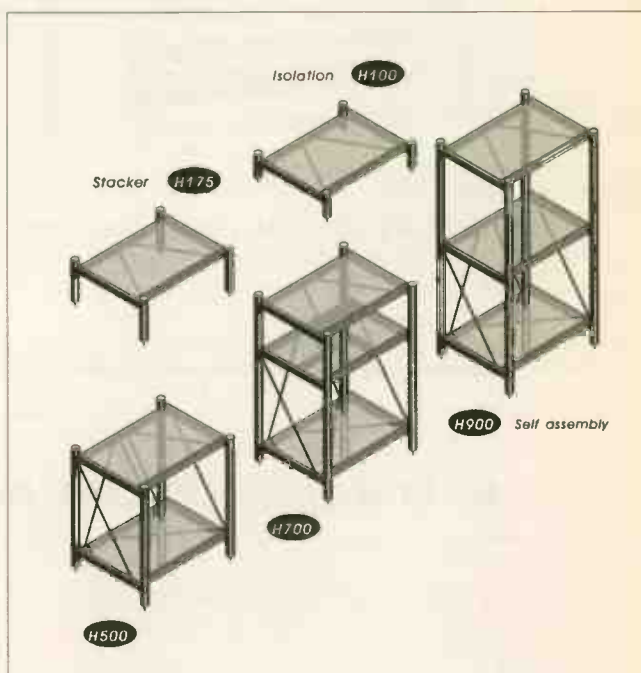
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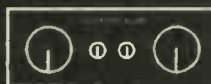
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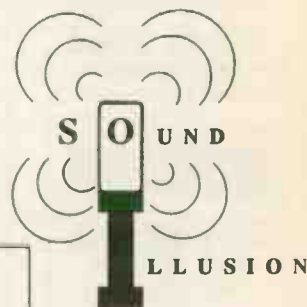
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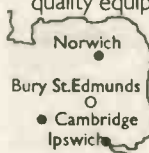
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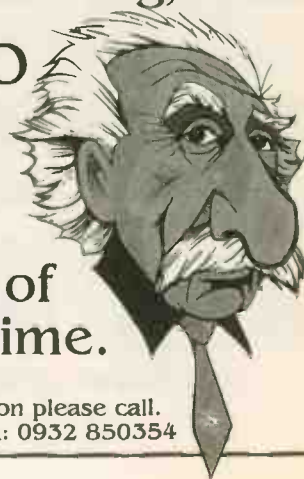
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SYSTEM SYNERGY

As I constantly keep mentioning, the vital aspect of getting a system to sound superb is matching the various components. We spend hours checking what works with what, and sometimes the results surprise even us. An interesting case occurred this week while trying out the ISO and perception phono stages for a customer who used an Ortofon MC3000 II + AVI pre-amp + ATC 50's in active form. As it happened my 50's were in passive mode and my trusty old Denon 103D was in the arm, so I carried out a test and the perception won. Having then mounted an Ortofon MC3000 and put the ATC's into AC/VE and repeated the test - the ISO won - it was close, but it is so important to evaluate the right system.

Talking about passive ATC 50's, these really do sound superb; it's strange that in general everyone only seems to consider them as active speakers. I know there are some ATC dealers who have never even listened to a pair of passive 50's, but they should. They are more tolerant than the actives and if you've got good amplification well worth considering, but anyway work well with AVI or Heybrook amplification, at a similar cost to actives.

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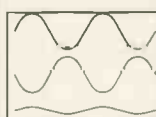
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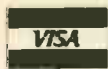
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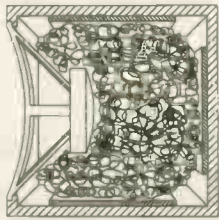
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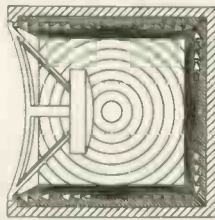


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readers' queries

BASS DOWN UNDER

To all experts at Hi-Fi World -

Re: REL Strata (Aussi \$2,000 - my limit) versus The Purpose Built Gradient S.W.57

1. I have a chance to buy a pair of 23 year old ESLs but I can't live without some bass! (though I don't feel a need to rattle the walls).

2. Hate Heavy Metal - love the rest

3. Ancillaries - mid-range stuff, mostly old: - Quad 405, 66 pre & CD. KEF R104 ABs, Thorens I45, Shure VI5.3, but it likes me (you're right, I'm no tinkerer - sorry).

4. My ears roll off sharply after 13kHz (but I'm only 40! -

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

Hey, what did you say?

5. I would love a Quick Flick around the office on the following basis:

Name, Vote, Reason.

6. It's bloody dark down here when it comes to pommie hi-fi stuff, but a little light comes filtering down once a month - albeit two months late - but thanks anyway.

**Bill McIvor
McIvor Architects,
Brisbane,
Australia.**

Name: Dominic Baker
Vote: REL Strata

Reason: There are several reasons for my vote, however, the most relevant one for you is that the Gradient SW-57 is around twice the price of the Strata before you even think about the extra power amplifier it's going to need - putting it beyond your budget. The REL has its own built-in power amplifier, can be positioned anywhere within a room and has a lovely rich bass quality to it. The SW-57 on the other hand can also sound very good, but it will almost certainly sound best facing in a different direction to the ESLs, so they won't be able to stand neatly on top (it's a dipole and therefore needs to be acoustically aligned with the room. This normally means that it must face into the corners, not towards the listener). In addition, the Gradient active crossover is a rather cheap affair and does tend to add a little

coarseness to the Quads which are otherwise oh-so-smooth.

