

Hi-Fi WORLD SUPPLEMENT

JANUARY 1994

FOUR NEW
HEADPHONES
TESTED

THE BEST CD, TAPE
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INTERCONNECTS AND
LOUDSPEAKER CABLES

CHRISTMAS PUZZLE
AND CROSSWORD

EQUIPMENT STANDS
REVIEWED

FREE CHRISTMAS SUPPLEMENT

AUDIO NOTE

AUDIO NOTE AUDIO COMPONENTS PARTS & PRICE LIST.

We have decided to offer a range of the ultra high quality components used in most of the Audio Note amplifiers to the discerning 'do-it-yourself'-valve amplifier enthusiast. These components include specially made valve bases, paper in oil signal capacitors, copper & silver foil signal capacitors, Black Gate graphite electrolytic capacitors, acid/corrosive-free silver solder, audio output transformers, valves and many other useful bits for upgrading old or constructing new valve amplifiers.

All prices are excluding Vat, which, if you live inside the EEC will be added to your purchase, after the addition of postage and packing costs.

We accept VISA, Mastercard, Access, Diners, and Amex, to pay this way. We will need your address, card no., with start and expiry dates, you can also pay by bankers draft, Eurocheque or cheques drawn on a UK bank account. Please note that there is a minimum charge on credit card transactions of £20.00.

Delivery is normally about 7 days from receipt of cleared funds, but please allow up to 60 days for some items, if not stock at the time or order.

If any of you reading this have possession of any books which contain information relevant to the subject of Audio Design and which would be useful to share with others, please let us know either by fax or telephone. There is an award of £20.00 (payable in valves or other bits, post free) to anybody who sends us a book which contains useful information about valve amplifier design or theory.

Circuits, Valve Data & Basic Technical Information.

If you would like some suggestions to base a future project around, then we shall be happy to provide you with a circuit pack containing good circuits like ONGAKU, KEGON/KASSAI, NEIRO, GAKU-ON plus several other power amplifier circuits and the M7Tube pre-amplifier, which is the best pre-amplifier circuit we have come across. Just send a stamped self addressed A4 size envelope, together with £4.00 in small denomination, or if you live outside the UK a US\$ 10.00 bill will do, please do not send International Response Coupons or International money orders, as they cost more to cash than their value.

We can also supply a set of data sheets for the most commonly used valves: ECC82, ECC88/6922, 12AY7/6072A, 7025/12AX7WA/ECC83, 6SN7, 300B, 211V74C, 845, EL34/6CA7, 2A3, 6X4, 5U4G, GZ34/SAR4, EL84/6BQ5, 6V6GT, 6L6G, 5881/6L6WG/KT66. Again send a stamped self addressed A4 envelope together with £3.00 in small denomination stamps or if outside the UK another US\$ 10.00 will suffice.

Since nothing really exists which gives a reasonable background to the subject of valve amplifier circuit design, Guy Adams and I have written and assembled a number of articles and extracts from old books which give some background to the subject, do not expect to become an instant expert, but it will serve as a useful reference, for the beginner as well as the more advanced. Again a small charge is required, this time £5.00, in small denomination stamps with a stamped self addressed envelope, outside the UK, please send US\$ 20.00.

We do accept a UK cheque or bankers draft in Pound Sterling for the above charges as well

SOUND PRACTICES.

If you are seriously interested in the subject of valve amplifier design, without the usual preconceived notions of what is 'good' amplifier design and technology (the traditional view, which has brought us the blessings of the transistor amplifier, has obviously disqualified itself quite monumentally), then SOUND PRACTICES is the magazine to read, here you will find articles about design parameters, DIY articles for amplifiers and speakers, reviews of new and old. In other words the very subjects that none of the self-serving, advertising led traditional press will touch as they do not enhance the business of their normal advertisers. You can buy SOUND PRACTICES from us at £5.00 per copy (there are currently 4 issues available) or by subscription from SOUND PRACTICES P. O. Box 19302, Alexandria, VA 22320, USA. A regular modern world bargain, and there are practically none of those in Audio today. With enough subscription support SOUND PRACTICES may just bring about the 'sound practices' that the hi-fi industry has abandoned for so long. So get a subscription!

OUTPUT TRANSFORMERS.

Specifications:

PP = Push-Pull, PPP = Parallel Push-Pull, SE = Single-ended, PSE = Single-ended Parallel, UL signifies 43% ultralinear taps, as a general rule we do not condone the use of UL-taps, as we consider these detrimental to sound quality. ** Dynaco replacement.

All primary impedances are calculated for Class A operation the main consideration given to maximum dynamic power transfer ability and minimum distortion, rather than meaningless steady state sine- or squarewave conditions.

All our single-ended output transformers are airgapped, and the maximum standing current allowed before saturation is shown in column 5

All our output transformers have a frequency response well beyond the audible range, typically 20Hz - 40KHz minus 1.5dB, all are IE-coded with high grade silicon steel laminations, wound with oxygen-free copper wire and supplied with either bell-ends or frames, both with flying leads.

We generally overspecify our transformers by 50% power in Push-Pull (which means that a transformer stated as 25 watts will allow about 35-38 watt peaks, our single-ended outputs are generally over specified by 100%, which means that they will instantaneously allow peaks of double the given maximum power (through undistorted).

We do not give any further technical information on our output transformers, as we do not wish to take part in technical competitions, our products are designed to criteria which are and will be understood once they are listened to!

In addition to the output transformers offered below, we offer a design service, where we can supply almost any requirement for wideband transformers, whether for microphones, moving coil cartridges, line input, phase splitter, interstages, driver or power output, we design and manufacture prototypes in-house, the cost for the paper design is £200.00, prototype cost is calculated on a per case basis. We can also produce production quantities.

Sizes are given as Width/Height/Depth, where depth is the depth of the coil itself and width is the length of the core.

CHOKES & INDUCTORS.

Value	Size	Price Ex. UK Vat
3H/1 00mA		14.00
5H/1 50mA		21.00
10H/125mA	63x74x76 mm	26.00
10H/200mA	98x65x83 mm	33.00

PAPER IN OIL SIGNAL CAPACITORS

These handmade signal capacitors are sonically superior to any of the plastic or other paper types we have come across. If you have never experienced the difference that a really good paper/oil capacitor can make in a valve amplifier, then you really should try. Our specially made paper/oil caps have a life, colour, lack of harshness and evenness of dynamic behaviour across the frequency range, which is guaranteed to brighten up your day! Recommended as replacements in old and new valve amplifiers alike (and even in the odd transistor amplifier), and essential for DIY projects.

Value	DC Voltage	Size	Price ex. UK Vat
0.015mF	400volt	21x9mm	2.85
0.022mF	400volt	35x10mm	3.70
0.082mF	400volt	33x14mm	4.25
0.12mF	400volt	33x14mm	4.75
0.18mF	400volt	32x16mm	5.15
0.22mF	400volt	35x18mm	5.85
0.33mF	400volt	43x18mm	6.75
1.4mF	400volt	70x24mm	14.95
0.0015mF	630volt	17x9mm	2.85
0.022mF	630volt	20x10mm	3.25
0.082mF	630volt	33x16mm	3.75
0.18mF	630volt	43x18mm	4.75
0.22mF	630volt	52x19mm	5.75
0.33mF	630volt	52x22mm	7.25
0.39mF	630volt	52x26mm	7.95
0.22mF	1000volt	56x26mm	6.95
0.39mF	1000volt	61x26mm	11.65
1.2mF	1000volt	72x40mm	16.75
0.22mF	1600volt	60x26mm	9.65
0.22mF	2000volt	70x29mm	11.55

All Audio Note paper in oil signal capacitors are axial type. We are preparing a range of very small picolard value paper in oil capacitors at the moment in addition to the above.

PAPER IN OIL COPPER FOIL SIGNAL CAPACITORS.

We are currently developing a range of paper in oil capacitors where instead of using aluminium foil as in the above paper caps, we use an oxygen free copper foil with 99.99% pure solid silver lead out wires, to 'bridge' the price-quality gap between the more standard paper/oil caps and the Japanese handmade Silver foil signal capacitors. For the time being we will only have two values available.

Value	DC Voltage	Size	Price ex. UK Vat.
0.15mF	630 volt	32x16 mm	16.45
0.22mF	630 volt	56x20 mm	19.75

AUDIO NOTE SILVER FOIL SIGNAL CAPACITORS.

Best signal capacitors available, quality really speaks for itself, used in amplifiers like ONGAKU, KEGON, GAKU-ON and M7Tube Silver, handmade in very limited quantities at Audio Notes facility in Tokyo, Japan.

Value	DC Voltage	Price ex. UK Vat.
0.02mF	500 volt	211.75
0.05mF	500 volt	346.75
0.1mF	500 volt	645.75
0.2mF	500 volt	995.75

AUDIO NOTE PAPER IN OIL RESERVOIR CAPACITORS.

Mainly for use in inductor power supplies, but have other uses.

Value	DC Voltage	Size	Price Ex. UK Vat.
2mF	400 volt	30x40x55 mm	26.75
2mF	630 volt	35x45x72 mm	33.65
2mF	1000 volt	45x45x72 mm	41.75
2mF	1600 volt	50x70x72 mm	45.95
4mF	1000 volt	45x45x120 mm	49.95
4mF	2500 volt	70x70x120 mm	265.75
10mF	1000 volt	70x100x120 mm	96.75
12mF	1000 volt	70x100x120 mm	109.95
12mF	1600 volt	100x100x120 mm	136.75
12mF	2000 volt	100x100x220 mm	159.75

AUDIO NOTE ACID & FLUORINE FREE SILVER SOLDER.

The best solder we have been able to find, does not contaminate the junction, which over time increases junction resistance. Used in all our amplifiers from OT to the GAKU-ON

Weight/Measure	Price Ex. UK Vat
50 grammes or about 8 meter 1mm diameter	19.95
1 kilo roll of 1mm diameter	299.95

AUDIO NOTE CABLES & WIRES.

We are proud to offer the AUDIO NOTE range of high quality copper and silver coax, speaker and wiring cables, which, depending on the overall price of the project will do justice to any hi-fi system, regardless of price.

Solid 99.99% Pure Audio Note Silver Wire.

Gauge	Insulation Material	Price per Meter Ex. UK Vat.
0.05mm	Polyurethane	16.75
0.2mm	Polyurethane	22.75
1mm	ML	36.75

The above solid silver wires are suitable for inductors for speaker crossovers, both active and passive or for internal wiring in tonearms, amplifiers etc.

AUDIO NOTE HIGH QUALITY STEPPED ATTENUATORS & SWITCHES.

These handmade attenuators and switches are manufactured by a friend of Mr. Kondo of AUDIO NOTE, and represent the best available volume controls and switches you can use in your pre-amplifier, the attenuator is 48 steps and with silver/modium plated contacts/brushes made with an array of tantalum film resistors. The switches feature silver plated contacts and self cleaning action.

Type	Value	Price Ex. UK Vat.
Stereo Potentiometer		
/Attenuator	50KOhms	198.75
Stereo Potentiometer		
/Attenuator	100KOhms	207.75
2 Channel switch	6 - way adjustable	78.75
4 Channel switch	6 - way adjustable	101.75

AUDIO NOTE HIGH QUALITY CERAMIC VALVE BASES

All of our valve bases are of the highest possible quality, made from steatite and using the best metal parts from alloys which retain their spring tension around the valve pin for longer. They are recommended as upgrades to most old valve amplifiers and should be an essential part of any DIY project.

Type	Mounting	Plating	Price Ex. UK Vat
4-pin UX4 for 300B		Gold	8.25
/2A3/801A Chassis			
4-pin UX4 for 300B		Nickel	7.25
/2A3/801A Chassis			
4-pin UX4 WF-type for 300B/2A3/801A Chassis Silver			14.75

RESISTORS

Beyschlag

We offer three quality levels of resistor quality, all are 1%, starting with the Beyschlag metallfilm, which are slightly magnetic (as are the vast majority of other makes of metal film resistors), but nonetheless very good sounding, as used in all our UK-made amplifiers, up to quality level 3 (the MEISHU/P3) no-leadback triode amplifiers.

Beyschlag 1 watt, 1% resistors up to 500KOhm, E 0.11, above 500KOhm £0.13 each.

HOLCO

Better sound quality can be achieved with the H2, 1 watt, 1% non-magnetic resistors, which we regard as the best 'industrial grade' metallfilm resistors available. They have one small drawback, as they are quite fragile and require careful handling, do not bend the legs too close to the body, they may become noisy

HOLCO resistors type H2 50PPM cost £0.36 each from 10000m to 500KOhm, higher and lower values are all £0.63 each.

SHINKOH Tantalum Film Resistors.

This is definitely the best sounding resistors available, forget the VISHAY, which may be ok in high feedback transistor amplifiers, but in our opinion quite uncomplimentary to the qualities of real Audio Amplification (i.e. directly heated triode amplifiers running feedback free in single-ended Class A), this is where you will need the tantalum film resistor for the best results. Unfortunately, the manufacturers have decided to withdraw the 1 & 2 watt values off the market for the time being, leaving only the 1/2 watt version available, which does rather complicate matters. However, as with most handmade specialist items, which covers most on this list, if demand is sufficient, supply will rectify itself

Type	Mounting	Price Ex. UK Vat.
8-pin for EL34, 6550.		
KT66, 6L6G Chassis with bracket		1.45
9-pin for ECC83, ECC88, 5687		
6350 Chassis with shroud		1.85

AUDIO NOTE SELECTED AUDIO VALVES.

Our valves are selected from the best available sources and are tested to the same stringent standards that we apply in the production of our own amplifiers, they fall into two categories, standard production items and rare, mostly NOS (New Old Stock) valves which are no longer in production. We have compiled a special list of the NOS items, which is available on request, beware the valves on this list are NOT cheap.

Standard Stock Items.

Type No.	Type	Price Ex. UK Vat
ECC83/12AX7WA/7025	double triode	2.95
E88CC/6922/60J8WA/7308	double triode	3.95
EF86/6267/2729	pentode	2.45
ECC82/1 2AU7/61 89W	double triode, mil spec	5.75
65N7	double triode, U8X base	1.75
65L7GT	double triode, U8X base	2.85
65J7	pentode	1.75
5687WA	double triode very powerful	4.55
6350WA	double triode small power	4.75
EL84/6BQ5	pentode	1.55
EL84M/6BQ5WA	small power pentode, mil spec version	4.75
6V6GT	small power pentode	2.45
6L6G	medium power pentode	2.75
5881/KT66/6L6WG	medium power tetrode	4.95
6550/KT88	large power tetrode	12.45
6C33	powerful regulator, indirectly heated	

POTENTIOMETERS.

Best available from sound quality - price viewpoint, made by Noble in Japan, high quality carbonfilm. Volume Controls.

Impedance	Construction	Price Ex. UK Vat
100KOhm	Frame type, PCB mounted	3.45
1 00KOhm	Encapsulated type, PCB mounted	12.65

Balance Controls.

Impedance	Construction	Price Ex. UK Vat
1 00KOhm	Frame type, PCB mounted	3.95
100KOhm	Encapsulated type, PCB mounted	14.15

STANDARD TYPE SWITCHES.

This switch is adjustable 2 - 6 - way, it has gold plated contacts and a stainless steel ball for best possible corrosion protection and contact, price ex. UK Vat £3.30.

STANDARD ELECTROLYTIC CAPACITORS. Good quality standard industrial types.

Value	Voltage	Size	Price Ex. UK Vat.
100mF	10volt	18x6mm axial	
		11x7mm radial	0.23
100mF	16volt	15x6 mm axial	0.29
220mF	16volt	11x8 mm radial	0.31
220mF	40volt	13x10 mm radial	0.42
100mF	63volt	13x10 mm radial	0.47
4700mF	16volt	38x18 mm radial	0.82
2200mF	50volt	35x18 mm radial	
		41x16 mm axial	0.87
10mF	160volt	15x10 mm radial	0.56

22mF	350volt	25x12 mm radial	1.25
22mF	450volt	41x16 mm axial	1.89
47mF	385volt	25x21 mm radial	2.16
56mF	400volt	30x21 mm radial	2.37
68mF	400volt	30x22 mm radial	2.68
100mF	400volt	30x25 mm radial	3.26
220mF	385volt	52x30 mm radial	4.45
220mF	450volt	40x30 mm radial	5.85
220mF	550volt	112x35 mm radial	27.65
		screw terminals	

RCA, BNC, BANANA, PLUGS, RCA SOCKETS, SPEAKER & GROUND TERMINALS & LOUDSPEAKER SPADES.

RCA	Plugs Standard Gold plug	1.55
AN-C	Gold plug	3.65
AN-GP	AUDIO10 NOTE gold plug	8.51
AN-P	AUDIO10 NOTE Silver plug, teflon insulated, non-magnetic	25.53

RCA Sockets.

Type	Mounting	Price Ex. UK Vat.
RCA socket nickel plated	Chassis mounted	0.41
RCA socket gold plated	Chassis mounted	0.65
AN-CS AUDIO10 NOTE non-magnetic, teflon insulated	Chassis mounted	3.65

socket, gold plated

BNC Plugs & Sockets.

Type	Price ex. UK Vat.
Standard BNC plug	3.45
BNC Silver plated socket chassis mounted	2.05

Banana Plugs, Loudspeaker Cable Spades, Chassis Loudspeaker Terminals.

Type	Price Ex. UK Vat.
Banana plug, gold plated, spring loaded tension	2.45
AUDIO10 NOTE Loudspeaker Cable spade silver plated, non-magnetic	4.65
AUDIO10 NOTE AN-ST Speaker Terminal, chassis mounts, nickel plated, red or black	1.85
AUDIO10 NOTE AN-ST/G Speaker Terminal, chassis mounts, gold plated, red or black	2.75
AUDIO10 NOTE AN-STR Speaker Terminal, chassis mounts, fully gold plated, non-magnetic, red or black	4.75
Ground Terminal, chassis mounted and nickel plated	1.45

Our range of components is constantly expanding, as we find new or better suppliers, so stay in touch by reading our adverts in hi-fi World and hi-fi News

BLACK GATE ELECTRON TRANSFER, High Performance, Graphite Electrolytic capacitors.

There are very few audio parts that promise a guaranteed improvement when replacing practically any other part, but this is what the BLACK GATE capacitors actually do. Exchanging any electrolytic capacitor anywhere in the circuit of an amplifier or in the crossover of a speaker will greatly improve sound quality. We are working on some guidelines as to where, how and which types of Black Gates to use in different circuits; the first such technical guideline is available now and is called "Improving your CD-Player" and can be obtained by sending a stamped addressed envelope to us requesting this leaflet. It is very important to note that all BLACK GATE capacitors take time to charge-up or stabilize, when first put in circuit, depending on type and application this "maturing" time can be between 100 and 300 hours

Value	Voltage	BG-Type	Suggested Use	Price Ex. UK Vat
0.47mF	50volt	PK	Anywhere	1.05
1 mF	50volt	PK	Anywhere	1.25
2.2mF	50volt	PK	Anywhere	1.55
4.7mF	50volt	PK	Anywhere	2.15
22mF	50volt	PK	Anywhere	3.35
100mF	100volt	Standard	Anywhere	7.75
1 000mF	50volt	Standard	Anywhere	24.55
220mF	1 6volt	Standard	Anywhere	4.35
470mF	1 6volt	Standard	Anywhere	6.35
10,000mF	80volt	Standard	PSU smoothing	234.65
4700mF	1 6volt	Standard	Anywhere	14.25
47mF + 47mF	500volt - 550v surge	SK-Type	PSU filter capacitor	85.95
100mF + 100mF	500volt - 550v surge	SK-Type	PSU filter capacitor	101.95
100mF	500volt - 550v surge	SK-Type	PSU filter capacitor	72.75
220mF + 220mF	350volt - 400v surge	SK-Type	PSU filter capacitor	92.65
100mF + 100mF	350volt - 400v surge	SK-Type	PSU filter capacitor	75.35
22mF	350volt	VK-Type	Decoupling or filter capacitor	18.95
220mF	1 6volt	F-Type	Low ESR version	6.75
220mF	1 6volt	FK-Type	Ultra low ESR version, comparable to film caps	9.95
1000mF	50volt	FK-Type	As above use anywhere	43.95
2200mF	50volt	FK-Type	As above use anywhere	98.85
4.7mF	50volt	C-Type	For circuits with DC potential difference	3.35
1 mF	50volt	N-Series	Bipolar for use in negative feedback circuits etc	4.95
4.7mF	50volt	N-Series	as above	5.75
10mF	50volt	N-Series	as above	6.95
47mF	50volt	N-Series	as above	13.75
100mF	50volt	N-Series	as above	18.95
6.8mF	50volt	Bipolar	For loudspeaker crossover networks	8.95
1 0mF	50volt	Bipolar	as above	10.85
22mF	50volt	Bipolar	as above	17.45
47mF	50 volt	Bipolar	as above	27.95
100mF	16volt	BG-N Type	For super low noise PSU's	24.65
470mF	16volt	BG-N Type	as above	28.95
1000mF	50volt	BG-N Type	as above	99.95
220mF	100volt	BG-N Type	as above	423.35

On the next page is a list of all BLACK GATE capacitors available, together their sizes, best usage etc. Lastly, we can supply a range of more modestly priced components, still good quality, but more industrial grade, if you like

AUDIO10 QUALITY OUTPUT TRANSFORMERS.

Single-ended Circuits.

Suggested Valve VAT	Max Cl. A Power	Prim-Sec. Impedance	Size/Weight Max.	Current	Price ex. UK
EL84/ECL86/6V6	20 watts	2K6 - 4/8 Ohms	117x98x90 mm	110mA PSE	87.00
300B/2A3/6B4G	25 watts	2K5 - 4/8 Ohms	117x98x90mm	90mA SE	91.00
EL34/6S50/KT88	30 watts	1K5 - 4/8 Ohms	115x98x95mm	180mA PSE	113.00
2A3/6B4G	30 watts	1K25 - 4/8 Ohms	98x82x95mm	130mA PSE	97.00
5881/KT66	30 watts	1K1 - 4/8 Ohms	115x98x95mm	140mA PSE	106.00
211/VT4C	30watts	10K - 4/8Ohms	117x98x100mm	150mA SE	114.00
211/VT4C/845	50 watts	10K - 4/8 Ohms	112x134x150mm	150mA SE	124.00
300B	50 watts	1K25 - 4/8 Ohms	135x115x125mm	180mA PSE	151.00
845	50watts	2K5 - 4/8 Ohms	137x114x130mm	180mA PSE	172.00
211/VT4C	75 watts	5K - 4/8 Ohms	137x115x145 mm	240mA PSE	237.00

New SE Product

EL34/6S50/KT88	20 watts	3K - 4/8 Ohms	117x98x92 mm	130mA SE	104.00
6L6G	30 watts	3K - 4/8 Ohms	115x98x95 mm	140mA PSE	107.00

Push-Pull Circuits

EL84/ECL86/6V6	15 watts	8K - 4/8 Ohms	80x67x68 mm	PP	42.00
EL34/6L6G/5881	25 watts	6K - 4/8 Ohms	88x73x80 mm	PP	59.00
2A3/6B4G/300B	30 watts	5K - 4/8 Ohms	88x75x80 mm	PP	63.00
KT88/6S50	50 watts	6K6 - 4/8 Ohms	108x91x90 mm	PP	73.00
EL34/KT66/5881	50 watts	3K - 4/8 Ohms	98x82x83 mm	PPP	74.00
845	50 watts	6K8 - 4/8 Ohms	108x91x90 mm	PP	114.00

Pure Silver Wired Outputs.

300B/2A3/ 6B4G	25 watts	2K5 - 4/8 Ohms	90mA	SE	1,645.00
211/VT4-C/845	50watts	10K - 4/8ohms	112x134x150mm	150mA	1,975.00

The AUDIO10 NOTE silver wired outputs listed here are designed and made in the UK, we can supply the AUDIO10 NOTE Japan manufactured outputs for the ONGAKU or the KEGON, but they are exceptionally expensive, as you would expect from items that take upwards from 100 hours each to make, for example an output transformer for an ONGAKU costs £18,500.00

AUDIO10 NOTE CERAMIC STAND-OFFS.

In most hardwired valve power amplifiers it is frequently difficult to get the HT and heater rails properly suspended and separated, safely and neatly from the chassis, this especially applies when building amplifiers using the really high voltage directly heated triodes like 211, VT4-C, 845, 849, 304TL, DA100 etc. When planning design like this, it is important to incorporate suitable layout from the start, and the AUDIO10 NOTE stand-offs should be more or less mandatory in that context. They are screw-in type with steatite insulator and either a wrap-round turned "head" on the single way version or separated solder slots on the multi-way versions.

Type No	Number of Tags	Height/Length	Solder Connection	Chassis Fixing	Price Ex. UK Vat.
AN-421	1	25.5 mm	Wrap-round	Screw-in bolt	1.41
AN-422	1	17.4 mm	Wrap-round	Screw-in bolt	1.41
AN-423	1	22.6 mm	Solder slot	Screw-in	1.41
AN-452	2	Adjustable, 17mm	Solder slots	Dual bolt screw-in	2.42
AN-453	3	Adjustable, 24mm	Solder slots	Dual bolt screw-in	3.05
AN-455	5	Adjustable, 32mm	Solder slots	Dual bolt screw-in	4.04
AN-458	8	Adjustable, 58mm	Solder slots	Dual bolt screw-in	5.79
AN-460	10	Adjustable, 72mm	Solder slots	Dual bolt screw-in	7.31
AN-476	6	25mm/45mm	Solder slots	Screw-in bolts	5.35
AN-479	9	25mm/66mm	Solder slots	Screw-in bolts	7.53

AUDIO10 NOTE Coax Interconnect Cables.

Type/Colour code	Construction	Price per Stereo Meter Ex. UK Vat.
AN-A yellow	symmetrical 6N copper litz coax	15.32
AN-C red	symmetrical OFHC copper litz coax	29.79
AN-S dark grey with yellow stripe	symmetrical 99.99% silver litz coax	84.25
AN-V silver grey with yellow stripe	symmetrical 99.99% silver litz coax	152.35
AN-Vx silver grey	symmetrical 99.99% silver litz coax	382.98

It is recommended to use the internal twin silver wires in the AUDIO10 NOTE coax cables as internal wiring cable, this is what we do in amplifiers like the ONGAKU, M7TUBE etc.

AUDIO NOTE COMPLETE KITS.

We are developing a range of complete kits, to give those of you who have the ability, but do not have the time to develop a project from the ground, so to speak. In order to be able to offer the best possible quality - price relationship the kits we offer will be good basic circuits, with no-frills power supplies and components.

Kit One.

Based around the justly famous 300B directly heated triode, we see this kit as the introduction to real Audio Amplification, as it covers all the important aspects of design necessary. Single-Ended, No-Feedback, Class A, Directly Heated Triode, to become a member of this exclusive club of amplifiers

Kit One has one 300B per channel running at 420 volts with 75mA current giving 9/10 watts of the cleanest power you will ever hear, the input stage consists of a 6SN7GT with a 5687 double triode driver stage running in SRPP

The powersupply is a capacitor-choke-capacitor with a 5U4G HT rectifier, the heaters are AC heated

Component quality is similar to our Level 2 finished products, AUDIO10 NOTE paper in oil signal capacitors, Bayschlag Iwatt 1% metallfilm resistors, good quality electrolytics (sorry NO Black Gates!) and a simple, attractive stereo chassis in grey paintwork. Protecting cover is extra.

Price £750.00 incl. Vat, which includes all valves (yes, also the 2 x 300B needed) but not postage/packing which to UK customers is £12.00, topcover is £99.00 extra. The Kit One is available now

Kit Two.

Kit Two features 2 x 5881 pentodes running in parallel Single-Ended mode, yielding some 20 watts of pure Class A, valve rectified HT for the output stage, stereo chassis, and 6SL7GT input and 6SH7GT SRPP driver stage. componentry and chassis as Kit One.

Price £600.00 incl. Vat, includes valves, but not postage/packing, cover is extra at £99.00 Available in December 93. Write to, AUDIO10 NOTE (UK) Ltd. Unit 1, Block C, Hove Business Centre, Fonthill Road, Hove, East Sussex, BN3 6HA, England. Telephone +44 0273 220511, fax +44 0273 731498. Direct Line to sales +44 0273 885511.

MAINS TRANSFORMERS

This range relates to our finished products, mains transformers are notoriously difficult items to offer as the number of permutations of HT and Heater voltages are almost endless. We shall be offering a more comprehensive range as opportunities arise.

Primary Voltages	Secondary HT Windings	Secondary Heater Windings	Price Ex. UK Vat
0v/100v/110v/120v	0v-230v at 350mA	0v-12.6v at 1 Amp	34.00
0v/220v/230v/240v	3.1 5v-0v-3.1 5v at 4 Amp		
120v/1 10v/100v/0v	0v - 230v at 0.4 Amp	0v-12.6v at 1 A	41.00
0v/1 00v/11 0v/1 20v	3.1 5v - 3.1 5v at 4 Amp		
0v/1 00v/11 0v/1 20v	0v - 290v at 40mA	1 2 6v-0v at 1.5A	26.00
0v/100v/110v/120v	0v- 6.3v at 300mA		
0v/100v/1 10v/120v	310v-244v-0v-244v-310v at 320mA	3 15v - 0v-3.15v at 4.5 Amp	72.50
0v/100v/110v/120v	0v-920v at 160mA	12 6v at 1.5 Amp	
120v/110v/100v/0v	150v-150v at 50 mA 1.5A.	0 - 10v at 4 Amp, 0v-6.3v at 98 00	
0v/100v/110v/120v	390v-0v-390v at 200 mA	0v - 5v at 2.5A	
120v/1 10v/1 10v/0v		3.15v-0v-3.15v at 1.2Amp, 7v	86.70
0v/1 00v/11 0v/1	20v1 70v at 50mAat 3A,	7v at 3A, 5v at 2A	

AUDIO10 NOTE Speaker & Wiring Cables.

Type/Colour code	Construction	Price per Mono Meter Ex. UK Vat.
AN-D green	single core 6N copper speaker wiring	6.85
AN-B blue white writing	double strand screened 6N speaker	12.34
	wire	
AN-L blue black writing	double strand, screened 6N litz copper	25.11
	speaker wire	
AN-SP silver	single core 15 strand 99.99% litz	106.38
	silver speaker wire	
AN-SP-x silver	single core 20 strand 99.99% litz	382.98
	silver speaker wire	
	PTFE Insulated Silver Plated Copper Wires.	

We can also provide less expensive wiring wires for hard wiring circuits, these PTFE insulated silver plated copper wires are 19 strand of 0.15 mm wire and come in brown, black, blue, pink, red, green, orange, violet, white and red/white, they cost £1.60 per meter in any colour

AUDIO NOTE



SPECIAL CHRISTMAS OFFERS FROM HI-FI WORLD

special offers

MARY BLACK VIDEO AND CD

A video of four songs recorded live at the Royal Albert Hall and her latest album 'The Holy Ground' on CD all in a special presentation pack. An ideal Christmas gift for only £13.99.

CHESKY JAZZ CD SAMPLERS, VOLS I and II.

These Chesky Jazz samplers are possibly the best available, and are certainly very highly regarded by us at Hi-Fi World. Vol I contains audiophile quality recordings from several well known artists followed by a series of tests designed to help you get the best from your system. Vol II continues in similar fashion, but has 37 new tests to help further enhance the subjective performance of your system. Here's good music and an aid to setting up your system for the best results, all on two CDs for £13.00 each.

CHESKY RECORDS, THE COLLECTION.

If you are worried about buying an album as a gift for someone, in case they already have it, try this special high quality audiophile recording from Chesky. The Collection contains 16 tracks of various artists including classics from John Pizzarelli, Laveme Butler and the Westminster Choir. A great introduction to the broad range of music featured on Chesky Records at an amazing £9.50.

CHESKY VINYL

Chesky have just released superb quality 180gram Audiophile pressings of many of their most popular artists. These include:

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McCoy Tyner	New York Reunion
Rachmaninov	2nd Piano Concerto
Ravel/Rachmaninov	Reiner Sound
Tchaikovsky/Dohnanyi	Piano Concerto 1
Rachmaninov	Piano Concertos 1 & 4
Sibelius	Symphony 2 in D
Prokofiev	Song of the Nightingale
Clark Terry	Portraits
Various Jazz	Chesky Jazz Live
Brahms	Symphony 4
Respighi	Pines of Rome

These superb recordings are available for only £16

Hi-Fi WORLD INTERCONNECTS AND SCREENED MAINS CABLES.

As it's Christmas, and we know what an expensive time of year it can be, we've

PIXALL MKII RECORD CLEANER

The Pixall record cleaning system is one of the best available. Using a sticky roller it lifts up dust particles without damaging the record itself. So if you



1. Pixall Cleaner
2. Record Cubes
3. Interconnects
4. Phono Plug
5. Green Pen
6. Screened Mains Cable.

decided to slash the price of our own interconnects and Campaign Audio Design's screened mains cables by 20%. We can afford to do this for one month only, so get your orders in by the 1st January '94 and save a fortune.

ARCAM GOLD PHONO PLUGS

Why give gold earrings or rings when these gold Phono Plugs from Arcam have over 30% off. Ideal for the hi-fi enthusiast who likes to get his hands on a soldering iron. Set of four £10.50.

RECORD STORAGE CUBES

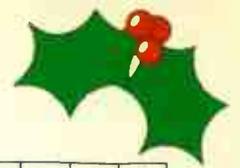
The best place to store all your Christmas albums is in one of our record cubes. Order before 1st January '94 and receive a 10% discount. Record storage cube £37.80 Four cubes £151.20.

value your records, the Pixall is one of the best cleaners available. Hi-Fi World special price of only £8.75.

LASERWAY GREEN PEN

Improve the sound from your CDs. Applied to the inner and outer rings of a CD, the green pen absorbs scattered red light from the laser, reducing interference. The green coating is completely harmless to the CD itself. On special offer at only £7.50

We can not guarantee delivery before Christmas due to the postal rush and limited availability of some products advertised. All offers are subject to availability, please phone 071 266 0461 for further details.



Christmas, of course, is a time for turkeys, and they aren't all of the plucked and roasted variety.

So, to guide you through the present-buying frenzy which accompanies Christmas, we've compiled a supplement full to bursting with Christmas gift ideas for your loved ones, or even yourself!

THE PUZZLES PAGE 5

It's right here. Bone up on all the best names in hi-fi, with our word-search and crossword. Can you find more than thirty words?

INTERCONNECTS 7

Everything you ever wanted to know about the best cables to connect your components. Which are copper, which silver? What colours do they come in, and are they suitable for use in place of tinsel on the tree?

LOUDSPEAKER CABLES 9

What's what in the way of connecting your system and 'speakers. Find out which cable does what for your system's sound, and which cables are suitable for weaving together into streamers for decorating the hall for that all-important impromptu Christmas party!

CD, RECORD AND TAPE CLEANERS 10

Eventually, the hectic party season will be over, and the time will come to assess and rectify the damage to your beloved software.

Don't despair! We have a page of the very best cleaners available to bring your records, tapes, and CDs back from the brink, no matter what they've been used for during the revelry.

HEADPHONES TEST 13

Yes, winter's here. You can tell by the way everybody puts away their in-ear headphones and gets out the bigger 'earwarmer' type to stop their ears freezing while they boogie down the street. We review a few of the latest pairs from Sennheiser and Beyer, and there's also a pair of cordless 'phones from Vivanco.