Name: Noel Keywood

Vote: REL Strata as well

Reason: I've spent months developing a subwoofer crossover for the Quad and rejected, even before

starting, the notion of using yet more silicon chips in the signal path, as Gradient do.

To me, upping the chip count in a system with speakers of the Quad's lucidity is a contradiction in terms and smacks of uncritical engineering inappropriate to the aims of the high fidelity. Couple this with the fact that no-one who uses the Gradient box likes the way it is engineered, and you have my firm vote against it. Some day we'll get around to publishing my own Quad crossover circuit in a universal form, hopefully soon in the DIY Supplement.

I have used the REL and, like just about everybody else it seems, was mightily impressed. REL subwoofers deliver real subsonics - earthquake stuff. However, they do need careful tuning to match them in or they can sound boomy. You need to set gain at a minimum and crossover frequency at its



The REL Strata gives good results wherever it's positioned.

Continued on page 117...

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ECC81 MULLARD	£5.00
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E810F MULLARD	£10.00
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G337 MULLARD	£3.00
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13D3 (CV4068)	£4.00
6SN7GT	£4.00
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U19 RECTIFIER	£15.00
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SOCKET 'n' SEE!

.... Continued from page 115

lowest then slowly adjust both upward. Matched in properly, a REL subwoofer with Quads can sound awesome, for the together they measure fairly flat from 10Hz right up to 20kHz - and it sounds like it.

TUNING IN TO A NEW SYSTEM

I have just sold my system through your magazine. With some of the money I would now like to buy a tuner based system. I have made a selection of products from your magazine, i.e. Pioneer A-300X amp., Rotel RT-950BX tuner, Rogers LS2a2 speakers - all highly recommended as individual products.

It would be difficult to find a shop with all three units to have an audition. With your expert knowledge, as you have reviewed all these products, could I ask you to give your verdict as a complete system in terms of sound quality compatibility. I want easy, warm, relaxing listening that only good hi-fi can give, even at a budget price.

Also, would you please let me have the company name and address of the shop in the December issue P.47 Audio Jumble.

**A Brooksban
London W12.**

The Pioneer A-300X and Rogers LS2a2s are a good combination and you have chosen well here, but there is an alternative to the Rotel tuner you have picked which may better give the warm and relaxing sound you are pursuing. The NAD402 at around £160 takes some beating. All here agree that it is one of the best tuners available below £500.

Remember that to get the very best from a quality tuner you will need a good aerial. Your closest transmitters are Wrotham in Kent for BBC stations and Croydon for commercial radio. This means that for good signal strength,

i.e. enough to provide full quieting and high fidelity sound, a four element aerial will be essential.

The shop to which you refer is Howse of Southboro, Kent, and sells TVs, Radios and Hi-Fis, but not vintage equipment. John Howse is a vintage audio enthusiast who organises events such as the Audio Jumble (17th July 1994). For details on the next gathering, 'phone John on 0892 540022. **DB**

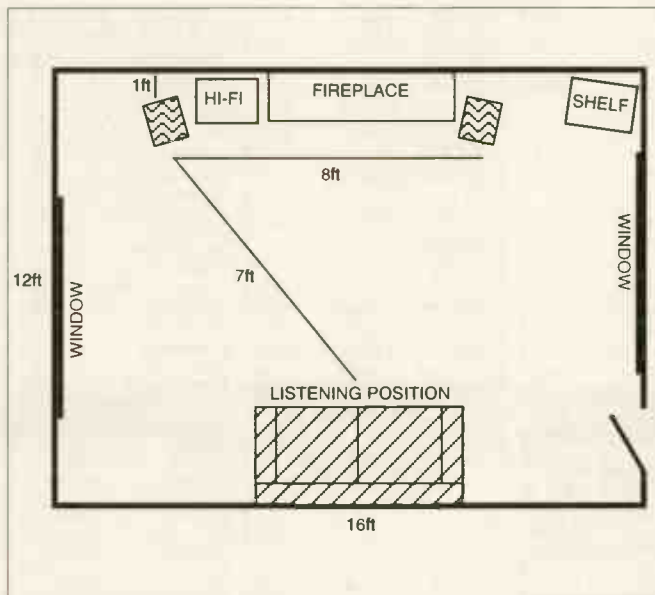
LOST IN THE SPEAKERDOME

I want to change my speakers, but am lost in the maze of

exciting but refined with a no-fatigue factor, as these speakers will have to last me many years to come. All of this I wish to attain within the limitations of my amplification and a sensible budget, as funds are tight, but I would rather wait than buy cheap, if positive benefits are to be found.

I listen to music both quietly and loud, so good sensitivity would be a virtue. Below is a diagram of my room layout and there is no alternative (I am married - need I say more) so speakers that work well very close to a near wall are essential.

My musical tastes



Alan Scott is looking for new loudspeakers to suit his system and room.

speakerdom! My system comprises Arcam Alpha 5 CD, Cyrus II + PSX, Tannoy 605s Mk1 on sand filled dedicated stands bi-wired with QED Gold and Audioquest Quartz cables. The midrange transparency and instrumental separation is quite good, but I am not happy with the performance of the cheap metal dome tweeter which is too harsh and overpowering on brightly recorded CDs.

I also need a better balanced, clearer, punchier and more realistically tuneful bass that does not get lost in the background so much (although many recordings are partly to blame for this). I love a very detailed sound, dynamic and

encompass light rock, blues, acoustic rock and others, but not classical, soul, dance and jazz.

My room size and acoustic has a profound effect upon the speaker's performance and the more I read, the more confused I have become. I have considered "monitors" but their low sensitivity and apparent below-par bass performance have made me unsure. I would appreciate your suggestions and comments so as to make a short list of possibilities.

**Alan Scott
Hemel Hempstead,
Herts.**

I agree that metal dome

tweeters can sound a little unnatural, but I think that it would be unfair to Tannoy to lay all of the blame at their feet. Both the Arcam Alpha 5 CD player and Mission amplifier have a bright and lively sound that may be exciting the Tannoys just a little too much. This is a system mis-match. However, as you have recognised the cheapest and most effective solution would be to go for a more refined loudspeaker. I'd recommend either the TDL RTL2s or 3s, whichever you prefer of the two. Both combine high sensitivity, really good bass dynamics and control, a nice, sweet, soft dome tweeter and a good clean midrange, so they'd appear to fit your needs quite nicely.

The only other loudspeakers that may suit your system are Rogers' LS8a2s. These use their own in-house designed bass/mid-unit which has a lovely neutral quality to it and a metal dome tweeter - don't frown, it's a very good one that will behave itself well in the company of Mission amplifiers.

Whilst you're auditioning new loudspeakers, I'd suggest you try using some of Ortofon's SPK loudspeaker cable; it may help to clean up the sound a little and improve definition. **DB**

WEIRD

Enclosed are details of my systems and a drawing of my living room. OK, I know its weird but the basic idea of the main system is to fill the room with sound without strain, which it does well. Also the IMFs provide a good, solid, nicely controlled bass, with the Snells providing the treble beautifully; they work well together.

I know valves are supposed to be low powered, but this system goes very loud without strain such that a friend who plays in a rather

Continued on page 119... ▶▶

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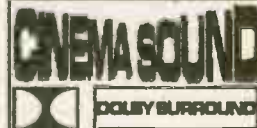
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E & OE

.... Continued from page 117

noisy band keeps shouting at me to turn it down when he comes round. The system will also play low beautifully.

Alright, so overall I'm happy with the system, but I would like your advice on some upgrades. Whilst happy with the Cambridge I feel it's holding the Leaks and Snells back. Could you suggest a

or can you suggest something else, MC or MM? Also suitable interconnects and speaker wires, again I hope to get another Rogers Cadet and bi-amp the Missions and maybe change the stands to Atcoma ones.

Apart from the queries mentioned, do you have any suggestions for other upgrades or comments generally.

Finally thanks for a great

quite an effective preamplifier, even if it does look a little basic mechanically against some of today's better preamps. You'd only better it with a Rose RV-23S, an Audio Innovations P2 or a line-level pre-amp like our own kit design, KLP-1. We'd only recommend a preamp upgrade if your Leak TL12+ valve power amps and Stereo 20 are in first rate condition though. Otherwise, whilst their sweetness might be obvious, their lucidity could well be improved, since ageing components can compromise sound quality in this respect. Graham Tricker of GT Audio is the man to contact about Leak restoration. He can be contacted on 0895-833099. Kits of components are available for restoration purposes.

We favour silver

plated and pure silver interconnects, producing our own of course. So you could well try experimenting with the Maplin cable; it should give good results.

For the PD-S801, get a DPA Little Bit. It's one of the best upgrade convertors around for this purpose.

You may well be able to split the IMF crossover into low pass and high pass sections for bi-amping, but do not try to alter or redesign it. Crossovers are highly specific to the drive units and cabinets they work in conjunction with. The best you can do is to upgrade the components (e.g. change electrolytics to polypropylenes of the same value) and internal wiring. And remember that Quad IIs turn out a measly 12watts or so - nothing like enough for a TLS80, which was designed for high power solid state amplifiers. So don't expect to drive them too hard.

The Sumiko Blue Point

cartridge is a fine high output moving coil that will feed any moving magnet preamp, including a Hart. The Moth arm (a Rega RB250) would be a good upgrade for the old SME3009 II; fit another Sumiko or try a Goldring cartridge, MM or MC (all Goldrings are decent).

Check out Ortofon loudspeaker cables (Dominic and Eric swear by them).

Many people have recommended the Rogers Cadet to us. Other readers might like to take note; car boots have been known to yield up such wondrous devices early on Sunday morning, before the gannets arrive. We will hopefully get around to reviewing this amplifier; must remember to get out of bed early.

Any other suggestions? What about a pair of Stax Electrostatic headphones for the cat. **NK**

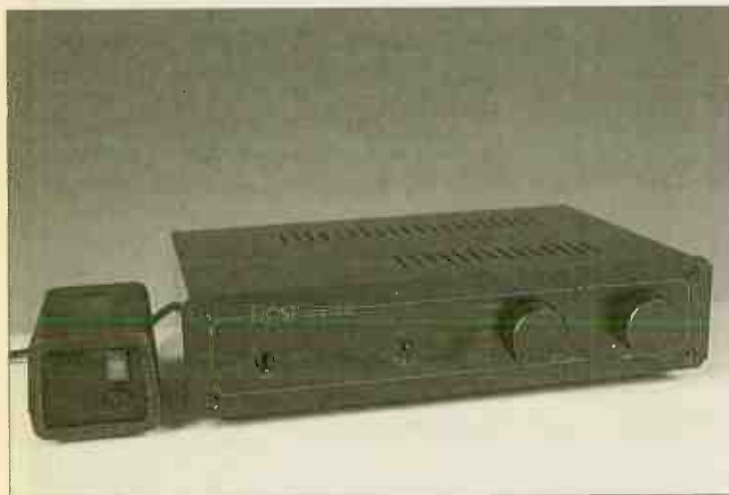
GOOD BYE OLD FRIEND

I am about to change my old friend, a very early ('85) Mission Cyrus I amplifier. The rest of my system consists of an Axis/Akito/K9 on Mana sound-frame, Arcam Delta 2 speakers - on stands of course, Ixos hardcore cable and a Denon 710 tape. I've two amps in mind of totally different nature.