EQUIPMENT STANDS 14

Is your hi-fi shivering with the winter's chill? Or is it just suffering from vibration? Any vibration can compromise the performance of your system, so we've got a few words to say on the subject of equipment isolation, and what's worthwhile in the market at the moment

S	O	U	N	D	S	T	A	G	E	X	S	M	E	V	D	R
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E	F	F	L	B	Z	I	R	P	T	U	N	E	R	D	S	A
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Hi-Fi World's Christmas Crossword

ACROSS

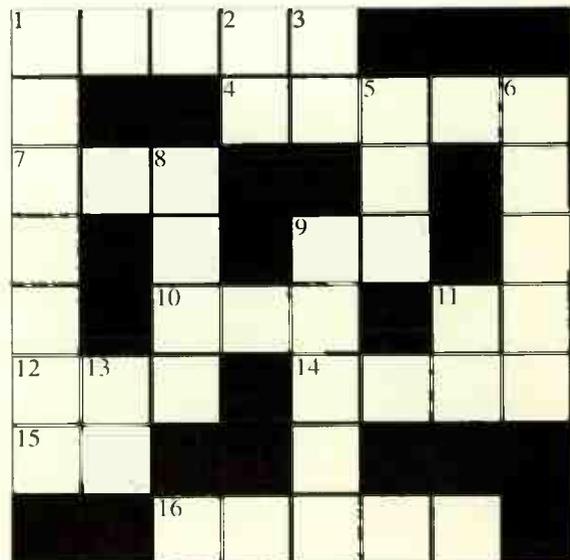
1. First among Cambridgeshire amplifiers and CD players. (5)
4. Big name, big amps, from the forbidden planet. (5)
7. Where you might go for tools to build a kit loudspeaker. (3)
9. See 3 down. (2)
10. Thirteen could be dangerous, but one is essential for a hi-fi system. (3)
11. No sound? Try changing to this position. (2)
12. A new acoustic dimension. (3)
14. A little thing, but their own. (4)
15. This company may employ old technology, but its employees travel to work by tube, alcohol free. (2)
16. Mike will never be without a paddle while designing amplifiers, tuners and DACs. (5)

DOWN

1. Type of music developed and recorded by a man who's had a dose of salts after watching a Python film. (7)
2. Founded by Sidney, now seen on the LS 0300 loudspeakers. (2)
3. A man who signs up the band, or, alternatively, the U.S. company that created a

legend. (2)

5. At least one needed for serious listening, especially if made by Tim de Paravicini. (3)
6. English power to the Scot's turntable. (5)
8. A Huntingdon hi-fi company, much longer-lived than the early surround-sound system which shared its name. (4)
9. The record company that began with a fabulous core of four. (5)
11. See 11 across. (2)
13. No need to telegraph to Leeds for accessories or cartridges from this company. (2)





To obtain the best from any hi-fi the connections between the components play an important part. We specialise in Hi-Fi and Audio Visual connections. We can also tailor-make any cable to your requirements. Our products are British made – hand built – to a high standard – fully guaranteed – reliable – using quality components. We are consistently recommended and used by leading British manufacturers and Hi-Fi dealers. All these things imply that it is the best product around and the most expensive.

Well, that's partly true, it is one of the best products around but as for expensive, well – that's just not us. At the Chord Company we like to offer value for money and that means not bumping up the price to cover slinky packs and expensive marketing. We believe in quality and service and by quality we mean something that SOUNDS right, not something that just looks expensive. That's why – we didn't wait for the single European market, we've sold to the single world market for the past seven years exporting worldwide. Send off the coupon below for a full list of suppliers or call us, you will find us helpful and receptive.

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INTERCONNECTS

Stocking fillers from £15 - £275, as recommended by Dominic Baker.



interconnects

1) van den Hul The Second £199.99

The Second has a similar construction to that of the First, but a triple screen is used to give extra protection against hum. Smooth and refined sound.
Tel: 0622 721636

(2) Monster Interlink 400 £39.95

For the more serious audiophile, but still one with a budget to adhere to. This cable is constructed from two cores, one for high and one for low frequencies. Very good value.
Tel: 0908 317707

(3) Naim NA-06 Interconnect £14.69

Standard 5-pin DIN terminated interconnects especially for use with Naim amplifiers.
Tel: 0722 332266

(4) Naim Snake Interconnect £44.65

A much thicker and higher quality version of the standard interconnect, an ideal upgrade for those with Naim systems.

(5) Campaign Audio Design Connoisseur S £28

Campaign Audio Design have a huge range of excellent cables at very reasonable prices. This one is a high quality screened silver plated copper cable and offers superb value.
Tel: 0222 779401

(6) Linn Analogue Interconnect £38/1.2m length

Flexible and directional, Linn's analogue interconnect offers excellent value for money, even in a non-Linn based system.
Tel: 041 6445111

(7) The Chord Company from £25

These are a cheap upgrade to supplied 'patch chords'. The Chord Co. will make up any cable to order
Tel: 0722 331674

(8) Furukawa PCOCC £various

A long time favourite of ours, but recent price increase compromises value. Worth seeking out, but likely to become extinct shortly.

(9) Orelle VLS IC100 £19.95/0.8m length

This is a very flexible oxygen free cable with gold plated phonos. It has a clean sound with an open treble.
Tel: 081 8109388

(10) XLO Reference £275

These brightly coloured directional interconnects give a well focused and detailed sound that justifies the price.
Tel: 0602 284147

(11) van den Hul The First £179.99

van den Hul's first 'metal free cable' using Linear Structured Carbon signal wire. The absence of metal in the signal path gives a smooth and detailed sound.

(12) Monster Interlink 200 £19.95

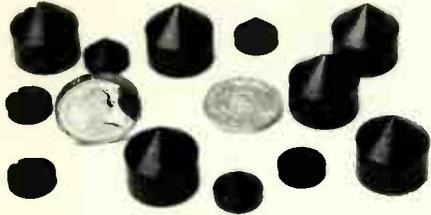
This is intended to be a cheap, but high quality alternative to the standard 'patch chords' supplied with equipment. It is a balanced construction cable with 24K gold plated phono plugs.

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Partington Toppers can be used with your loudspeakers, and a variety of other Hi Fi Equipment - CD Players, Pre Amps, Etc. to greatly improve sound quality.

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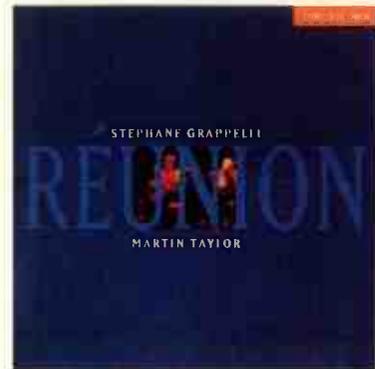
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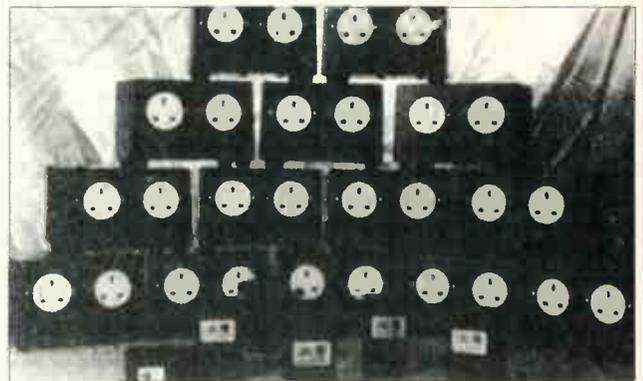
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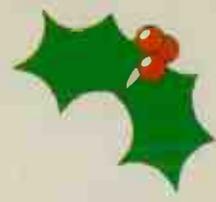
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LOUDSPEAKER CABLES

Dominic Baker takes a look at seventeen loudspeaker cables - the audiophile's preference to socks.



- (1) van den Hul Snowline £3.49/m
Snowline is a stranded cable in a white flexible casing with a smooth and refined sound.
Tel: 0622 721636
- (2) van den Hul The Clearwater £4.99/m
This very pretty halogen free cable is flexible and has a wide centre strip allowing it to be tacked in place.
- (3) van den Hul CS122 £7.49/m
A mucky cream colour, this cable has a powerful bass and a bright treble.
- (4) van den Hul D352 £14.99/m
252 strands of silver plated oxygen free cable make this a very high specification cable. A sweet treble and clear midrange characterize it.
- (5) van den Hul Snowtrack £7.99/m
Snowtrack is a bi-wire version of Snowline, with a pair of conductors for bass and a pair for treble.
- (6) Ortofon SPK100 £2.50/m
Even though this is the bottom of the range Ortofon 'speaker cable it still features 260 strands of six-9s copper.
Tel: 0753 889949
- (7) QUAD QLSCF2 £3.50/m
Quad's first ever cable is a copper stranded affair with a sensible price tag - would you expect anything else from Quad? Its flat profile allows it to be hidden under carpets.
- (8) Kelvin Audio Cables K80 £1.20/m
80 strands of 0.2mm high grade copper are used in the construction of K80. It is a good upgrade from the thinner cable supplied with equipment.
Tel: 0355 226522
- (9) Ortofon SPK300 £7.50/m
The top of the range cable from Ortofon uses 7x13 strand cores of 99.9999% copper which are enameled to prevent oxidation. A powerful soldering iron is required to melt the enamel before they can be soldered to plugs.
- (10) Ortofon SPK200 £5/m
This is a bi-wire speaker cable using SPK100 on the outside for the treble and 390 strands of 99.9999% pure copper for the bass. It has an even tonal balance making it ideal for well sorted systems.
- (11) Kelvin Audio Cables K120 £2.40/m
56 strands of high quality heavy gauge copper give this cable a heavy bass, ideal for budget systems.
- (12) Kelvin Audio Cables K19 £4/m
This is a heavy, high current cable with an electric blue sleeving. Should add some weight to bass light systems.
- (13) Naim Loudspeaker Cable £4.35/m + £4.29 each for dual banana plugs.
A must for Naim amplifiers.
Tel: 0722 332266
- (14) XLO Reference Type 6 £124/m + £50 termination charge.
A stiff cable that needs heavy terminals to hold it in place. Powerful and open sound with excellent focus.
Tel: 0602 284147
- (15) Monster XP £1.50/m
The thin, flat cross section makes this cable ideal for those who want their cables to be hidden out of sight. It has a light and open sound.
Tel: 0908 317707
- (16) Campaign Audio Design SCL1000 £8/m, SCL500 £4/m + £1.85 each for plugs.
These two cables are intended to be used together, the thinner one for the treble and the thicker for the bass. Both are constructed using silver plated copper.
Tel: 0222 779401
- (17) Monster Powerline 2+ £15/m
Powerline 2+ could easily be mistaken for a hosepipe. Although it has a massive cross section, it is quite flexible and gives bass real slam and dynamics.



CHRISTMAS SPRING CLEANING

Eric Braithwaite takes a look at some useful stocking fillers for the audiophile who cares for their music collection.

So - all ready for the spring cleaning? It ought to be a regular chore - funny how a hi-fi New Man's housework is never done. Nary a duff accessory here and all well worth a quick missive to the chap in a red suit and a white pom-pom on his hat.

CD CLEANERS

AUDIO-TECHNICA AT6708 CD LENS CLEANER PRICE £16.25

A neat little device, basically a CD with a ring of tiny brushes round the inner circumference. A drop of liquid from the brush in the fluid bottle is transferred to one marked with an arrow on the disc, which is then inserted into the drawer of the CD player. Press Play, and Bob's your uncle.

At least, mostly. I had no difficulty with it on CDM4, CDM9 and an old top-loader, but Rotels appear not to appreciate it for some reason. Otherwise, it does what it claims, which is a boon for smokers and those who have CD players with hidden laser heads which are otherwise uncleanable.

Only one snag, apart from the one already mentioned; I didn't put the cap back on the bottle firmly enough and spilt half the liquid. By the way, it plays a few bars of a guitar arrangement of 'Yesterday' while it works, a considerable improvement on the original MOR nasty. That is, on most players, or unless you turn the sound off.

AUDIOQUEST LASERGUIDE PRICE £14.95

Not a CD cleaner, but a treatment. I was turned on to this, despite considerable initial scepticism, by Bill Lowe of AudioQuest a couple of Penta Shows ago. Used sparingly, sprayed onto a lint-free cloth and then rubbed radially over a CD it does add a degree of clarity and 'cooler' definition to the sound. Some discs treated two years ago have shown no appreciable deterioration or damage - one is used regularly as a test disc for reviews. Many readers have been as sceptical as I was originally, but it was blind-tested and three listeners independently agreed that it made a slight, but worthwhile improvement. It does do something more than a mere polish with

a dry cloth, making Bjork's synthesised sound less synthetic and clearer on 'Human Behaviour'. It even made her vocals a fraction more forward and even more intelligible - only by about two per cent, but even that helps.

TDK WET AND DRY CD CLEANER CD-C1 PRICE £7.99

A bottle of cleaning fluid and a plastic applicator with a squeegee at either end fall out of this package once you've bent your fingernails prising open the bubble-wrap. As with all CD cleaners, the squeegees should be used radially, from the inside out, sweeping the disc in segments like slices of Christmas cake. Feeling something like chamois leather, one - labelled and coloured - is for wet cleaning, the other to dry the CD off afterwards. Those practised in Origami can refold these as they become grubby by pressing on the holder.

It effectively removed the fingermarks - but not scratches, please note - from a CD that was a near candidate for inclusion in Scotland Yard's files. The result was indeed a cleaner-edged sound. Though no-one in their right minds would use a CD as a jam sandwich, as suggested when they first came on the market, a liberal sun-dried application of sugary coffee, alcohol and cigarette ash proved more taxing. It required two cleans and a further polish with a duster, even then leaving marks and some radial scratches behind. Moral: have a Sober CD Replacer standing by at the party before anything as bad as that happens.

RECORD CLEANERS

AUDIO-TECHNICA AT6012 RECORD CLEANING KIT PRICE £10.50

Comprising an elegantly-shaped plastic holder with a curved velvet pad and a bottle of cleaning fluid, Audio-Technica's Record Cleaning Kit surprised me. For



years I've resolutely stuck to a dry carbon-fibre brush. This, however is a good deal more effective than the velvet dusters record shops used to sell when vinyl meant music and not floor coverings. A gentle rocking motion as it's swept over the record really does lift off the dust. With a couple of drops of fluid through the filler holes in the handgrip of the Sonic Broom (honest, it's printed on the side!) a particularly dusty copy of The Orb responded well to treatment. Far fewer crackles and pops gave the LP a much more pristine and refreshed, slightly brighter and clearer sound. It can be used dry, a good idea for all but stubborn marks.

The only drawback was that one dry twirl round the LP cleaned the outer edge more effectively than the inner tracks. Two or three goes are required sometimes, but this new broom swept cleaner than I would have believed. Unfortunately it looks set to join other

vinyl-related species in the great Jurassic Park in the sky, in the not-too-distant-future.

PIXALL MARK II RECORD CLEANER PRICE £10.75 (REFILL £2.75)

I must have been one of the original purchasers of a Pixall, so long ago I can't remember when. Since the first version it's become more trendily black plastic, the roller of sticky tape (bearing a close relationship to masking tape) less fat. It now comes with a drop-down rest so it doesn't glue itself to the sideboard when

up with refills, since used this way, one roller will clean only a dozen LPs or so.

STYLUS CLEANERS

Before we abandon vinyl like the record shops, there will be a short silence to mourn the demise of the most effective stylus cleaner around. This was the electronic affair - a gently vibrating pad on which the stylus was placed. Alas, though Audio-Technica intended to re-introduce it in October, it appears that the tooling cannot be re-made. Anyone who has a spare one - Goldring also made one, but this too is now defunct - can now probably expect to sell it for its weight in gold - be warned!

CASSETTE DECK CLEANERS

MILTY MAGNETT IX CASSETTE DEMAGNETIZER PRICE £9.99

One of the regular chores involved in using a cassette deck should be demagnetizing the heads after every thirty hours or so, but it's one few people take on regularly. As a cassette is played, the heads build up a magnetic charge which interferes with their ability to 'read' the tape. The most noticeable effect is a loss of high frequencies and an increase in background noise - something too many cassette owners take for granted as natural wear and tear.

Inside a standard clear plastic cassette shell the Magnett IX fits in a watch-battery powered electronic circuit which delivers a 1kHz DC signal to the head. It's

essential - since most cassette decks these days are microprocessor controlled and must be powered up to function - that either the amplifier or the cassette deck's own volume output must be turned down, or it will be 'speaker frying time.'

What can be said except that the Milty demagnetizer works? On a Nakamichi BX2, lately used a good deal, transients on a Metal tape recording emerged cleaner, with more sparkle. Noise was certainly reduced, allowing the recorded ambience to show through more, and allow the individual performers a little more space and air. A red LED shows it's working - it takes a fraction of a second - and Stop should be pressed after you see the Record Level swoop up to the top of the display and back down again. Highly recommended, but for one snag. If you have a discrete three-head player, this design will only demagnetize the playback head. For these users there is still no alternative but the hand-held

'gun' type which is becoming increasingly difficult to find - and expensive.



MILTY TRIPLE A AUTOMATIC CASSETTE DECK CLEANING SYSTEM PRICE £6.50 (TWO REPLACEMENT CARTRIDGES AND BOTTLE OF CLEANING FLUID £3.99)

A neat device enclosing red plastic gears and wheels in a standard clear plastic cassette shell which waggle two sprung felt pads which are shaped to sweep over the curved profile of the erase and record heads. Static pads clean capstan and pinch wheels, a drop of the supplied cleaning fluid squeezed over each pad.

No wonder a mechanical arrangement like this is called a 'gear train'. It chunters along making a noise just like an early locomotive on the Stockton and Darlington railway. It takes around ten to twenty seconds to clean the heads and rollers, but it tempts the child in everyone to watch it trundling round rather longer.

It cleaned my two-head Nakamichi very effectively, including the capstan wheel, which after applying Milty's Locomotion Number One looked brand new. Although the felt pads looked distinctly grubby after only two passes, the replacement mechanism including pads is economical. At this price, a real bargain.

Again, alas, there's one snag. This device won't clean the record head on discrete three-head decks. Like the demagnetizer, it's for two-head decks or ones where the record/playback heads are 'siamesed', i.e. merged together in one block. For those with discrete three-head players it's back to the old manual cotton-bud and finger method. A good example of which is...

TDK HEAD CLEANING KIT CK-A1 PRICE £5.50

Nothing mechanical about this system, just old-fashioned elbow-grease. Two generously-sized (by comparison with the Milty Triple A) bottles of cleaning fluid are supplied along with fifteen cotton buds. One fluid is for cleaning the heads and metal parts, the other for the rubber pinch wheels.

A squirt of liquid, a gentle rubbing motion, and it's surprising how much muck comes off both heads, but more especially the pinch wheel, even after only a few hours of tape usage. The effects of proper head cleaning are not dissimilar to de-magnetization and the two should be done in tandem. A sparkling head means - or should - a sparkling treble.

TDK's cotton buds have a pointed tip for the more inaccessible parts at one end and a rounded tip at the other. Ideally, one should be used for the heads and another for the pinch wheel to avoid the fluids being applied wrongly. The pack allows for seven-and-a-half operations, though the fluid bottles do last for a good year or so in my experience. Replacement buds come from the local chemist ●



All available from Hi-Fi World Mail Order.

you put it down.