I'm a vinyl nut, so obviously a phono stage is of greatest importance. Basically, do I play safe with my first choice of a Naim 92/90 or go for the new Alchemist Kraken Anniversary integrated amplifier with off-board power supply which I'm rather taken with? Although Alchemist offer a phono-board for an option (£45) would this do my records and the amp justice?

I was considering an off-board head-amp. I've read your report on the EAR 834P valve phono preamp, but at £290 it's fairly costly. Could you recommend a suitable

Continued on page 121....



The Rose RV-23S valve pre-amp with solid state MM and MC inputs.

suitable replacement, remembering they only need 125mV input?

I wonder what interconnects I could replace the Tandy with (and the others), or is it financially worth it? Also, what about speaker wire? Maplin do a silver plated wire for £3.95 a metre.

I plan to get a DAC for the Pioneer PD-S801. Could you recommend anything?

I am intending to rewire the IMFs and have the crossovers re-built and converted, to allow me to get another set of Quad IIs to bi-amp them.

Also a friend has a Hart phono amp which sounds good. I'm thinking of getting one for the 401.

Regarding the bedroom system, again I'm mostly happy with this, apart from the SME/Supex. I intend to change to a Moth and wonder about a suitable cartridge under £100. Do you have any comments on the Denon 110

magazine which encouraged me to listen to valves, e.g. the Rogers, as well as seek out the rest of my older equipment. PS. If you get a chance listen to a rebuilt Rogers Cadet, when I got mine it was after listening to a couple of Audio Innovations which didn't sound as good. A friend got rid of his Audio Innovations and turned down a Meridian after he bought and rebuilt a Cadet III.

**Davies McGuire
Newfoundpool,
Leicester.**

Weird? We'd be euphemistic and say it was 'imaginatively constructed'; you get full marks for effort! Connecting a Quad 44 preamp to Quad II valve power amps is hardly for beginners, and getting no less than two Garrards up and running takes some effort as well. We like the lodger's turntable - the Japanese would reckon he gets the best deal, since they rate the 301 most highly.

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... Continued from page 119

head-amp, preferably of I.C. design, or do you consider that the purchase of a head-amp is unnecessary in my outfit? Would I be better off plumping for the Naim pre/power and dismissing the idea of the Kraken as being fanciful?

Please advise, I need your professional opinion, not one of a sales-person which I always regard as having ulterior motives, "irrelevant" to the customer needs. I've always shopped with my ear - now I need your opinion.

David Musgrove
Lillington,
Warwickshire.

Right, you want advice, so here it is.

1) Ditch the K9 and replace it with either an Arcam P77 or the Goldring 1042. This will give you a much sweeter and more detailed sound from vinyl.

2) Go for a really top flight integrated amplifier with a good phono stage, like Sugden's superb A21a. These will both offer a considerable improvement over your ageing Cyrus 1. You should hear much tighter, more powerful bass dynamics and the whole sound will be more detailed and richer.

3) Get rid of the Arcam 2s and replace them with something a little cleaner and more revealing. Epos ES1 Is should do the trick on their own open frame stands. These are reasonably sensitive, so should go well with the A21a, and have a very detailed and musical presentation.

If you don't get on with these speakers, it might be worth listening to Castle's new Durham 900s. These claim 90dB sensitivity, so they should have a detailed and energetic sound. They also come as mirror image pairs with the tweeters offset to one side, so they should image well also.

I seem to have planned

your upgrades for the next year or so, but it'd be worth finding a dealer who can let you hear the whole lot, so you know what you're aiming for and can confirm it is to your taste. **DB**

QUAD MAKE A STAND

I found your latest supplement very interesting and useful as I have a pair of Quad ESL63 Pro. electrostatic loudspeakers. One of the reasons I bought the Pro was because it doesn't have the downward facing grills, hence the sound can easily 'get out' without resort to tilting, and increased height or grill change etc.

Is it still necessary to get stands for the Pro which, from your article, would seem in this case to offer a trade off of 'not losing too much bass', to possible greater clarity.

I very much like the Stand and Deliver stands as they blend in very nicely with the loudspeaker and come with spikes instead of wheels.

If you advise that stands are still going to give a good improvement then I will start running around like a headless chicken trying to locate a pair.

My system consists of Roksan Xerxes, Artemiz, AT-OC30, Hi-Fi News step-up, Concordant Excelsior feeding Leak TL50+ power amps with ESL63 Pro.

Changes planned/dreamt of:

- Speaker stands
- VDH Cobar interconnect and speaker cable
- EAR step up
- Leak TL50+ rev amp (already underway)
- Innovative (cheap) efforts at isolation and tweaking

As a last thought, how about some comparative reviews of transformer step-up devices to include EAR, Audio Innovations and the smaller manufacturers. Also, what a shame not to have tested the Concordant Excelsior phono stage with a really good step-up transformer and

interconnect - how might this have compared with the Michell Iso you used instead? NB: Listening room 15 x 18 feet

Donald Naismith
Scotland.
(address withheld)

Start running, 'cos Stand and Deliver stands do improve the Pros in our opinion. But you'll only get as far as a headless chicken, because at present they don't exist. In response to your query, Quad told me, however, that they do hope to start making their own stand in the near future, now

acknowledging the steady demand for such an item, as well as its innate worth.

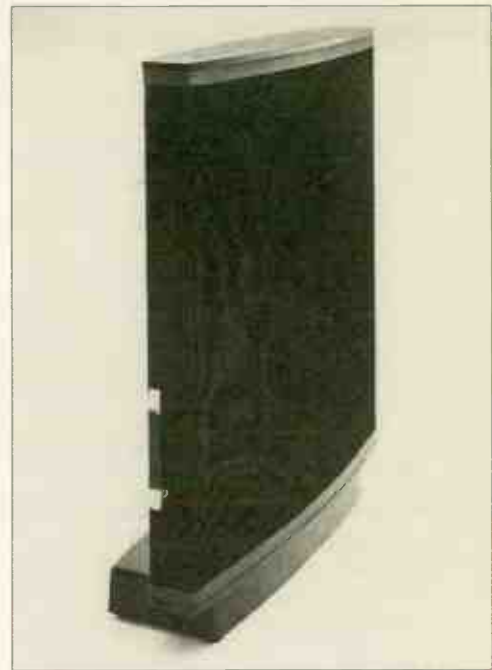
Sitting on the floor, Quad ESL63s - including Pros - have rather boomy bass. Raising them up by about 10-12in lessens this problem. Raising them any higher makes them bass light. You can easily check the effect of this by raising the speakers up on boxes first. It would be possible to make stands from wood; I suggest you try a solid front baffle. As you say, the Pros do not suffer downward beaming, so improvements in this area will be less obvious.

VDH cable would be fine, but don't forget inexpensive Quad cable (yes - even Quad have become believers - albeit reluctant ones at the altar of Mammon!).

The EAR834 and 834P work very well with Quads, although the insensitivity of these speakers limit volume (we measure 83dB Sound

Pressure Level for 2.8V, or a nominal 1watt, whereas most speakers give 86dB or more nowadays). They'll still go loud with an 834 and I'd say this was a symbiotic match in sound quality terms.

Leak amplifiers can be restored, or parts supplied,



The Quad ESL 63 Pros will benefit from good stands.

by Haden Boardman of Audio Classics ('phone 0942-57525) and Graham Tricker of GT Audio ('phone 0895-833099).

My experience of Concordant in the past has shown measured performance to be a bit - er - open to question, but sound quality was liquid, warm and smooth - definitely beguiling.

You must know by now that I continually recommend removing the metal fronts of Quads as a tweak, albeit with the proviso that this is potentially dangerous, since it exposes lethal (2500V) voltages. Do be very careful about this - you must know what the dangers are and whether they are acceptable. Dominic, myself and Martin Colloms, to name but three, choose to use ESL63s with the grilles off, but the usual advice is to avoid this where fried budgie doesn't feature on the menu (or where children are, or might be present). **NK**



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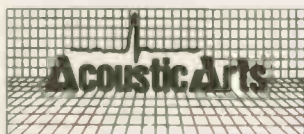
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NVA A40/50	mint s/h	£250	Meridian 602 Trans.	mint s/h	£895
Musical Fidelity P140/P3A	vgc	£295	Quad 67 CD	as new	£595
Krell KSA 50	mint s/h	£895	Roksan Xerxes/Tabriz-zi	as new	£995
Musical Fidelity Typhoon/the pre	mint s/h	£295	Alphason Sonata/Zeta	mint s/h	£495
Krell KMA 100 MKII	mint s/h	£1795	Micell Gyrodec/RB300/PSU	vgc	£550
Croft 4SA	mint s/h	£350	Roksan TMS/Artemiz/Shiraz/XPS3	as new	£2750
Audiolab 8000 P/C	mint s/h	£650	Ortofon MC 3000/T3000	as new	£795
Beard BB100 MKII	as new	£750	London Jubilee	as new	£650
Audio Research LS2	mint s/h	£1600	Burmester 838 phono	mint s/h	£595
Meridian 601 DSP+DAC	mint s/h	£1500	Pioneer HZ1 phono	as new	£1295
Roksan L2/S1 pre/pwr	as new	£1595	Quad 66 Tuner	as new	£395
Audio Note OTO	as new	£895			
Mod Squad Deluxe L.D.	mint s/h	£495			
Quad 66/606	as new	£1050			
Sonus Faber Electa	mint s/h	£1050			
Monitor Audio Studio 10 +stds	mint s/h	£695			
Apogee Callipers	vgc	£895			
Martin Logan Sequel II	mint s/h	£1295			
Monitor Audio Studio 20 SE	as new	£1495			
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 Jimmy Hughes, Audiophile April 1991.

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Krell 100S (ex demo)	£1295	Theta Basic CD transport (ex demo)
Graham L51 (oncam) (ex demo)	£1195	Sonus Faber Minuetto's (ex demo)
Jadis Def seven (used mint)	£3495	Audio Research D100 (ex demo)
Lumley Reference 12h		Audio Innovations 300 int. amp (used)
Triode Pent. (ex demo)	£2895	Audio Innovations 200 pow. amp (used)
Avd/SME 4 (ex demo)	£1495	Audionite AN2 speakers (front)
Martin Logan Quest (ex demo)	£3995	Audionite ANF speaker (front)
		Sony 702FS Dac (used and rare)

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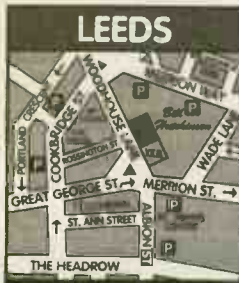


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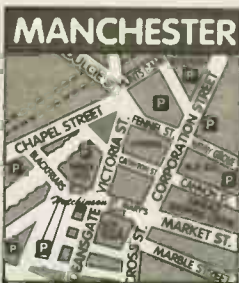
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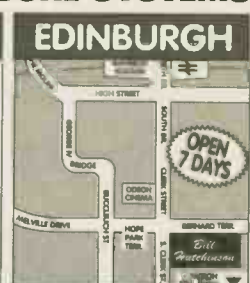
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CONCORDANT EXCELSIOR Valve Pre-amp. Perfect working order. Slight scratch on wooden case hence £450. Tel: 0694-771278 or 0939-234170.