It clings to the vinyl with some ferocity, which means a record cannot be cleaned while on the turntable, but that means dust and dog hairs stay stuck to the sticky tape equally firmly.

Curiously, the Pixall often appears to reduce the static charge as well as shifting the dust, observable this time on Bob Marley and The Wailers. Its only disadvantage is the need to exercise caution. If the roller goes over the label, for example, it could pick up the print as well. And it's best to inspect the roller after each radial pass over the LP to make sure it hasn't picked up a tiny sharp piece of grit as well as dust. Otherwise, your cherished collectable could end up subjected to some unwanted scars.

Used with caution - and, despite the instructions, with the dirty piece of tape cut off using the built-in blade to leave a fresh surface after every LP - the Pixall lives up to its name. It does mean stocking

The highest fidelity. Naturally.

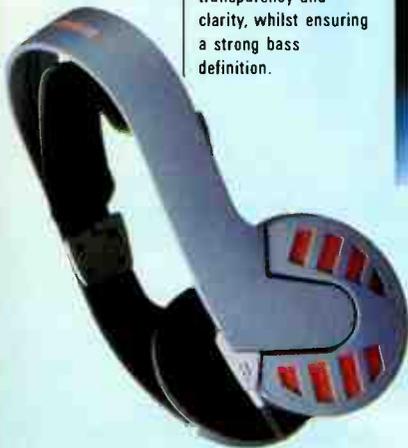
HD 580

Top of the range dynamic headphone using new duofoil diaphragm which virtually eliminates sound colouration.



HD 320

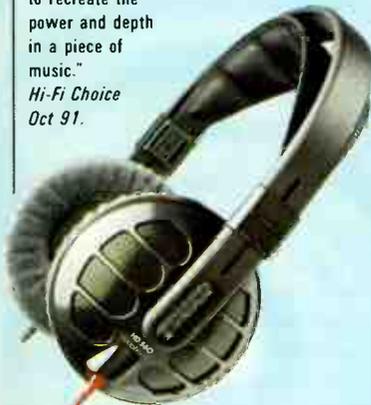
Part of the new generation of dynamic hi-fi stereo headphones, the HD 320 has ergonomic styling with a sound quality that is designed to optimise transparency and clarity, whilst ensuring a strong bass definition.



HD 560 II

"A detailed and open headphone with the ability to recreate the power and depth in a piece of music."

*Hi-Fi Choice
Oct 91.*



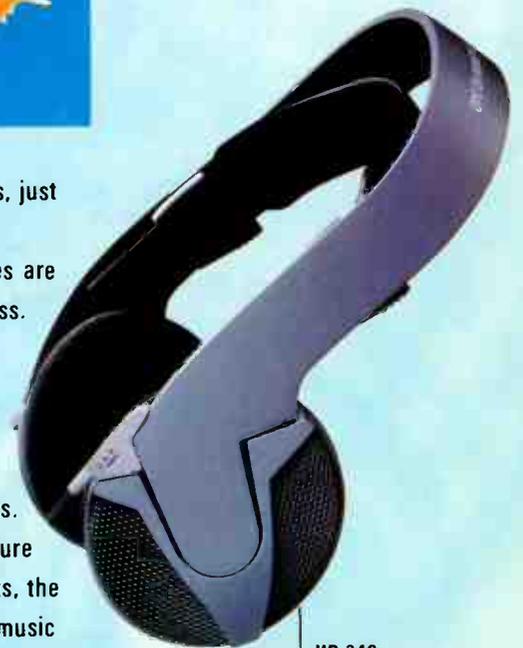
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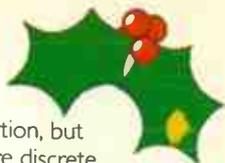


HD 340

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EAR WARMERS

Dominic Baker goes back to his roots, and enjoys auditioning four new pairs of headphones.

I've always liked music played through headphones, in fact as a teenager I listened to nothing else but a Sony Walkman Pro through a pair of Sennheiser HD40s. They have the ability to really show what a stereo signal is capable of, sounds can go through or around your head in a way that no loudspeaker system could ever match. Perhaps my fascination with headphones is what eventually led me to Quad's electrostatics, as they are the only 'speaker that I have ever heard with the stereo separation of a good pair of 'phones.

We have decided to take a look at four new pairs of headphones on the market ranging from around £40 to £120 (a small price to pay to silence those relatives who insist on listening to Christmas singles throughout the festive season).

SENNHEISER HD320 £39.95

The HD320s are modern, stylish looking headphones constructed from strong grey plastic with bright red foam stripes visible from the side. The cable is connected to one side only, which I have always preferred; much less likely to strangle you when you doze off to the music.

Plugging in the HD320s brought back all that I had enjoyed about headphones, they seem to drive your ears so much better than a pair of loudspeakers, in a similar way that horns drive a room better than conventional 'speakers I suppose.

The general character of the '320s is soft and undemanding with a heavy bass and a slightly thick sound. They have no real speed or upper mid punch, but are relaxing, a good after-work wind down. On Steve Earl's 'Copperhead Road' album,

the title track's methodic drum line was allowed to linger a little too long, decaying slowly in comparison to the shorter crack normally played. I initially found the treble a little dull, but turning the bass down to -3 on the Audiolab gave a much more even balance, and the mid and treble a better chance to compete.

With the Lemon Trees the light bass on the recording suited the '320s much better, in fact the bass prominence of the 'phones helped balance the recording, giving it a bit of 'welly', if not attack. The bass still needed attenuating, but to not to the same extent, and the vocal harmonies came across beautifully.

Tel: 0628 850811

BEYERDYNAMIC DT 331 £49.95

Beyer's latest 'phones are open designs with large circular ear cushions. These are normally more comfortable than those that rest directly on the ear, which can make listening hot and uncomfortable. Beyer claim a high spec. for both of their new headphones, including oxygen-free cable and gold plated jacks.

The DT 331s are a crisp and detailed sounding pair of headphones. They are lively and punchy to listen to with plenty of slam and attack. On 'Copperhead Road' they played the bass drum with more snap than the cheaper Sennheisers, and with the Lemon Trees they were clearer and gave an impression of a wider, more expansive soundstage. In fact they were good enough to reveal the crudity of the mix on 'Child of Love' which has a haphazardly panned keyboard effect through it. The only gripe would be the slightly sharp treble; this gives a clear, well focused sound, but can become a bit too much with some albums.

BEYERDYNAMIC DT 431 £69.95

The DT 431s are the next step up from the 331s and, from the specifications, appear to offer a more extended bass for the extra £20. In appearance they are

virtually identical, sharing the same plastic moulded construction, but with a slightly more discrete black mesh on the outside of the cups rather than the silver of the 331s.

The 431s are very similar in character to the 331s, as you would expect. The best way to describe them would be as a refined pair of 331s. They have a little more bass grunt, which helps give them a more balanced sound overall, but the slight treble sharpness is still there.

Thankfully though, the more extended bass doesn't make them sluggish and they retain the same energy and slam that the 331s exhibit. To conclude, they are slightly more refined at either frequency extreme, making the extra £20 worth it for those who spend hours listening, but for

shorter bursts the 331s offer all the guts for less.

Tel: 0273 479411

VIVANCO IR 9001 S £119.19

These are infra-red headphones, ones that receive music from a transmitter. The transmitter is plugged into a headphone socket and powered up with a small plug-in power supply. The headphones have an infra-red receiver and are powered by two AA size batteries which fit into small capsules by each ear.

The Vivanco's claim to have a range of 10m and a usable transmission angle of 110 degrees. However in practice the signal bounces around a room, and I found that I could actually stand behind the transmitter and still receive the signal clearly.

However the signal is 'line-of-sight' only, so even within 10m it can't be received from behind a door. Even so, I found them incredibly useful. If you are reading, or just sitting back and relaxing, you can lift a cup of coffee to your mouth without getting tangled up and scolded.

The sound quality of the Vivancos wasn't especially spectacular, having a similar balance to that of the Sennheisers. But what you are paying for here is convenience, and they certainly steal that award ●

Tel: 0442 231616





STANDING FIRM

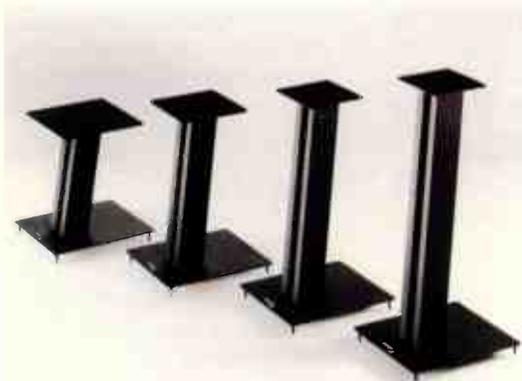
equipment stands

Equipment racks not only keep a system tidy and off the floor, but they improve its performance as well. Loudspeaker stands hold a 'speaker firm in relation to the room, allowing it to more efficiently transfer its energy into sound. And equipment racks prevent any vibration that may cause tracking problems with CD players or record decks. So if you're fed up with the mess on the floor, try some of the following supports.

TARGET LOUDSPEAKER STANDS

'Speaker stands provide solid support for the 'speakers, and should be given precedence over other equipment supports. They allow the 'speakers to function properly, improving both bass definition and midrange clarity. Box colourations are also reduced by the stand sinking energy into the floor.

Target are amongst the best known loudspeaker stands, and their TR range offers excellent performance from around £55. Tel: 0582 401244



AUDIOPHILE BASE SYSTEM

More expensive, but more comprehensive, is the Audiophile Base equipment rack. The Audiophile system uses a modular tripod stand, complete with six useful cable guides which separate mains and signal cables, and special Sorbothane isolated shelves. The Base isolation shelves can also be added to any existing equipment rack as an upgrade to the standard supplied shelves.

The stand is sold as separate modules which lock together, costing £65 for the basic starter module, and then £50 for each 120mm unit thereafter, £55 for a 170mm unit, and £60 for a 270mm unit. A five-shelf rack will cost £265 without the Base isolation platforms. Two sizes of Isolation platform are available, 430x360mm at £65 and 525x425mm for £90.

Tel: 0342 826262

APOLLO ARIA

Apollo's Aria system, on first sight, appears to be a standard, four leg, equipment shelf with either MDF or tinted glass shelves. However, on closer inspection it turns out to be an extremely versatile modular system offering three different width shelves. The three different shelves can be inter-linked together sharing a common upright between them. So a wide Garrard 401 could be placed next to a narrow midi-system and a normal sized TV/video, all on the same rack.

If you are looking to save space, have equipment that varies in size, and want something stylish, the Apollo Aria is ideal. The Aria system is available from most good hi-fi dealers. Tel: 021 5205070



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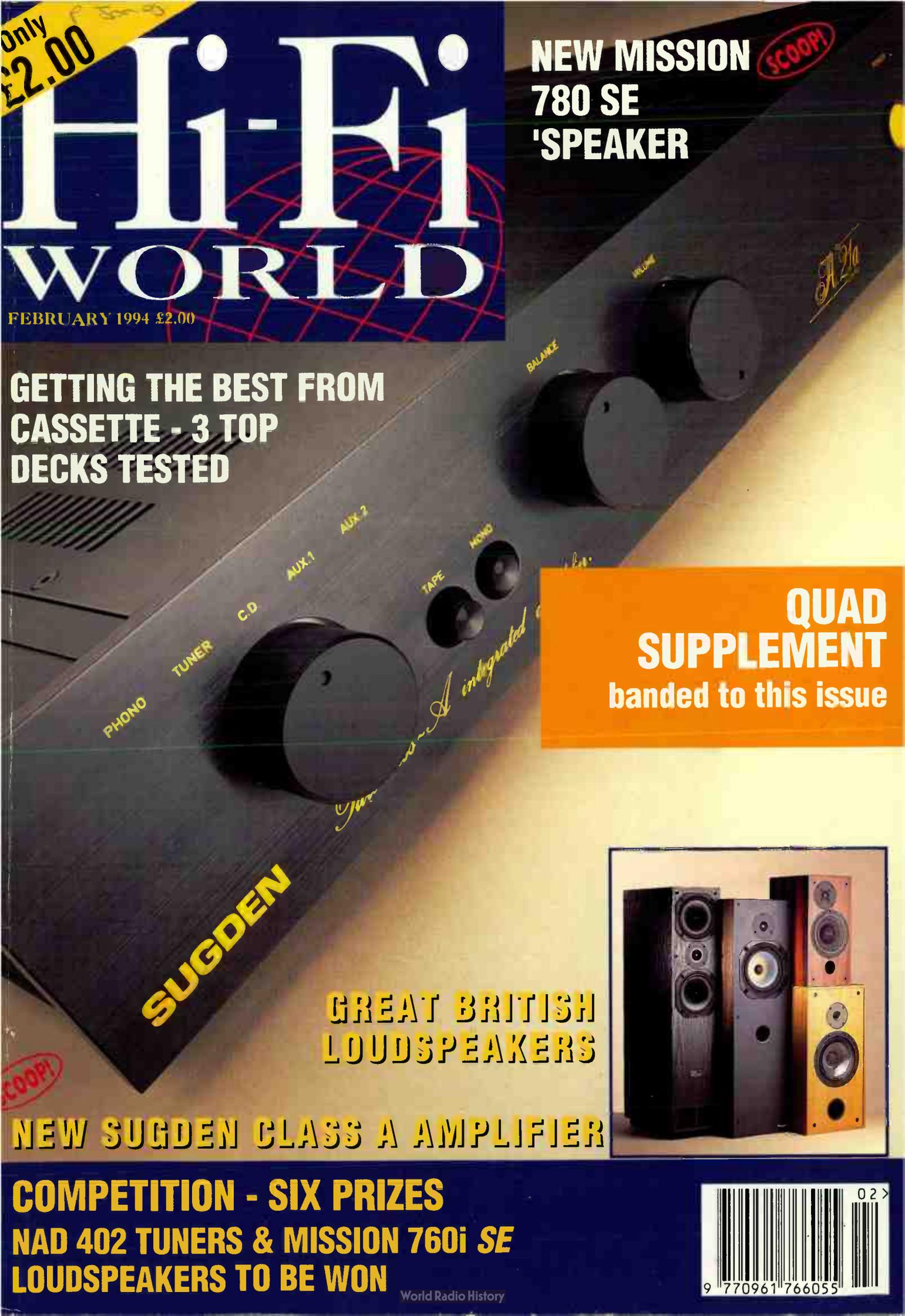
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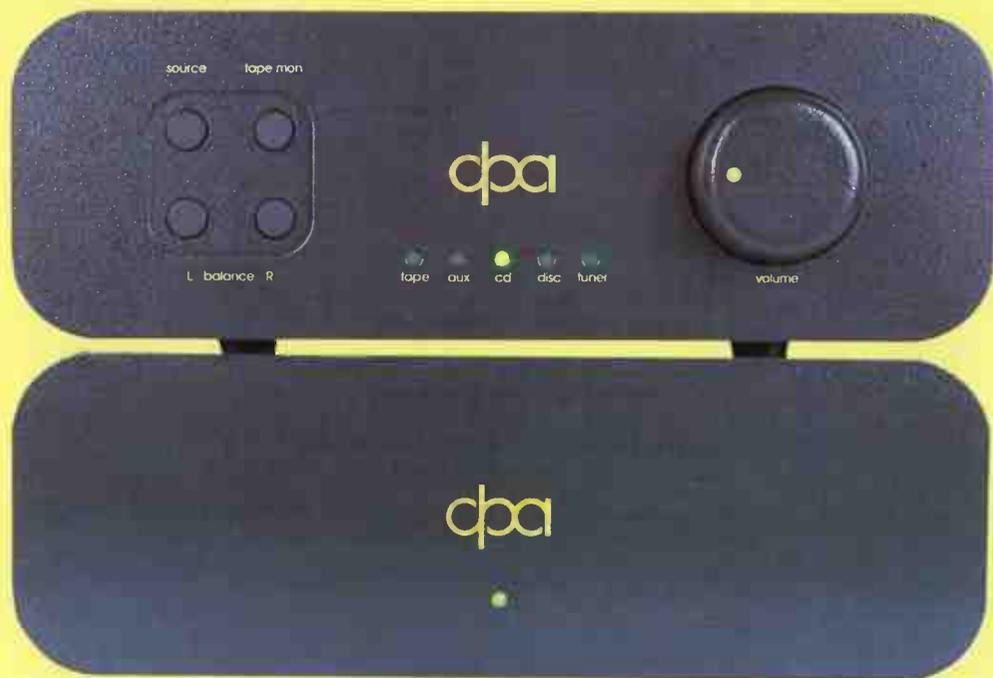


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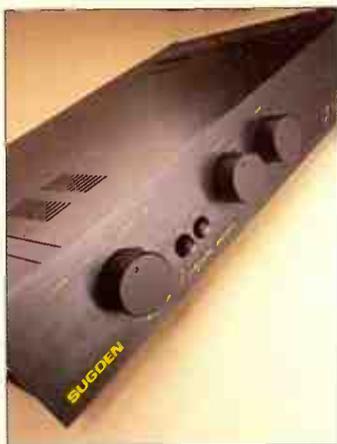
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THIS MONTH'S REVIEWS



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Paul Hartley Studio 071- 482 3768

AMPLIFIERS

SUGDEN A21a 28

Eric Braithwaite positions himself in front of Sugden's new A21a Class A amplifier, and takes off his flat 'at to its civilized performance.



AUDIO INNOVATIONS LI AND SERIES 800 PRE AND POWER-AMPLIFIERS 42

A company well-known for heating the world's listening rooms with their glowing valves, Audio Innovations keep the home fires burning with this pre- and power-amplifier combination.

KINSHAW PERCEPTION HEAD AMP 58

For the delectation and delight of those of you who can't get enough out of their cartridge, we present, reviewed by Dominic Baker, Kinshaw's very own and latest remedy, a two-box head amp.

COMPACT DISC

ORELLE TRANSPORT AND DAC 44

Following the success of their single-box CD player, Orelle have now launched the CD-10T transport, with DA-180 DAC, all for less than £1400. Dominic Todd checks it out.

TECHNICS SL-PG340A 50

A good CD player need not be expensive; this £150 player didn't disgrace itself in front of Simon Cooke's critical ear.

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ALL HANDS ON DECKS! 33

Noel investigates three of the latest cassette decks, to find out what they offer.