MERIDIAN 206 Delta Sigma. £795. Quad 34/FM4, £575. AKG 1000. £325. Tascam Portatone Tape Deck, £295. Dual CS701, Shure V15 + spare, £50. All boxed/mint (0533) 532513 Leicester.

AURA VA100 Evolution Amplifier, as new, £250. Tel: 0703 328573 (Soton) eyes.

NAKAMICHI CR7E. Just serviced. Perfect. Offers. Also Pioneer CT95 Dolbys to top of the range cassette deck. Two weeks old. Offers to Mr Moss 081-203 4411.

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Beautiful Garrard 301, Heavy Plinth. Linn Ittock Arm £350 (may split) two re-built Leak TL50+ £450. Integrated Armstrong Valve Amplifier £60. Leak Stereo 20 £180. 0709-555403 evenings.

WANTED: 50 Watt Valve Monoblock by Magneta (B.V.C.) Ltd. Leatherhead, Surrey also information about this equipment. Telephone: 0392-469242 evenings please.

LINN INDEX Loudspeakers plus KU-Stone Stands. Excellent condition £230. Tel: (0780) 53079 (eves/weekends).

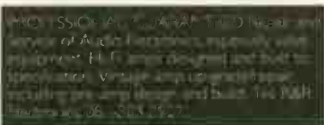
MICHELL ISO/HERA £275.00. Concordant Exhilarant £400.00. Concordant Modified Quads £300.00 (per pair). Groove Tubed. Audio Technica at OCS £30.00. Denon DL304 £50.00. Tel: Dean 0902-788648 or work: 0384-262470.

LINN LP12 Lingo, Trampolin, Akito, Klyde (2 years old). £850. Audio Innovations 200 pre-amp (MM/MC) and power amp £200 each. Linn Pretek pre-amp £200, Epos ES11 speakers with stands £275. All in pristine condition. Tel: 0904 631515.

FOR SAI F: Linn Ittock LV2 boxed £175; Quad II Stereo Tuner (valves) £65; Audio Technica ATH70 Electret Headphones boxed £100; Thorens TD160/SME3009, wood plinth £65. Tel: 081-989 6434.

KL51 SPEAKER Cabinets built by furniture-maker. Finished in satin black simulated woodgrain with chamfered front baffles. £150 o.n.o. or swap Creek/Cyrus amp. 0787-374399. (W. Suffolk).

WANTED: Roksan latest spec record deck, prefer rosewood. Also large Denon monoblock power amplifier. Tel: Dave 0455-616932.



ACCUSTAT 1100's £600.00, Revox A77, serviced, remote booklet, £300. Elite Townshend pre/power monoblocks M/C M/M £250.00. Audio Research STC-70 power-amp. Offers? Electrocompact 25W Class A, £225.00. Thorens TD 125 MKII. Lots more. 0932-849849.

MICROMEGA MICRODAC, nearly new, £250 (£350). Wilmslow Crossover and Tweeter up-grade for KEF Concertos/Kelkat 3's. £80 (£135). Wanted: Leak Stereo 20 for re-building. Phone 0283-820818 eves.

TOWNSHEND ELITE Rock MKII Moth Arm (Rega RB250) AT-OCS M/C £335 o.n.o. Tel: 0243 568627.

LINN LP12. Black, Valhalla. Ittock LVII, A.T.5. £375. LK1 Pre-amp, inc. XLR's, latest spec. £275. Meridian component integrated amp, CD, Aux, Tape and moving magnet inputs. £150. Tel: Banbury (0295) 272925.

HAFLER XL600 Power-amp and Hafler D110 Pre-amp excellent condition £850. Tel: Steve 0229-827980 (Cumbria).

MERIDIAN 206B CD Player (DAC 5). Excellent condition £550. Tel: 041-639 7036 (Glasgow).

HEYBROOK POINT Five Series 2 Loudspeakers. Approx 20 months old. As new, boxed. £1100. Tel: Rugeley (0889) 575655.

MAGNEPLANAR: White Electrostatic Loudspeakers, Slimline (50 x 120 x 5cm). Great sound and brilliant imagery. As new. £430 o.n.o. Southend (0702) 470633.

WANTED: Quad FM4, in exchange for Meridian 203 B.S.C., as new. New set of matched valves for Quad II Amps £500.00. Tel: after 6.00 pm 0455-617784.

TANDBERG RECEIVER TR2025MB, FM, Long, Med and short wave, presets, £110. Technics turntable SLQ3 Quartz Direct Drive Auto £70. Sony Single Tape Deck TC-FX420R, Dolby, Autoreverse. £70. Tel: 0606-782556.

LINN LP12/EKOS/LINGO power supply / AT-F5 Cartridge excellent condition. New £2,455.00. Will sell for £1,000.00. Tel: 081-964 8356 (after 6.00 pm).