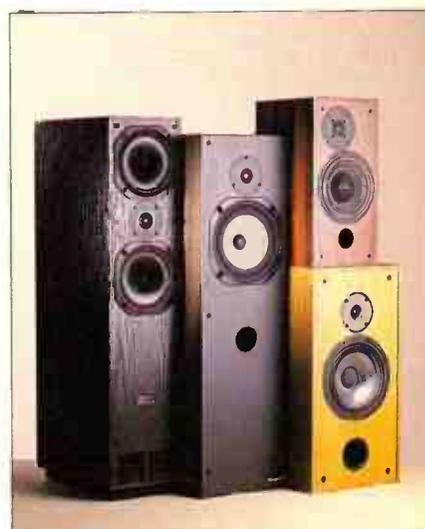
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Sony TC-K611S
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Taller brother of the Aegis Model 1, will the new floorstanding Model 2s stand equally proud?

MISSION 780 SE 11

The latest Missions to get the SE treatment.

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TOWNSHEND ROCK III 24

The latest incarnation of Max Townshend's classic turntable, the one with the trough full of silicone, has Eric Braithwaite licking his fingers.

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DENON TU-580RD 48

Noel and Simon investigate the 'Affairs' of Denon's latest RDS tuner, as well as its 'Drama'. Is it a good sport?



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SIX WAYS TO GET THE BEST FROM YOUR LOUDSPEAKERS 23

QUAD SUPPLEMENT

Banded to this issue you will find something free that you can't get with any other magazine: a QUAD Supplement. Contents include:

A review of QUAD's latest remote-control 66 system, stylish enough to grace any home.

How to set up and use the legendary QUAD electrostatic loudspeakers.

Practical advice on the classic QUAD 11/22 valve pre and power amplifiers.

MUSIC

Our guide to some of the best new releases

ROCK RECORD OF THE MONTH:

Gram Parsons
Grievous Angel

CLASSICAL RECORD OF THE MONTH:

Vaughan Williams
Symphonies Nos. 4 and 6; Fantasia on a theme by Thomas Tallis

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RECORD OFFERS: Whatever your taste, our mail order section will provide some of the best cuts around 96

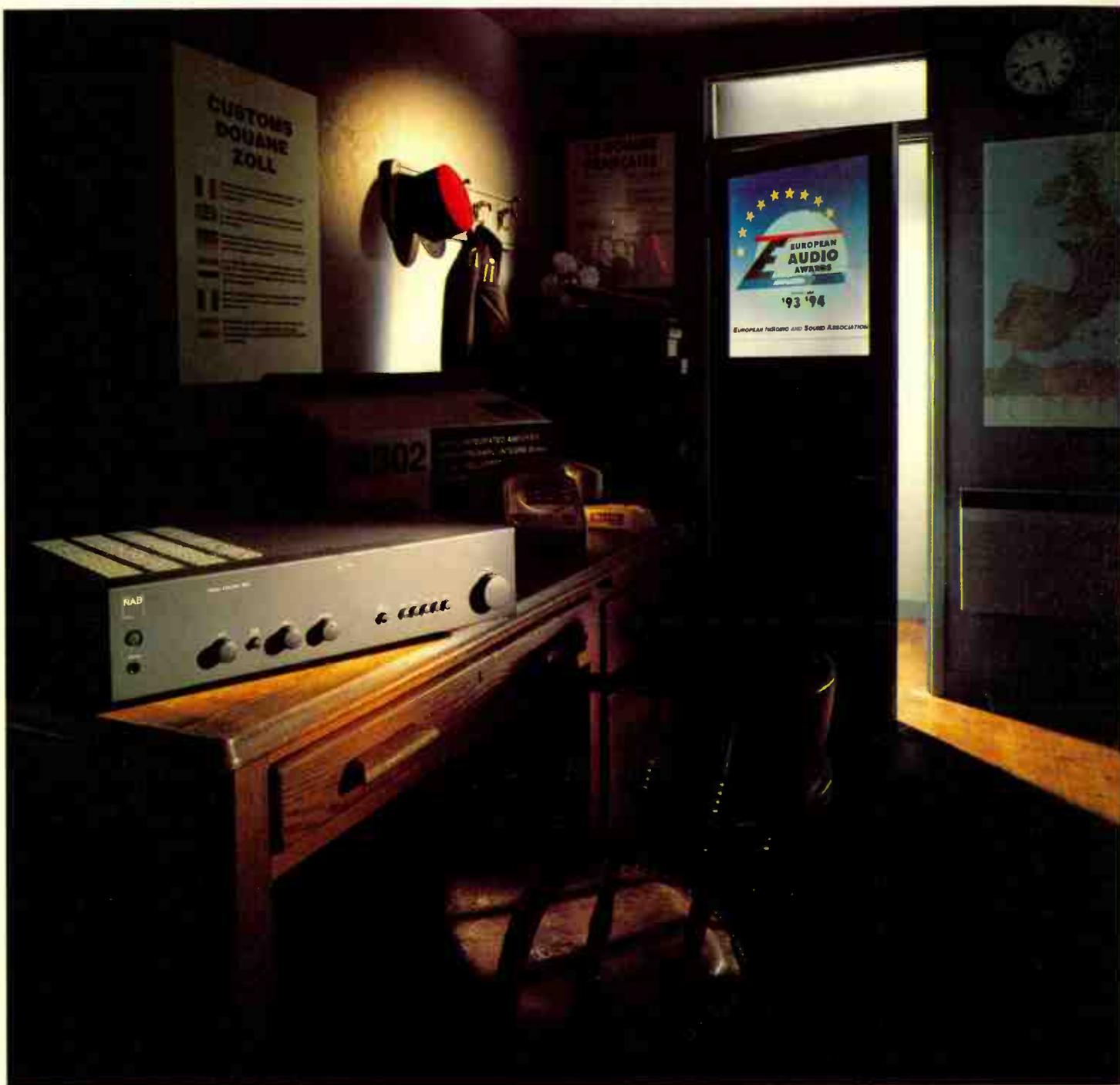
COMPETITION

Is it a tuner? Or is it a new pair of loudspeakers you need to complete your system? All you have to do is answer our simple questions, complete the ditty, and six of you have the chance to win either the highly acclaimed NAD 402 amplifier, or a pair of Mission 760i SE loudspeakers. 66



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C L O S E R I N S P E C T I O N



NAD 302. European Amplifier of the Year '93-'94

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World Radio History

CASTLE HOWARD

The Castle Howard is a new floor-standing loudspeaker, based on the 'quarter-wave' design principle employed in their Winchester and Chester loudspeakers. The 'quarter wave' loading employs a folded, tapered tube to enhance the bass output. The Howard is reputed to go below 35Hz, using two 150mm bass/midrange units, and one 25mm metal dome tweeter. It also boasts a sensitivity of 90dB/W/m, impedance of 8ohms, and a price tag of £1000 for standard wood veneer finishes, with rosewood and yew coming in at £1100.

Castle Acoustics Ltd. Park Mill, Shortbank Road, Skipton, North Yorkshire BD23 2TT. Tel: 0756 795335

TUBES IN SYNERGY

Those of you who get an attack of nostalgia at the idea of Dan Dare's unending struggle with the Mekon might like to know about Tube Technology's latest amplifier. The new Synergy might look like something that's fallen out of a Flash Gordon film, but it has, as they say, 'all mod. cons.' and comes in two versions. The Synergy I is a 150watt stereo integrated amplifier with remote control and on-board bias control. It is a dual mono design, and takes up to five line level inputs. The price for this miracle of post-Rutherford styling is £3800. It will also be available as a 150watt stereo power amplifier, the Synergy II, price to be announced.

Tube Technology, Hatch Farm, Chertsey Road, Addlestone, Surrey KT15 2EH. Tel: 0932 850361

PLUMBING

REL have introduced two new active sub-woofer systems, for those of you who aim to plumb the depths of your collection. The 'Strata' contains a single 25cm driver in a 40litre box to cover a frequency range of 20-120Hz. It costs £499. The 'Studio' is slightly larger, using two 26cm drivers in a 120litre cabinet to produce 12-100Hz frequencies. The 'Studio' costs £2995.



Harman Audio, Harman International Industries Ltd, Unit 2, Borehamwood Industrial Park, Rowley Lane, Herts WD6 5PZ. Tel: 081 207 5050.

KEF QUEUE UP

The Q70 is KEF's latest loudspeaker addition to their Q range, which employs two 160mm bass drivers and a 160mm 'Uni-Q' midrange/HF unit in a 1050mm tall cabinet. Available in grey or black ash vinyl finishes, the Q70s cost £699 per pair.

KEF Audio (UK) Ltd. Ecclestone Road, Tovil, Maidstone, Kent ME15 6QP. Tel: 0622 672261





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World Radio history

THE PATH TO RIGHTEOUSNESS

- or, at least, sonic superiority, may have just been made a little easier by Path Group, who have brought out two additions to their Ixos range of cables. Their new 'Silver Bullet' is a Teflon-insulated silver-plated oxygen-free copper interconnect with gold-plated phono plugs, retailing at £80 per metre for a stereo pair.

Path have also launched 'Digital Interconnect', a 75ohm oxygen-free copper interconnect cable, well dressed in a polyethylene foam insulation and a natty Teflon jacket. The price for this miracle of sartorial elegance is £20.

Path Premier, another Path Group company, have also come up with some interconnects called the Kontak Link - after their famous electrical contact cleaner - comprising the £49.95 per metre Link 505 digital interconnect and the £89.95 per metre Link 502 silver clad oxygen-free copper interconnect cable.

Path Group, Unit 2, Desborough Industrial Park, Desborough Park Road, High Wycombe, Bucks HP12 3BG. Tel: 0494 441736.

SONIC LINK GO GREEN AND CRIMSON

- but not from envy or embarrassment, they've just launched a couple of new interconnects. Sonic Link Green is a 75ohm coaxial interconnect made from silver-plated copper with PTFE insulation, costing £50 per metre run, fitted with gold plated phonos.

The Crimson is a solid core copper interconnect, with silver plated cores and, again, PTFE insulation. It costs £49 per metre stereo pair, with gold-plated phonos.

Sonic Link will terminate both with rhodium-plated phono plugs, for a £20 premium.

Sonic Link,
Derwent Business
Centre, Clarke St.,
Derby DE1 2BU.
Tel: 0332 674929



THE WORLD'S MOST DANGEROUS INTERCONNECT?

The name K2 may strike fear and awe into the hearts of the mountaineers among you, but Kelvin Audio Cables have something a little more relaxed in mind, with their new K2 interconnect. The only 'arduous' task, selecting the appropriate cable from listening tests, has already been taken care of by Kelvin, who have the copper cable produced in the U.K. to their own specification.

Price for the K2 is £25 per metre stereo pair with gold-plated plugs, and £50 with Neutrik Profi Professional plugs.

Kelvin Audio Cables, 2a Gardenhall, East Kilbride G75 8SP.
Tel: 03552 26522

MUSIC LINK

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You'll have to keep the party going while you wait for delivery, though. MusicLink aims for delivery from stock within three days, and out-of-stock item delivery within ten days.

MusicLink. Tel: 081 812 0812

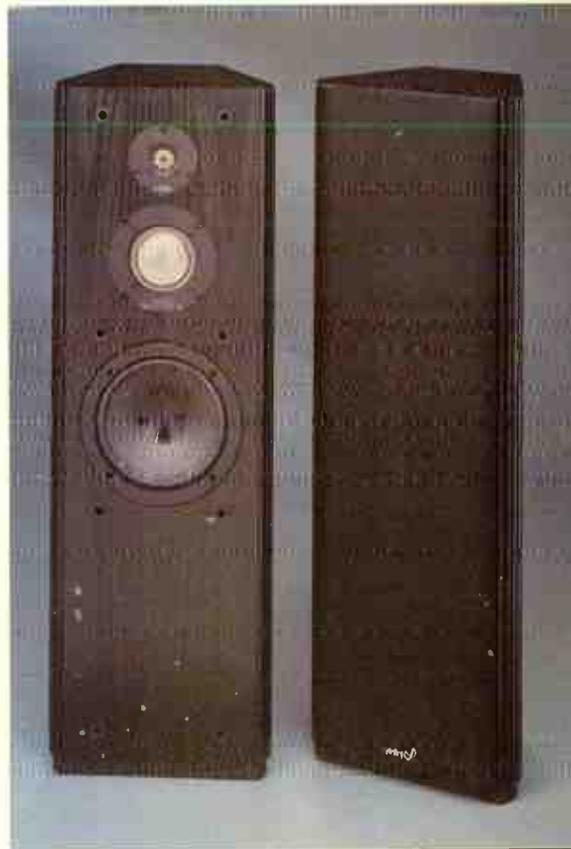
ROTEL AMPLIFIER FOR AUDIOPHILES

Gamepath have announced the launch of a new 'audiophile' amplifier from Rotel, the RA960BX2, priced at £300. This, as the name suggests, is an upgraded version of their RA960BX amplifier. The new version comes 'with added vitamins and minerals' in the form of polypropylene capacitors replacing the standard ones used in key signal coupling and negative feedback circuitry. The phono stage also uses passive high frequency and active low frequency equalization 'for greater sonic integrity'.

NEW GROUND COVERED BY INFINITY

The new Kappa 6.1i and 7.1i 'speakers from Infinity are here. Both are three-way designs incorporating an injection moulded graphite (carbon, to its friends) woofer, polyelastomer midrange unit and infinity's electro-magnetic induction tweeter in rounded triangular section cabinets. The 6.1i retails at £995 and the 7.1i for £1195 per pair.

Infinity have also launched their Micro II satellite 'speaker system, retailing at £399.95. The satellites each house a 4.5in. polypropylene woofer and a 0.5in. tweeter in an 8in. tall, 5.5in. diameter cylindrical cabinet, while the complementary subwoofer fills in the lower frequencies with two 6.5in. polypropylene drive units.



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

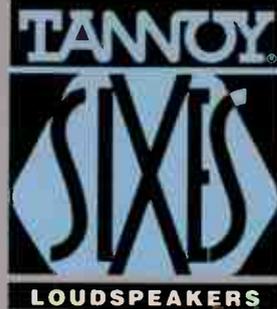
Because we thought about it. Deeply. Our R&D people spend their lives immersed in speaker design – but never out of their depth.

Bathtime operatics may have inspired the SIXES concept, first seen in the original successful SIXES. You see, four-square walls generate standing waves which boost 'boom'. Fine for resonant renditions of 'Nessun Dorma', but fatal to accurate musical reproduction.

Similarly, since sharp edges cause sound diffractions, playing havoc with frequency response and believable stereo imaging, our six-sided cabinets adopt a more oblique approach.

The quest for colour-free sound is unceasing. The senior members of the new SIXES family feature our Dual Concentric sound sources, whilst all models incorporate contoured moulded bass cones, low-weight and stiff for agile yet powerful bass response. And tweeters with gold-anodised domes, ensuring treble clarity and smoothness.

To read more about the new SIXES – write today or phone 0236 420199. But for the absolute truth, all you have to do is to listen.



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World Radio History

MICRODOT

The latest idea from America to help you keep hold of your hard-won, expensive, hi-fi, is the Microdot, which bears the owner's personal registration number to make it instantly identifiable. Made from Mylar and reputed to be impervious to detergents, oils, solvents, and fading, as well as being able to bond to almost any surface for a claimed one hundred years. The only way for a thief to remove the dot is by mechanical grinding of the surface it is stuck to, which will destroy the value of the goods. That, of course, is if the thief can find the little widget, because a mylar Microdot is about as big as a full stop (like this one). That means that it is all but invisible, and small enough to hide under a screw-head or almost anywhere.

A kit containing 150 coded Microdots costs £69.99, and five year's subscription to the Instant Action Recovery Service, to enable you to recover stolen coded goods costs £75.00

Microtech Suite 227, 2 Old Brompton Road, G.B. London SW7 3DQ. Tel: 071 413 9529

COMPACT DISC EXHIBITION

By the time you read this copy of Hi-Fi World, the Design Museum will be almost ready to take down its exhibition of CD jewel case artwork, and other imaginative solutions to the problem of how to make a flimsy plastic box look as good as those old LP covers from days of yore. So hurry! You only have until the end of March to see it.

Review Gallery Display, The Design Museum, Butler's Wharf, London SE1 2YD Tel: 071 403 6933



CERWIN VEGA

If you've always called these 'speakers Cerwin Vague, think again. Their new VS line of 'speakers is reputed to give tight and fast (but LOUD) bass. They are also claiming serious sensitivity, with the least sensitive of the VS range, the 'small' £249.99 two-way VS8, rated at 94dB, 1dB less than the 'medium' three-way VS10 at £349.99. The 'large' VS12 'speaker offers 97dB sensitivity from a three-way design costing £549.99, and the three-way VS15 claims a thoroughly awesome 102dB, and a £699.99 price tag to match.

Cerwin Vega, CSE Unit 9, Centre Park Holdings, The Airfield, Tockwith, Yorks. YO5 8QF. Tel: 0423 359054

WORTH BREAKING THE LAW FOR

Perfect Pitch Music's new Light Metal I loudspeakers were so desirable that thieves thought it worth a considerable amount of effort to manoeuvre the 1 metre high loudspeakers through the newly broken side window of a Vauxhall Cavalier! So delighted with their new £2,600 wonders (probably destined for a life on the end of a £99 low-fi) the thieves were kind enough to leave blood on the broken glass of the car window to express their gratitude. How thoughtful!

If you have any information that may help Perfect Pitch Music locate their loudspeakers, please contact:

Perfect Pitch Music, Hanworth Trading Est. Hampton Road West, Feltham, Middx. TW13 6DH. Tel: 081 893 8662

MISSION 780 SE

A first impression by Dominic Baker

The latest Mission loudspeaker to get the SE treatment is the popular 780. In this guise it now sports chunky knurled

gold plated binding posts, and both an uprated crossover and internal wiring. The premium for these upgrades is £39, taking the retail price up to £239, which places them directly against TDL's excellent RTL 2s, our current £250 favourite.

As with the majority of Mission loudspeakers the 780 SEs are designed to be used in close proximity to a rear wall or on a bookshelf. Placed on rigid stands and about 10cm from a rear wall the 780 SEs give a balanced and powerful sound.

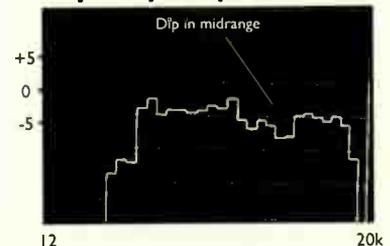
The bass is a little deeper than that of the 760i SEs, but retains their excellent

solidity and punch - giving the new 780s a similarly enthusiastic sound. But, like the 760i SEs, they exaggerated sibilance on the Lemon Trees' Open Book album and became grating with PJ Harvey's Dry. In this respect, they don't measure up to the refinement of TDL's RTL 2s.

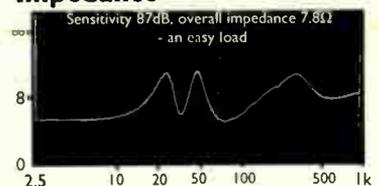
An open and clear midrange did justice to Kim Deal on The Breeder's POD, but through the Missions, this sounded just a little heavy and closed in. The 'speakers did an admirable job of filling the room, but image detail was vague.

What they do offer is a big and enjoyable sound. They go slightly deeper than the 760i SEs and will handle more power before becoming uncomfortable, but don't offer quite the same value for money. If you like the 'Mission sound', and like it louder and deeper than the 760i SEs can manage, the 780 SEs may be just the 'speaker for you ●

Frequency Response



Impedance



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Thoreo 1605 Mission 72	£399.00	£199.00	£154.00

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ACOUSTIC ENERGY

AEGIS MODEL 2



Dominic Baker and Eric Braithwaite take a look at Acoustic Energy's first floorstander - the Aegis Model 2.

SOUND QUALITY

I was expecting a slightly richer, more powerful bass from the Aegis Model 2s than that of the smaller Model 1s, plus a little more excitement. At normal listening levels though, the Model 2s appeared almost reluctant to get themselves involved. However, their exceptionally clean - squeaky clean - sound made me sure that there was still some mileage in them.

Winding the volume up to levels that I've never reached before produced some interesting results. The extra 45 degrees around the volume scale didn't produce a proportionately louder sound, but the extra power added expression and energy to the Model 2's sound.

At these high levels they became more enjoyable; the bass filled out, sounding less dry and over damped, and the mid-range started to get away from the box. They don't image particularly well, and have a limited soundstage, but are comfortable to listen to at high levels and give the impression of a clean and undistorted performance.

ERIC ON CLASSICAL

Tight, lean and dry and a tad too close to being almost light-weight were my inescapable first impressions. The first three have been hallmarks of Acoustic Energy designs in any case, but the lasting feeling playing orchestral music was of one of the smaller earlier AE designs parked on top of an additional box. Better for Mozart's piano concertos with the ECO than the VPO and Mahler.

Separating size from bass slam needs a mental re-adjustment. Heavy piano work - Mussorgsky's Pictures in the piano scoring - came across tidily but too neatly swept, bottom notes acceptable, but lacking impact. Dutoit and the Montreal orchestra's Three-Cornered Hat, however, showed up a few places where the tonal quality could have been less dry and lean, particularly in some too-ethereal piccolo and flute, while percussion also came off the scales a bit slimmer than the size of this box would suggest.

More in line with the smaller speakers in this range, the Model 2s did possess the same knack of re-creating acoustic space, but needed a fair whack at the watts for the sound to shoulder the speaker boxes aside to give a real impression of a wide orchestral stage.

MEASURED PERFORMANCE

Like the smaller Aegis 1s, the 2s have a very even and well-mannered frequency response. There is a small dip in the crossover region, but this will tend to fill in in the far field, i.e. back at the listening position. There is also a lift in the upper bass which should add some subjective speed.

Overall impedance measured 12.8Ω, suggesting the Model 2s shouldn't take much current to drive. But they have extremely low sensitivity, measured at 82dB, which means a powerful amplifier will be needed to get the best from them.

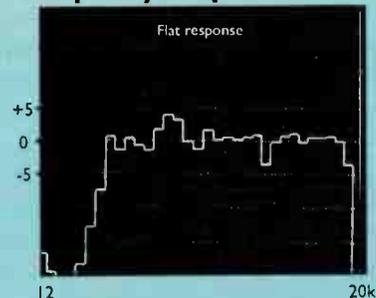
The impedance curve shows the Model 2s to be quite reactive, which coupled with their low sensitivity means that a strong amplifier will be needed. I'd recommend at least 100watts for good results. **DB**

Following the success of their Aegis Model 1 loudspeakers, Acoustic Energy have just launched the floorstanding Model 2s. At £799, little more than the cost of a pair of Aegis 1s along with their dedicated stands, it would appear that they are a bit of a bargain.

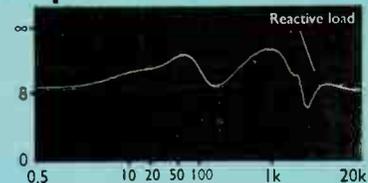
A 170mm metal cone bass unit and a 25mm metal dome tweeter not only give the new Aegis a very high power handling capability, but may improve crossover integration; instruments should not change their character as they pass from bass through to treble. The crossover itself uses high quality components, including specially made polypropylene capacitors; two sets of binding posts allow for bi-wiring.

The multi-chamber cabinet uses a complex arrangement of horizontal and vertical braces to give it an extremely rigid structure. As though this wasn't enough, each speaker also comes with 7kg of lead in the base to anchor it firmly to the floor. The bass unit is reflex-loaded by a smallish port on the rear panel.

Frequency Response



Impedance



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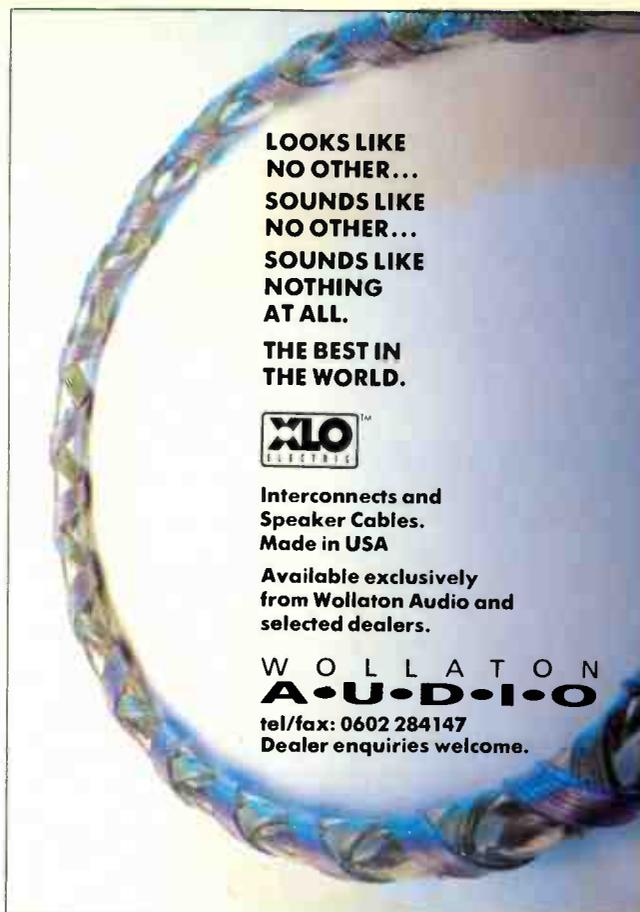
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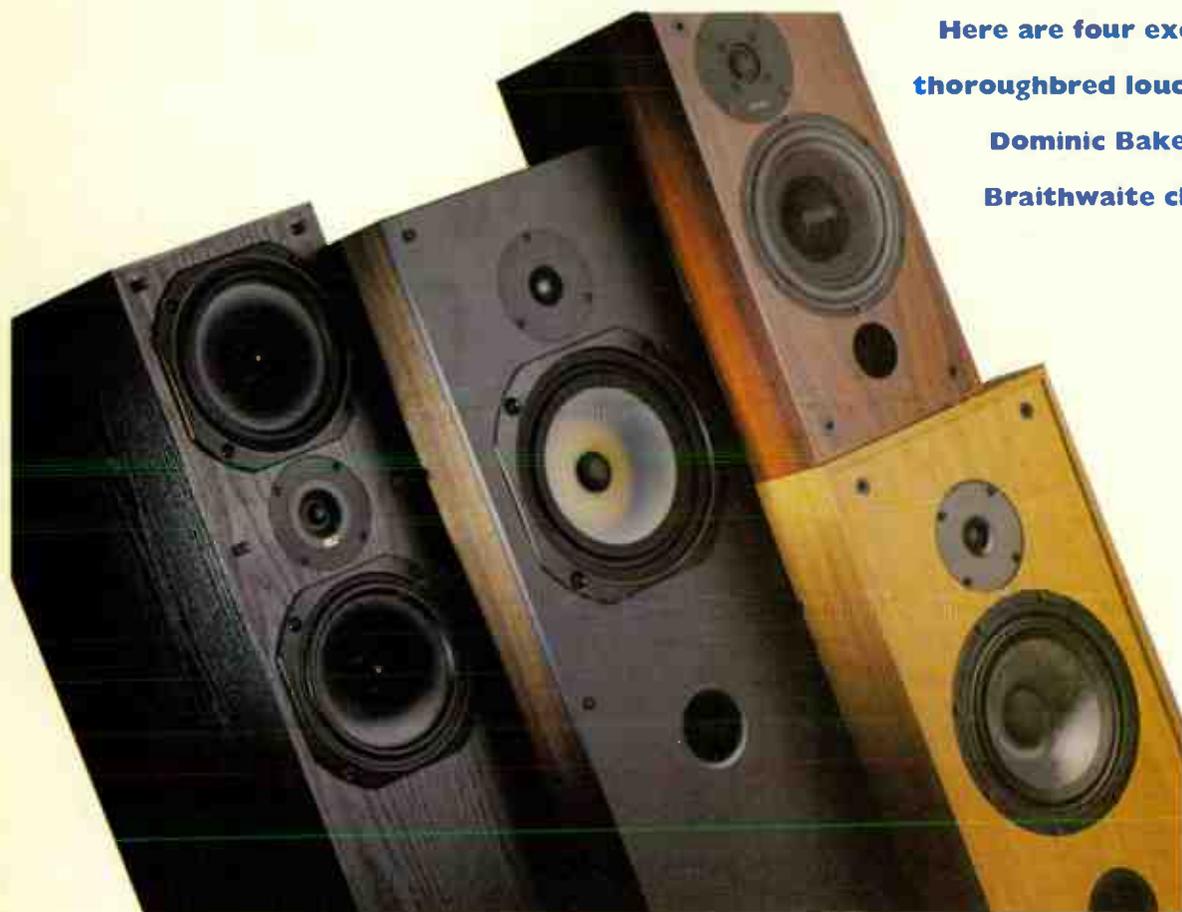
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GREAT BRITISH THOROUGHBREDS

British Loudspeakers



Here are four exciting new thoroughbred loudspeakers.

Dominic Baker and Eric Braithwaite check their pedigree.

So, what makes a great British loudspeaker? Is it real wood veneers, specially made and selected drive units, years of research and development or just that they are tailored to a 'British sound' which, to be more specific, was defined by the B.B.C. Whatever it is, here are four of the best examples of the breed, all different in character, but all engineered for what their designers perceive to be accuracy and honesty of presentation first and foremost.

All four of the loudspeakers chosen for this group have been carefully designed and constructed from high quality materials. A couple use drive units specially designed and manufactured in-house which, considering the relatively small size of the companies involved, shows a real commitment to quality engineering. Those that don't make their own drivers either carefully select and specify them, or have them custom-made to their own requirements. You won't find a single standard off-the-shelf driver in any

of these 'speakers.

And this is partly what you are paying for, a quality engineered product with that important little extra attention to fine detail that elevates these loudspeakers from the commonplace to the refined. Competing with rivals is usually not the issue; pursuing perfection in areas considered important by the designer is. This specialist approach yields loudspeakers that are unique in character, more so than computer designed, mass produced types based upon standard parts. Critical listeners are likely to prefer one or other above all else - hence this test. Here are four excellent loudspeakers, but each excels in its own area. There should be a loudspeaker here for everyone, one that will provide years of enjoyment.

The four loudspeakers chosen are, in ascending order of price: TDL's new RTL 3s which use a truncated transmission line for deep bass and good sensitivity; ProAc's Studio 100s which, as the name suggests, are primarily an accurate and revealing monitor loudspeaker; Rogers'

LS8a/2s, a floorstander designed to give an open and enjoyably musical sound in a domestic environment; Spendor's SP2/3s, again a monitor, but with the emphasis on midband neutrality and transparency.

All four are brand new on the market; the chances are that you won't have read about them before. They represent the state-of-the-art in British loudspeaker engineering under the £1000 price barrier. They set the standard that others have to live up to, and this makes them an important and influential group of loudspeakers. They were measured in-house and reviewed by myself, Dominic Baker, and by Eric Braithwaite. All of us review dynamic loudspeakers and are well acquainted with the best around. We also both possess and use Quad electrostatics, which provide a firm quality benchmark. It is against this background that our observations are made. We were impressed by this group of loudspeakers; your ideal loudspeaker may be found here.



£699

ProAc's Studio 100s are the latest incarnation of the Studio 1s, directly replacing the MkII version. Although very similar from the outside, several improvements have been made to help reduce colouration, increase subjective speed and improve their soundstaging and imaging qualities.

These changes start with the cabinet which now uses MDF of differing thickness for the front and rear baffles to that used on the sides and top. This helps break up the resonances associated with panel thickness. The crossover has also been revised to accommodate a new tweeter, ProAc taking the opportunity to fit twin binding posts for bi-wiring and upgrade the wire to higher quality oxygen-free multi-strand copper at the same time.

The new tweeter is made by SEAS to ProAc's specification and now has a ferrofluid of different viscosity to give it a smoother response. It is offset to one side of the baffle, so the Studio 100s come as a 'handed' pair, to be positioned so that the tweeters are on the inside. Treble radiated toward the listener is less affected by surface reflections from the narrowed baffle and image quality is improved - well that's the theory.

The paper bass unit is specified by ProAc and made by Scanspeak to a very high standard. It has remained unchanged from the one used in the Studio 1 MkIIs, but the improved crossover and cabinet construction better let its strengths show. It has a soft fibrous texture, well damped and less likely to produce a hard sound from undamped breakups.

The Studio 100s supplied for this test came in a gorgeous, solid-looking rosewood veneer, an extra raising the price tag to a little under £770. Standard finishes at £699 include walnut, black, oak, mahogany and teak, while yew can be had for a similar price to the rosewood.

The Studio 100s were used on a

PROAC STUDIO 100

heavy pair of Target R2 stands and as recommended, best results were obtained in free space, about 3ft from the side wall and 2ft from the rear giving a balanced sound with good bass depth and a clean midrange. Any further back and the bass could become a little coloured and ponderous, so bookshelves are definitely out.

SOUND QUALITY

The ProAc's have a bright and lively treble which gives them an energetic balance. Fortunately, the treble is of good quality; ProAc's tweeter reveals fine detail and differences in texture cleanly and clearly, without becoming confused. If you've got it, flaunt it, and that's certainly what the Studio 100s do. Some may find them a little too bright but in fact, if anything, I found the ProAc's a welcome change from so many other speakers because of their ability to resolve treble detail and image well.

I suspect that the combination of a good quality tweeter, a slightly accentuated treble and the offset all contribute to this speaker's imaging. I'm amazed that more manufacturers choose not to 'hand' their loudspeakers. It improves imaging without affecting any other area of performance.

The new Studio 100s are very dynamic loudspeakers; they reveal dynamic contrasts, or changes in level, without softening or compressing them. If a vocalist comes in a little too loud on their microphone, the '100s tell you about it. This makes them a lively, communicative 'speaker to listen to. It's exactly what you'd expect a top quality studio monitor to sound like - analytical.

The improved cabinets make a big difference. Now the sound has become more open in comparison to the original Studio 1 MkIIs and it is completely free from the cabinet. REM's 'Talk About The Passion' demonstrated the smooth, almost unnoticeable crossover between the two drive units. Bass lines were also handled very well, the plucked bass guitar strings on 'Sitting Still' having a good, solid and clean kick to them.

Bass extension was respectable for the small size of the 100s, but it was nothing like as extended as that of the larger TDLs. All the same, for all but church organ fans, the 100s should be fine.

ERIC ON CLASSICAL

Drier in the lower mid-range than previous ProAc's, as I recall, the Studio 100s had a good balance of strengths. A wide dynamic range and very respectable

tonal colour had Mozart and the ECO very much in dance mode. A tendency to a too 'squeaky clean' treble - on top violin notes and piccolos in de Falla's Three Corned Hat - while observable, was suppressed short of blackboard-scraping fierceness the way the ProAc presented.

Barenboim's piano - and his ECO - in the Mozart piece would encourage lengthy listening. It was extremely pleasant throughout, though the piano was a little small in scale.

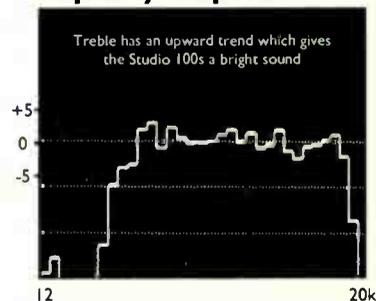
Orchestrally speaking, the Studio 100s presented an engaging and accurate variety of tonal colour, with clear, well-defined, solo and sectional images and a well-developed, slightly forward soundstage, albeit a trifle short on depth. These speakers were simply delightful, unphased by tough recordings, and an absolute pleasure to listen to.

CONCLUSION

The Studio 100s do a remarkable job of creating a live acoustic around instruments and performers. The whole atmosphere of the recording comes through to give a detailed and natural sounding performance. They come close to the Spendors, exceptional clarity in the midband, but offer a brighter, more lively balance with fine, bass drive.

**ProAc,
Professional Acoustics,
130 - 132 Thirsk Road,
Borehamwood,
Herts. WD6 5BA
Tel. 081 207 1150**

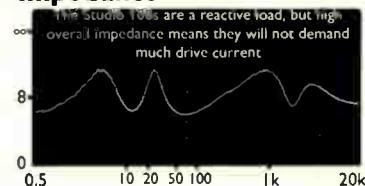
Frequency Response



**Sensitivity
Impedance**

**86dB
11Ω**

Impedance



SPENDOR SP2/3



£769

Spendor's SP2/3s are large, reflex loaded, stand mounting speakers. They look a little dated, with their chubby proportions, black cloth grilles and teak veneer, but are the latest version of the long standing SP2. This is a well engineered, traditional design relying on the strengths of high quality drive units, crossover and solid cabinet construction. For years the SP2s have been a popular monitor for professional and domestic applications.