QUAD Q3 Pre-amp and 405 Power-amp. Recent QUAD service. Offers. Pair Sony Speakers SSE 30, 50 watts. 12" W x 24" H 11" D. Offers. 0782-395797 (Staffs).

PINK TRIANGLE Turntable, Helius Scorpio and Audio Technica AT-F5, recently serviced, boxed, little used, unmarked deck, £380. Tel: Haywards Heath (0444) 413660.

CHURCH DONATION SALE: Quad 303/FM4/44. SME Series II/Shure V15 Type V. Garrard 401. Marantz SD35/CD54. Sennheiser 2000 ES Phones. Lowther Acoustics. Inclusive offers please; details. 0293 532825.

WANTED: Keith Monks Record Cleaning Machine must be in good working order. Tel: Paul (0533) 553176.



NAIM NAIT 2. Great sounding amplifier. Very good condition. Box and manual. £190 o.v.n.o. Tel: Andy (0753) 825928 Slough.

ARCAM ALPHA plus CD: Alpha 3 amplifier; Alpha 3 Tuner, Mission 780 Speakers; Cyrus Stands; Sound Organisation Rack; Linn-Chord leads: 1 year old, boxed. £699. Tel: 0494-873487 (South Bucks).

LEAK TROUGHLINE 3 Stereo Tuner, working order, original condition £150 o.n.o. Phone: 0270 68500.

ACOUSTAT SPECTRA 1100 Electrostatic Hybrid Loudspeakers. Very good condition £600 o.n.o. MOD SQUAD Line Drive £200. Tel: 0843 584030 eves or days (answer phone).

PIONEER A400GTE. NAD CD T.L. Cassette Deck. Clearwater Speakers and Stands £325 - boxed. Tel: 0639-701104. Anytime.

AUDIO INNOVATIONS 600 Valve Pre-amp £240. Leak Stereo 20 Sugden re-build £230. Linn KANS and KANII Stands £320. All o.n.o. Tel: 0209-820066.

HELP! Sage Amplifier Module wanted. Supermos 100 watt, others considered if in pairs. Desperate. Tel: 0482-470961.

LINN LP12, EKOS, Troika (all '91). Naim 32.5/SNAPS/250. EPOS ES14, tables, stands. Yamaha K-340 deck. £2,400 o.n.o. Tel: 081-547 1264.

SUGDEN, SDA-I DAC, latest spec, superb sound, £475. Sugden, SDD-I transport, £450. Oracle Delphi MK3, Turbo supply, Randall Tonearm Terminator, Sumiko MDC800 "The Arm", £995. All mint and boxed. Tel: 0273-775302.

J.E. SUGDEN Power Amp P51, control unit CS1, stereo F.M. tuner R51. Including instruction leaflets (circuit diagrams). Celestion Ditton 55 speakers, all in good working order. Sensible offers, (0865) 390884 (Oxon).

NAKAMICHI CR7 - The ultimate cassette deck. Automatic record Bias/Azimuth. Manual playback Azimuth control. Auto Fade. Remote control. cost £1,995 new. Reluctant sale £1,150 o.n.o. Tel: 0895-258193 (Uxbridge).

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LINN SONDEK LP.12 Lingo, Ittock MK3 21/2 years old, boxed and in mint condition, approx 400 hours use. Tone-arm to be retained hence price £750 o.n.o. Any demo welcome. Tel: 021 558 1248

ACOUSTIC ENERGY AE-1 (Rosewood) boxed pair only 2 months old £695 o.n.o. or swap for mint Nakamichi cassette plus cash. Target T-20 stands 10" boxed pair £30. Tel: 081-778 6174.

WANTED: SONY TAE - 1000 ESD, DSP Pro-logic Pre-amp. Cash waiting. For sale: Nakamichi Receiver 1; top of range; 80w/p channel; audio/video inputs/outputs; remote will operate two NAKAMICHI decks and CD player. Excellent condition. 1 year old. R.R.P. was £800 will sell for £300. Reason for Sale: up-grading. Contact Leonel on 0483-771731 (Home - Days) or 0483-32791 (work-evenings).

MICHAELSON ODYSSEUS Integrated Valve Amplifier. Recently re-valved, line level. Art-Deco Style, 45 watts. Boxed can demo. £450 (£999new). Tel: Rochdale 0706-357804.

LINN ISOBARIKS, Walnut Finish, including stands, panels, 1987 model, sounds great with Naim amps. Lovingly cared for example. Mint condition. £850 o.n.o. Tel: 0524-381389.

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LINN AXIS Turntable, AKITO K9 as new. £250. Mana Acoustics Sound Shelf - mounts to wall - was £150 new. £70 (081) 428 7201.

CHORD SPM 1000. 250 watts into 8 OHMS. Black front with black ash sides. As new, boxed £1,250. Birmingham 021-472 8746 after 6.30 pm.

NAKAMICHI CR-7E cassette deck. New, with unopened remote control unit. Now £1,995, will accept £1,300 or v.n.o. Tel: 0424-220171 (eve).

HELIUS SCORPIO Tonearm, Audionote re-wired £75. Koetsu Rosewood, mint £160. Supex SD900 cartridge, boxed. Mint £65. Rogers Ravensbrook amplifier £45. JPW Minims, mint £45. Wanted: Nakamichi 480 cassette. Tel: 0280-701145.

TANNOY 15" Dual Concentric DU386 speakers, complete with crossovers, all fixings and technical manual and enclosure construction guide with or without Tannoy York Cabinets £480 call any evening after 6.00 pm. 34c. Gintra Park, Norwood, SE19 2LQ.