The tweeter is a specially selected version of the popular Scanspeak D2010 fabric dome which finds its way into many of the more up-market, quality British loudspeakers, being too expensive and esoteric for mass manufacture. It is renowned for its sweet, open sound and smooth response. This unit passes over at 3kHz to a 200mm clear homopolymer polypropylene bass unit specially made in-house by Spendor which makes the SP2/3 unique. It is hand doped to give it a neutral and smooth sound and pairs are matched to within 0.5dB for consistency.

The 7-element crossover uses high quality components throughout and is connected directly to the two sets of chunky binding posts at the rear to facilitate bi-wiring, which is advisable for best results.

Finding stands for the SP2/3s is not a particularly easy task as they are quite large, but I found that Target's HJ15/3s were ideal for the job. These are a heavyweight, three-leg design. Something of at least similar proportions should be used with the SP2s to give them a solid foundation.

The SP2/3s have a dry and quite light bass quality which means that they give their best close up to a rear wall. I found that when positioned about a foot away from the wall and toed in towards the listener, the SP2s gave the most neutral balance and good stage depth and width.

SOUND QUALITY

Spendor's special high quality bass unit gives

the SP2/3s an unusually open and clear midrange that projects well beyond the confines of the box. It is here that these speakers excel. A good midrange is vital if the tonal colours of a violin are to be accurately portrayed, or the character and emotion of vocals revealed. The midband was nearly as neutral and uncoloured as that of Quad's 63s, sharing a similar ability to focus sharply on detail and reveal it to the listener.

As with the smaller S20s in the Jan '94 issue, the SP2/3s did not image particularly well. It was enough to give a good indication of the positioning of artists, but without the pin-point accuracy that some designs can exhibit. Toeing them in filled the centre of the soundstage to give a more solid image.

Using CD, and the recent 'MTV live' release of 10,000 Maniacs, the SP2/3s pushed Natalie Merchant's voice out into the room in an almost over-emphasised fashion. The mid is forward, but then it is so good that you want it to be, and this kind of midrange lift gives a sense of openness and extra detail when compared to a 'flatter' loudspeaker. It certainly did the trick on The The's *Mind Bomb* with the snare drum on 'Armageddon Days' fast and crisp, leading the way for the rest of the instruments to follow. This track also displayed the excellent sense of rhythm and timing SP2/3s; although the bass unit is large and quite heavy it doesn't hang about, giving plenty of insight into bass playing techniques.

The soundstage created by these speakers was not as expansive as the best, but it was well focused, giving a deep and solid image to lead performers. The fluid midband and sweet treble give an accurate and uncoloured sound to strings; they pushed out of the boxes with a free and breathy sound. 'Kingdom of Rain', on the same The The album, with its gentle combination of female vocals and acoustic guitar backed by drums and bass, had a lovely tactile quality to it, the music flowing lucidly out of the SP2s. The small fabric dome of the tweeter gave a reasonably detailed performance, but it lacked some of the excitement or energy of bigger soft domes. It was not quite so engaging.

ERIC ON CLASSICAL

This speaker is for analogue lovers, since early-instrument (digital) Haydn on Sony had a too-sweet tone, as did Bronfman's piano, which was rather against the grain, since it is really more brutal-sounding. On the other hand, the Mozart Concertos had what can only be described as a splendid overall orchestral tonal colour. Then, it is an analogue recording...

The SP2/3 was something of a

smoothy, unflustered and very tidy with a beautifully (literally) integrated mid-range and treble. Not, however for those who like brasher and brisker pieces. Even Mozart can 'swing', and the Spendors lacked a little pace, low notes being apparently reluctant to leave the reflex port unless given a sharp push.

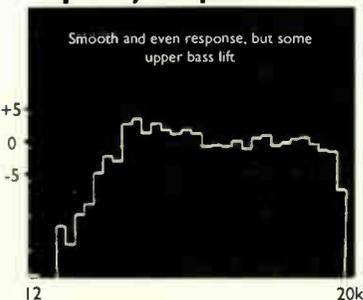
However beguiling in sound quality, the 'concert-hall' balance, where the soundstage is rather diffuse, appeared to be in evidence again. I've nothing against this *per se*, but while it makes for a relaxed stress-free listening session, many recordings rely on sharper and more precise imagery than the Spendors reproduced to make their effect.

CONCLUSION

Give the SP2s a solid bass line to follow and they grip it quite well - down to a point. They get so far down and then bass output rolls off fast. The result is a light and dry bass quality, but one that is clear and tuneful, integrating extremely well with the treble. This gives the SP2s a very smooth presentation - one you can continue to appreciate - that makes them enjoyable to listen to for hours. They are the most expensive speakers in this small group, but have qualities that make them well worth an audition. Whilst they may not be everybody's cup of tea, I spent many hours pleasurably listening to them.

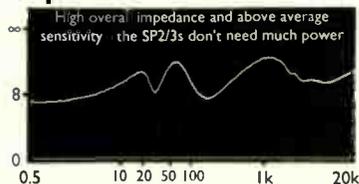
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Frequency Response



Sensitivity 87dB
Impedance 13Ω

Impedance

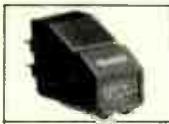


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£449

The Rogers LS8a/2s have the most conservative image of the four models in this report. It appears that little effort has been put into their styling - and it certainly makes no attempt to appeal to a younger audience in the way, say, Mission would. If they could be likened to anything, it would be the grey puppet figure of John Major on Spitting Image. However, the Rogers are nicely finished, their quality of craftsmanship is excellent and the materials used good and strong.

The LS8a/2s are designed, as with all Rogers loudspeakers, to be used with the grilles in place. A brighter balance can be obtained with them removed, but it is smoother when left in place. The whole Rogers LS range of loudspeakers has been improved. They are now fitted with a single pair of loudspeaker terminals rather than the bi-wire ones that used to be fitted. But this cost saving has enabled higher quality components to be used in the crossover, including a special polypropylene capacitor in the treble which should improve clarity. The increase in performance was considered far greater than that gained by bi-wiring, and as not everyone chooses to bi-wire their loudspeakers, of greater worth to their customers.

As do the other manufacturers in this group, Rogers make their own bass/midrange unit. The 205mm polypropylene driver used has been developed and refined by Rogers over many years and is certainly very professionally made. This unit is carefully controlled to make the crossover simple, indeed it uses only four components to roll the midband off and the tweeter in at 3kHz. The tweeter itself is a 19mm aluminium dome selected for its smooth response and directional characteristics. Although I normally tend to shy away from metal domes, preferring the sweetness of fabric, this unit, once run in,

gave an open and smooth sound without becoming sharp or coarse.

The bass of the LS8a/2s is quite dry and fast enough to stay out of trouble, even with them pushed back to within a foot of the rear wall. Lateral and vertical dispersion of the Rogers is very good which, combined with unexceptional imaging, allows them to be loosely positioned and still give good results over a large listening area - a plus on the Wife Factor Scale.

SOUND QUALITY

The LS8a/2s have a fast and bouncy sound, full of energy, contrary to what you would expect from their rather staid styling. The years of development that have gone into Rogers' unique bass/mid driver have certainly paid off; it gives a smooth, detailed and neutral sound, but this unit is also energetic in its portrayal of music.

The metal dome tweeter is instantly recognisable and does make the crossover point a little more obvious than some, but it is still one of the best metal domes I've heard. Even when cymbals were hit hard repeatedly the treble remained free of the resonant rattles and sharpnesses that so many lesser metal domes suffer.

These speakers have a very similar balance to the Heybrook Quartets, with a big, bouncy, enjoyable presentation and a slightly boxy bass which adds a pleasant springiness. With the Lemon Trees, vocal harmonies were pushed forwards out of the box and the light tuneful bass lines played with energetic enthusiasm. A little sibilance was evident, but then this album does tend to highlight the problem in 'speakers, and it never became annoying.

Rogers' LS8a/2s have a large sound that fills the room from corner to corner. The soundstage at the centre was not particularly wide or deep, but the sound from the 'speakers was so full that I hardly noticed. The image within the soundstage was reasonably focused, but not enough to precisely locate instruments. As mentioned above though, they do project over a wide angle, so the sound stays balanced over a large area of the room.

Bass output was not particularly deep for the cabinet size, but it was good enough in quality for me to be able to follow bass lines, which had a crisp, clean presentation. The Lemonheads' Come on Feel album was given some much needed life and excitement; it even became quite enjoyable. The Rogers coped particularly well with the frantic playing on 'Down About It', managing to keep the notes on time and in rhythm.

ROGERS LS8a/2

ERIC ON CLASSICAL

Most speakers, faced with Shlomo Mintz's 'Paganini Variations', give the impression he's falling over his fingers in the breathless rush to fit in all the notes. The Rogers caught them all, though at the cost of a little 'metal dome' grain in the violin tone. The driver Rogers now use is adept in the mid-range, and quite rhythmical.

There are some evident sonic compromises, with low strings showing a degree of warmth and roundness - plucked double bass, in fact, being a little plummy. Top notes - whether a soprano's or a piccolo's - were nicely bright, with a spot of grittiness in the violins proving acceptable since it appeared in surprisingly small doses for a metal dome tweeter.

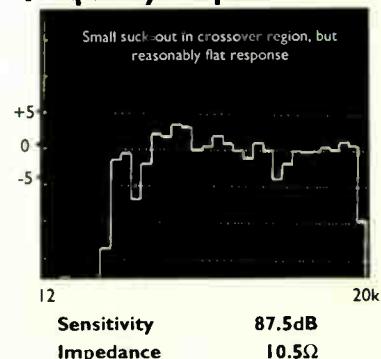
Overall, the LS8a/2s produced a splendid feel for the size and scale of an orchestra, with good dynamics and a wide dynamic range. A sizeable box, they needed the volume turned up and a lot of space between them and the listener, or they could sound, on first hearing, unwarrantedly dull. Cranked up, they could dance.

CONCLUSION

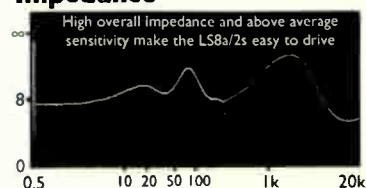
The Rogers LS8a/2s offer a big and enjoyable sound of room filling proportions and never give anything but a musical and interesting performance. They don't image particularly well and the metal dome does make itself known, but neither of these flaws particularly detract from what the LS8a/2s do right - play music.

**Rogers,
Swisstone Electronics,
310 Commonsides East,
Mitcham, Surrey,
CR4 1HX
Tel. 081 640 2172**

Frequency Response



Impedance



TDL RTL 3



£399

Top of the new 'Reflex Transmission Line' range of loudspeakers from TDL Electronics are the RTL3s. They are cleverly proportioned to be tall, thin and deep, putting the drive units at ear level whilst providing a narrow baffle for good imaging. This enables them to intrude less than other speakers of similar internal volume, such as the Rogers, for example, with its shorter, wider baffle.

Commercial transmission line loudspeakers have to be truncated, because a proper line is impracticably long, as well as sealed at its far end. Shortened lines vent into the room to bolster low frequencies. The 'reflex' transmission line is a further shortened version of this arrangement. The advantage is that bass response is flatter down to the cut-off point and no sacrifice to efficiency is made, TDL claim. The disadvantage is that where the RTL 3 reaches down to 35Hz, a similarly proportioned transmission line 'speaker could go down to 28Hz, say. However, the RTL 3s still go considerably lower in the bass than anything else at this price, yet they remain efficient enough to be driven by nearly any amplifier - an excellent compromise.

Two specially made 172mm polypropylene bass/mid units are used, each having centrally mounted phase plugs. These help extend frequency response smoothly up to the 3kHz crossover point, above which a 19mm fabric dome tweeter takes over. Both drivers are connected via heavy gauge, high quality cable to the simple, second order crossover. This uses high quality components and is separated for bass and treble arms to allow bi-wiring through chunky gold plated binding posts. The pair we received were finished in a rather smart black ash, but it wasn't real wood.

The TDLs were not quite as heavy as I'd expected them to be, but the panels used in the transmission line act as braces to give the cabinet a very rigid structure.

As suggested in the set-up instructions, placement is not particularly crucial. There's a lot of bass welly wherever you put them. I settled on a position about 2ft from my rear wall; in this position I found the bass had real slam and attack.

SOUND QUALITY

The bass of the TDLs was very good, and in many ways I preferred it to the more expensive full-transmission-line 'Studio' series which have a little too much bass for my taste. The RTL 3s displayed even and well controlled bass that went low and stayed tuneful almost all the time. A little box colouration was noticeable when a really strong fundamental played at high volume came through, but under most conditions this blemish was not obvious.

Although the TDLs do have, by far, the deepest bass of all the loudspeakers tested in this group, it remained balanced at all times. Even with The Beloved's Happiness album, with its strong electronic bass line and slightly recessed midband, the RTL 3s still managed to give a smooth and even performance without thickening in the bass. There was also plenty of punch in the lower mid to give the music speed and slam.

We found with the RTL 2s tested in the Dec '93 issue that their treble could become a little too strong. The addition of a second bass/mid unit in the '3s has increased midrange output, making for a better overall balance that came across as a more polite and refined sound. Still, the tweeter is not a particularly sweet and open-sounding device, but it didn't disgrace itself either. Even with The Breeders' 'Cannonball' from their Last Splash album the rather splashy cymbals failed to provoke the TDLs into displaying any unpleasant sharpness.

The midrange of the RTL 3s was clear, open and managed to create a large soundstage for musicians to play within. They weren't positioned with quite the same degree of accuracy that the Studio 100s could manage, but nonetheless, image detail and atmosphere were conveyed well enough for all but the most critical of listeners.

Radio 1's 'Live in Concert' recording of Lone Justice gave the TDLs something to chew on; they did so and spat out a large and powerful rock concert in response. Only on some of Maria McKee's more powerful vocals was a trace of chesty colouration made known. But this minor complaint paled into insignificance against the scale of the performance.

ERIC ON CLASSICAL

Notes below Middle C on solo piano were splendidly firm, detailed and crisp. On

Mussorgsky's 'Pictures', as on Mozart's Piano Concertos K466 and 491 played by Barenboim and the ECO, the piano, however, displayed a somewhat boxy mid-range.

Affecting brass, too, this afflicted the horns in Tafelmusik's Haydn with some near-cracked notes which certainly aren't. String tone was mostly pleasantly soft, with warm double-basses and a woody cello tone, but the authentic violins on this Sony 20-bit recording are more astringent.

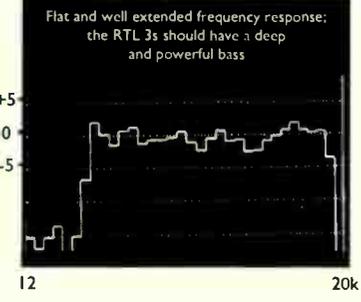
The RTL 3s produced a good sensation of depth and breadth - with ears on the tweeter axis! - the whole reminiscent of a concert-hall performance. Nothing wrong with that, but it did mean the TDLs opted out of some engineers' efforts at precision images, since all recordings were treated to this effect.

CONCLUSION

At only £400 the RTL 3s are superb value for money, offering a truly full-range presentation. They are not a loudspeaker for bass freaks, but they do accurately resolve low frequency content in music which many other loudspeakers fail to find. Possibly not quite subtle enough for demanding classical listeners, these speakers are everything the 'live Rock' fan could ask for.

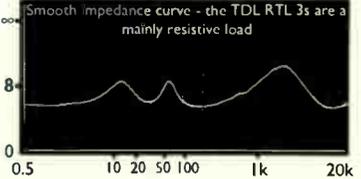
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Stands, Room Placement and Cables

Dominic Baker takes six steps to getting the best results from loudspeakers.

So, you made a decision and went for it: you take the new 'speakers out of their boxes, wire them up and press Play. Ugh! - they didn't sound like that in the shop's demo room. Don't despair. Buying them was only half the job, getting them to sing is the real art. Here are six steps that should help you set up your 'speakers and get the best from them.

1. Run them in. Most loudspeakers needed a good 24 hours to run in properly. The Spondors weren't really sounding at their best for a week though, so beware. Running a pair of loudspeakers in is easy; just put a CD on repeat or use the radio and leave them for at least 24 hours. You should be able to hear them become sweeter in the treble and freer in the midband and bass with time.

As a general rule 'speakers such as the Spondors with their stiff, thick, rubber drive unit surround will take longer to run in than those with a thin foam surround, like that of the ProAcs. It is best to run in the loudspeakers before any fine tuning with cables, stands and positioning is attempted, because they can change character so much that your initial set-up has to be revised.

2. Use 'speaker stands. If the loudspeakers are not floorstanders, or designed for bookshelves, they will need stands. A proper stand should hold them rigidly in relation to the floor. If the cabinet is allowed to move at all, its effect will be to cancel some of the information produced by the drive units. There is little point paying good money for a high quality loudspeaker and then compromising its performance in this area.

As a general rule, high mass stands add weight and authority to the bass end of a loudspeaker and open-frame types give a clearer and more open midband. There are plenty of heavyweights around to choose from, but you have to pay a lot to beat either Target's HJ15/3s or R2s for smaller 'speakers. The best open stands, by quite a margin in my opinion, are those supplied by either Heybrook or Epos. These are both four-leg stands with a wide footprint for stability. They don't have quite the same effect in the bass as a heavyweight, but they do amazing things with some loudspeakers. The increase in

detail and midrange clarity certainly made the ProAcs sing.

3. Positioning the loudspeakers. Most manufacturers provide a rough guide-line to positioning in their instructions, but a lot depends upon your listening room. Basically the walls of a room are used to reinforce bass output.

The technique is to start quite far out and move back towards the walls, increasing the amount of bass reinforcement. You should be able to find a position where the midband sounds clear and open and bass output is balanced in level. Obviously what 'balanced' means will depend upon individual listener's taste, but pushing them back into the corners too far will compromise the midband.