QUAD II AMPS 22 and FM2 with stereo decoder (fault on tuner) £275. Garrard 301 £20. Femograph valve reel to reel model 482U £80. May part-ex FM4, Nakamichi. Tel: 051-734 0965.

LEAK TL25 PLUS £85 o.n.o. Rogers Cadet 3 £50 o.n.o. Both in perfect working order. Telephone: 0302 885742 after 4 p.m. (Doncaster).

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ARCAM BLACK Box 3 DAC £150 Pioneer F4D1L Tuner £95 both boxed and perfect condition three target audio wall shelves £40 or £15 each. Phone: Steve 0625-619076.

KEF CR 200's Flush mount wall speakers, black, new unused. Cost £360. Accept £230. Tel: 0963-350844 Somerset.

GOOD-SOUNDING Equipment-built to last! Original model KEF105 speakers. AKAI GX95 cassette deck. Marantz PM84/2 amplifier (Class A). Telephone offers to Horrocks on 021-429 9143 or leave message.

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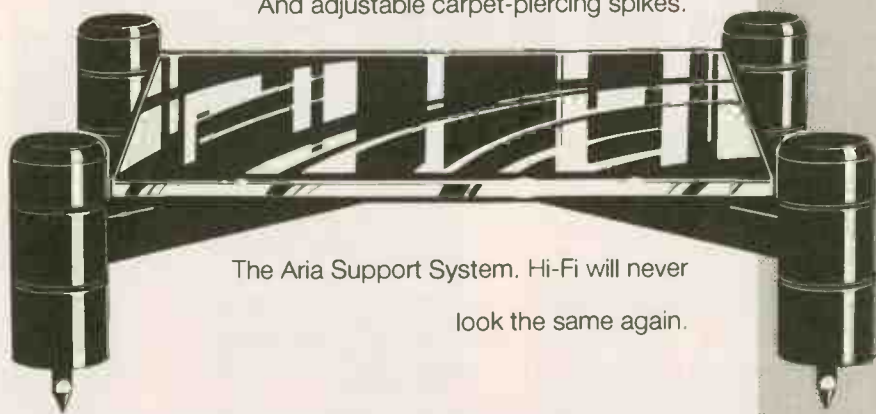
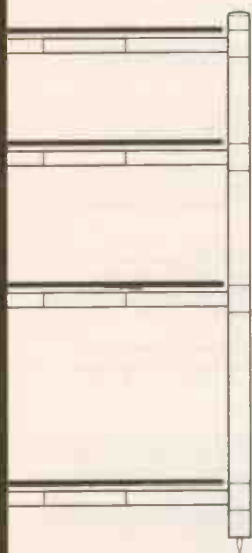
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R50 TRANSMISSION Line Speakers. Rosewood & Black. Professionally built (units £497.00 from Wilmslow Audio). Too large for New House. Tel: 0270-589322 or 0246-290049.

LEAK STEREO 20 Fully Re-built Kimber Caps and New Valves fitted beautiful open sound £200. Audio Research 5P8 unmodified and new valves fitted £250. Quad Stereo FMZ & Pre-amp £50 pair. Grants valve pre-amp £120 Leak mono valve tuner £30. Tel: Alan 0661-852874.

FOR SALE: AVI S2000A POWER Amplifier 250w/CHA. £950. Trilog 948 Valve Stereo Amp 50w/CHA £850. Audio Synthesis PAS-02 Passive/Pre £150. Phone 081-531 5979.

TDL MONITOR Reference Speakers, excellent condition £1,095, Mendian 203 DAC £195, Pioneer F737 Tuner £95. Tel: 0869-278249.

VALVE AMP LITERALS. Beard P1004 MKZ. 100WPC £475. Radford STA15 £300. Leak Stereo 20 (Croft re-built) £200. Rogers Cadet Pre-power £100. Also Tannoy Cheviots £220. Phone or Fax 0903-200705 (Sussex).

LEAK STEREO 20 Valve Amp £120. PROAC Tablette EBT Loudspeakers with Foundation Stands £95. IPL M2 Loudspeakers £95. Tel: 0895-637 846.

PINK TRIANGLE PTT00 RB300 Ortofon Quasar mint boxed £350. PROAC Studio Towers Prototype Mint £1,600. Nakamichi MR2 Pro Tape Deck Mint Boxed £200 LINX Stratos Pre-power mint boxed £200. Felixstowe 282838.

AUDIO INNOVATIONS Senes 500 Amplifier. Golden Dragon Valves. Good condition boxed. £450 Tel: Joe (0609) 779739 N. Yorks. (Shift worker - days/evenings).

QUAD ELS black, pr. Overhauled, protection circuits fitted. £450. Audio Innovations S800 Power-amp £375. Audio innovations S300 Integrated amp £225. Tel: 0883 349298 (Surrey).

WANTED: Leak TL 12+ and Stereo 20 or Leak TL10 and Stereo 20 or Leak TL 12+ and TL10 in exchange for: AVIS2000A Power Amplifier 250WPC. Phone: anytime 081-531 5979.

EQUIPMENT CLEAROUT. Meridian 205 mono blocks, excellent condition, including remote control, priced to £1,000. £500. Also in offer only tuner, ML7, etc. Tel: 01786 81010.

FOR SALE VINTAGE HI-FI. Quad 22 Control Unit, pair Quad II's amps. 10 spare valves, Garrard 301, Tandberg reel-to-reel, Wharfedale speakers, Wharfedale crossover, all very good condition. £500. Telephone: 0446-700875, after 6.30pm.

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