Most loudspeakers perform best toed in towards the listener, which helps fill out the centre image. However, some tweeters are designed to be listened to off-axis, the Tonigen ribbon and KEF's Uni-Q drive units being two such examples, and some are best listened to off-axis anyway! Chesky's Jazz Samplers are excellent tools for helping out here with their image, stage depth, width and LEDR test, which helps to locate objects within your room that may be responsible for reflections.

4. Use good cables. Loudspeaker cables have a large effect on the final performance of your system. A reasonable rule to follow is that around 10-15% of the cost of your 'speakers should be spent on cable. There are numerous cables to choose from, costing from a few pence up to a few hundred pounds per metre.

Light, stranded copper cables tend to be best suited to supplying the treble unit of a bi-wired system. The fine strands give a detailed and, providing the copper is high quality, smooth sound. Thicker stranded cables and solid core works best in the bass, where extra current handling capacity is needed. Silver plated copper and solid silver cables are an exception. These are good all-rounders, having the bulk required for current-hungry bass frequencies and the sweet smooth sound of silver for the treble.

For use with the four 'speakers tested I would recommend Ortofon SPK200 at £5/m as one of the most neutral sounding

and best value-for-money cables for bi-wiring. It uses very high purity (99.9999% pure) copper, with fine strands for the treble and thicker ones for the bass. It also comes terminated with excellent gold plated phono plugs.

If you prefer not to bother with bi-wiring, or your 'speakers don't allow it, try either Ortofon's slightly more expensive SPK300 (£7.50/m) or one of the many silver-plated copper cables around.

5. Run in the 'speaker cables. This may seem a strange thing to do, but many solid core cables take time to bed in. When the strands of a cable are twisted together the crystals that make up its structure are stressed. The gentle heating effect provided when music current passes through the cables relaxes the crystals and after a few days gives a smoother better focused sound. Obviously the effect varies greatly from cable to cable. Fine stranded copper will take less time to settle than a thick, solid core will.

6. Use the right amplifier. With transistor amps insufficient power can do more damage than having too much. A 20watt amplifier struggling to drive a pair of loudspeakers will be generating a lot of distortion. This heats up the voice coils of the treble units and may eventually cause damage.

However, when a loudspeaker is being over-driven by a clean, powerful amp, a sharp crack will often be heard as a warning to back off. Unfortunately, knowing this alarms users, some manufacturers make certain this useful form of warning cannot occur. Then the coil will overheat and may burn out.

With valve amplifiers it's a slightly different story. Valve amplifiers clip very softly and it is difficult to know when you are driving them too hard. But they do not tend to damage a loudspeaker as much as a transistor amp., being unable, for example, to blast d.c. through a 'speaker. With an average sensitivity loudspeaker (85dB) around 30-40watts minimum is best; 90dB is very sensitive and will need just 10watts minimum. Between this and 86dB, around 20watts is fine, but in all instances beware of thrashing the amplifier too hard - it won't do it any harm, but sound quality will suffer ●

ROCKY III

Eric Braithwaite enters the ring with Townshend's latest turntable, the Rock III and finds that it packs quite a punch.



Max Townshend told me some months ago that his new turntable was going to be more 'affordable' than the famous Rock Reference of a few years ago. In a flash of inspiration I started privately calling it the Arkansas. ('Little Rock?'). Alas, in reality it's simply Rock III.

To be accurate, this £799 motor unit - it is supplied without a lid or tonearm, though provision can be made for Linn-type arm, Regas or SMEs - is Son of Rock, out of Semic Sink. Anyone who has known either will see the resemblance. The base is a tray with three adjustable feet - like the Sink. Above is the main chassis of damped 3mm steel, isolated and suspended on a kind of pneumatic inner tube - like the Sink. Elite Rock reminiscences are invoked by the Townshend trough, a curved 'drinking trough' filled with viscous silicone fluid in which a spindle attached to an outrigger, bolted to the headshell sits. Townshend has long been an advocate of damping a tonearm at the headshell rather than the pivot end, and there are enough owners of Rocks and Rock References to support

the theory wholeheartedly.

If to some extent the original Rock involved a rethink on the ways a turntable functions, then using the Rock III also involves a spot of re-training. The trough is swung out, the LP placed on the platter, the clamp screwed down on the threaded spindle, the trough swung over the LP, the arm cued down onto the record. In practice this takes less time to do than describe, however fiddly it seems. If nothing else, it adds a little extra ritual to what Daniel Snaar of Micromega referred to as the 'ceremony' attendant on playing vinyl in an interview with *Hi-Fi World* a while ago.

The new Rock's fundamental ability is to trot, canter or gallop along with the music precisely as required. Its sheer rhythmical deftness is a joy to hear. It pulls off that rare high-end trick of announcing that musicians are playing together in perfect time. It has the knack of rounding

them out into three-dimensional beings, and is one of the best sources I know (including the few CD players and DACs that manage it) at reproducing

acoustic space in a recording. If you want a flavour of Abbey Road No. 1 Studio off an EMI recording, the Rock III fills the room with its signature. As they say, I've bin there, heard it.

It isn't just expansive studio space either, that the Rock III recreates in the living room. One of the fascinating aspects of the journey of rediscovery that attends all record playing on a top turntable, even in this jaded digital age, is to hear clearly the different acoustic in which solo instruments had been recorded. As with all good replay sources, however, this insight never detracts from the whole performance. The Rock holds music together as though it's been shrink-wrapped.

In some ways, its 'togetherness' is

disconcerting. At times, particularly with some Rock or Pop re-recordings, there appeared to be a degree of lateral spatial compression. This is not a turntable that is kind and forgiving to enhor half-baked mono-picks or squashed and compressed mixes. Stadium rock - like early U2 - sounds as though it's in a stadium, but P. J. Harvey's 'Rid of Me' sounded like AM radio, and I felt well rid of it after just a couple of tracks.

This first impression took a knock with classical orchestral recordings which burgeoned out into the room beyond the speakers in all possible directions. What the Rock is doing, in much the same way that the original did, is focusing individual images extremely tightly with oodles of air and space around them. The backing vocalists on Lou Reed's 'Walk on the Wild Side' simply strode right into the room, apparently bringing the studio ambience with them. This even transformed some of EMI's wobbler recordings, like the Dreyfus 'Alexander Nevsky'. Where on most turntables the chorus is fairly diffuse, the Rock III managed to separate the component voices in a surprisingly intelligible way.

Where it was a little hard to come to terms with was on Pollin's DG recording of Stravinsky's 'Trois Mouvements de l'Hexachord'. Rhythmically, the Townshend turntable kept up with Pollin's extraordinary density like an express train. The apparent physical scale of the piano was somewhat shrunken compared to what I'm used to hearing, but so precise was the image it was practically measurable. The surrounding acoustic was also extraordinarily holistic, stretching from the outer edges of each speaker, in

combination, the two are unnervingly liable to lead the unwary into suspecting an overly artificial constraint, but in all probability echoed the studio sound quite truthfully, if perhaps a bit too infatigably.

After a while, it dawned that many other turntables produce blurry images, or slightly exaggerated ones. Partly, this is responsible for the impression of rhythmical tautness and the feeling that the Rock III is incapable of missing a beat. Much of this lasting impression is reinforced by the sheer bass control.

“ The apparent physical scale of the piano was somewhat shrunken compared to what I'm used to hearing, but so precise was the image it was practically measurable. ”

where the chassis construction, damping and the trough are obviously playing a major part.

As far as I could see - or rather hear - there was no reason to doubt the Rock III could deliver bass notes down as far as they can be recorded. A rarely-used test record is a Decca SXL of Bach organ music - rarely used because some powerful low D's and E's tend to make me fear for the survival of my ESL-b's.

But there was strong evidence that this turntable was going to have no difficulty in reproducing bass notes down into the thirties (of Hertz) with perfect control. The upper end, however, was contained by comparison, but when this recording was made, Decca's Neumann lathe was much more confident at the lower frequency extremes than the upper ones, and the Rock simply refused to enhance the top end.

Cartridges, thanks to the trough, tracked like trains. They also glaringly display their own strengths and weaknesses: cheap and cheerful needles need not apply. I worked with a £115 Ortofon MC15 Super and a £480 Credo moving-coil from Switzerland as well as a somewhat world-weary Koetsu Black whose wear the Rock hid bare with distressing cruelty. Even with the budget Rega RB300 supplied with my turntable, all the virtues of the Rock kept coming through. The bass stayed firm and strong with - everyone says it, but it's true - CD-like clarity, the mid-range crisp, the rhythms fast, string tone sweet. I've heard it give other turntables in the same price bracket - with prior arms - more than a run for their money in these terms. But it does need to be approached without preconceptions. It rewrites some of the turntable-busting rules; it changes the way you listen to LPs, as well. ●

Townshend Rock III £799
Townshend Audio,
Tims Boatyard,
Timsway,
Staines,
Middx.
Tel: 0784 455866

TECHNICAL SNIPPETS

The inverted main bearing, derived from the Elite Rock and Rock Reference runs on a tungsten-carbide thrust pad and is cut with a spiral groove to carry the oil upwards.

No springs, sorbothane, or foam in the suspension. A 3mm steel plate forms the sub-chassis, damped with pads and standard-grade chipboard, floating on an inflated 'inner tube'. The Rock III is one of the most vibration-resistant turntables around, taking a very hefty belt even to marginally disturb the stylus. Future production models will have an indicator light next to the on/off switch, which will fail to light if the airbag needs re-inflating after a year or two. The bicycle pump is not supplied . . .

Speed-change is manual, requiring the precision-ground flat belt to be moved down to the lower step of the pulley,

positioned accessibly outside the rim of the platter. The main platter is cast and turned acrylic, which sits on an aluminium and brass sub-platter which carries the belt.



The motor is the 24-pole synchronous Airpak used by a number of other turntable manufacturers.

The other essential difference: the Townshend Trough. Originally cast metal, the new version looks much the same, but is moulded plastic. Filled to within a millimetre or two of the lip with silicone fluid, a spindle attached to an outrigger arm from the headshell applies damping as the stylus tracks the groove. This holds the arm firm and damps the arm/cartridge resonance, typically 10Hz. Intriguingly, my ESL-63s provided a convincing demonstration that this works, reproducing an impure violin from one turntable, and a notably purer one from the Rock III.

Levelling is provided through three adjustable feet and a built-in spirit level.

And the final part of the Rock vinyl ritual: a record clamp which screws quickly onto a threaded spindle.

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CLASS CONSCIOUSNESS

Temporarily adopting a Yorkshire accent, Eric Braithwaite 'ad a reet grand time wi' Sugden's new Class A integrated amp fray Heckmondwike.



To avoid accusations of partiality or favouritism towards all things Yorkshire, including the Sugden A21a amplifier reviewed here, please accept that I have become a naturalised Southerner for the duration of this review. Aw reet? Sorry: Okay, what?

At £639, plus an extra sixty if you want the optional plug-in moving-magnet or moving-coil disc stage, the A21a is a purler. Oops, wrong dialect; I mean it's jolly good. It's also jolly warm - but I mean in the heat its side fins give off, not tonally. For those who believe Class A equals warm and woolly sound, the A21a is an

invitation to take a running jump off Brighton pier. . . or what's left of it.

Oh, let's drop this southern stuff: it has more pitfalls than I bargained for! Suffice it to say you'd have to go a long way further than the end of Southport pier (and that is a long way, and the wrong county, but never mind) to find a Class A sound like this for under a grand: sharp, crisp, deep, tight, and with images you could cut out with a pair of scissors like the people who do silhouettes on the front, er, promenade. Or whatever they call it down here.

Heat was associated with the A21a in

more ways than one. Engrossed happily in John Scofield's *What We Do* album, I was roused from the last track by the neighbours to tell me a copious amount of smoke was issuing from my kitchen window. Pausing only to extinguish my dinner (Southern English; proper English, 'supper') I returned, my enthusiasm for the way the Sugden played jazz undampened.

Scofield tends to be a bit enthusiastic with the fuzzbox at times and the A21a rather ran away with his enthusiasm, the only time I felt the Sugden lost its grip, making his electric guitar spread laterally a

bit thickly and sounding somewhat confused and even messy. It had to be backed off more than I would have liked on a couple of tracks. But Levano's sax acquired that true brass-necked sound that even high-end amplifiers sometimes struggle with. Pan-potted across the soundstage though Bill Stewart's drumming is, all the individual elements were clean as shot silk, from snare drums to bass to paradiddles and stick-work. Percussion is so often problematic in sound reproduction: you hear 'drums', but the Sugden differentiates, saying 'snare', 'rimshot', 'brush'. Cymbals - but it's a minor quibble - had a very slight splashiness, some of the extended upper

transport and DAC with equal pleasure, revelling in an atmospheric sense of occasion.

The A21a glosses over some of the minutiae of an orchestral performance: violin texture, compared to the wonderful rasping brass and strongly resonant lower and 'darker' strings, is in absolute terms a bit on the thin side. While the amplifier produces a remarkable impression of forceful, effortless dynamics, reacting instantly to the demands of the score and conductor, one does wish sometimes that the upper strings would soar that extra little bit higher. But the overall orchestral texture is otherwise so real, tactile and vibrant, the strings bright and clean, this

with live DAT master recordings - jazz recorded in Holland and orchestras and choirs in the Concertgebouw in Amsterdam - and believe me, it shows. Whatever is played through the A21a is invested with flesh, blood and lungs. And where delicacy is called for in Lontano's recording of Villa-Lobos finely textured choral pieces, or the extraordinary and difficult textures of his Quatuor (flute, alto sax, celeste, harp and female voices, would you believe) it sorted them with aplomb.

The same vividness and clarity comes through with rock, as well. Midnight Oil's 'Drums of Thunder' rocketed into the room, grunge guitar positively smoking,



harmonics, I suspect, not having quite the same freedom of the rest.

There's nothing quite like a good tune, and the Sugden has a splendid feel for rhythm in a way that involves the viscera. A couple of hours of Mozart's Piano Concertos, topped up with Beethoven's Eighth had me singing along and batting my arms about like a demented orangutan. This is an amplifier that re-creates a musical performance without faltering over a beat and draws the listener in, so passing time becomes irrelevant. I switched between the Quad 67CD player and Sugden's own SDD-1 and SDA-1

small question mark is soon subsumed in the pleasure.

Both Sugden's digital and analogue designs are close cousins: they each have the knack of surrounding and interleaving an orchestra with space, air, and best of all, the illusion that live players are breathing, blowing and bowing naturally. Giuliani's guitar concertos on Philips had a naturalness of tone and enveloping acoustical space - let alone wonderfully vivacious guitar from Pepe Romero and rich orchestral tone - totally without the degree of artifice that says 'recording'.

Sugden's develop their electronics

fingers dripping broken nails and blood. I had to take a second look at my ESL-63s to check they were wearing spikes and not Doc Marten's. There was so much flexible muscle behind Soul Asylum, pace along with Gloria Estefan's 'Mi Tierra' with sparkling clean-cut instruments and, above all, powerful but mobile bass, I dropped any intellectual pretence and rocked happily. Wildly, even. It doesn't matter whether it's the kazoo at the beginning of The Goats' 'Do The Digs Dug' or Willie Nelson's vocals, performers and band members step out crisply and firmly into the room, leaving the speakers behind,

Kiss my Aura, Dora

Frank Zappa, '74



AURA VA100 EVOLUTION

For details and stockists of the AURA range of hi-fi 'phone 0903-750750

UK Distribution: B&W Loudspeakers (UK Sales) Ltd., Marlborough Road, Lancing, West Sussex, BN11 8TR

tuning the electronics invisible. Ragga, rap, balladry - it's all grist to the Class A mill. If love is a drug, the A21a's music-making is the equivalent of an illegal substance with a hell of a kick. You don't want to come down. Nirvana? Play 'em and you're in it.

Coming down, however, to mundane considerations, what the new Sugden offers for source-laden users is sufficient but slightly limiting. No tone controls, but volume and centrally-detented balance knobs, with a mono button which is good to see for old fogies who play mono recordings once in a while; a rotary source selector for four inputs (five if you have the phono version) and a tape deck with a monitor button.

Gold-plated sockets and binding posts finish it all off, with the fascia and metalwork thick-gauge and substantially built. I am glad to see the top plate secured with Allen bolts instead of the rattly metal tags on the cheaper amplifiers. The controls are more solid and firmer to the touch, too.

It all exudes quality, if not being the

last word in elegance: this amplifier won't make it into the Design Museum, but it feels better value for money than a good deal of the competition. What a pity the instruction manual looks as though it was done on a cheap duplicator though. Still, up there where the wind blows, they spend their pennies on the important things - like the sound and the metal.

Briefly, for those who have antique

“Whatever is played through the A21a is invested with flesh, blood and lungs”

wotsits that play round black things, Sugden's disc stage is well up to scratch, with a firm, tight soundstage and a very fluent - though tad more laid-back - sound. Mozart's Bassoon Concerto on vinyl had plenty of atmosphere, air, depth and a slightly contracted width by comparison, but excellent tonal balance, a very good orchestral picture, the same vividness, liveliness and ability to flow with the music that characterised the line.

inputs. Ditto with Robert Plant and others, too; a similar sharply etched detail to CD, crisp and brisk attack, fine, clear, accurate vocals. It was only lacking some of the remarkably strong (green) wellie that CD had on offer. It lacks sufficient gain for some high-output - well, not that high - moving-coils, but is extremely lucid and very quiet.

Yorkshiremen are a dour lot, what with the Wars of the Roses, Commonwealth cricket teams and the antics of a pair of Dukes of York not giving us (ahem, them) much to grin about. But the Sugden would

maintain a smile on the surliest face. Mankind cannot live on bread alone (especially if it's been flambéed by mistake) but the A21a staved off my hunger for anything but more music until well into the early hours. It must be twenty years or more since Sugden produced the first-ever Class A transistor amplifier; the A21a is a worthy successor. Neow then, ah reckon ah were a bit 'asty; can ah 'ave mi passport back? ●

MEASURED PERFORMANCE

Like most Class A amps, the A21a has limited output and should not be caned if it is to give its best. I measured 24watts per channel, a value that remains constant irrespective of whether one or both channels are loaded. It's an interesting feature of Class As that they have greater immunity to dynamic power supply loading than conventional amplifiers because, in effect, both channels are running flat out all the time. This amplifier consumed 84watts from the mains when idling; had the figure been less than 50watts it couldn't have been pure Class A.

Power fell to 14watts into 4ohms with a steady sine wave test signal (little like music), but current limiting occurred, or so it appeared. Consequently, I applied a tone burst signal to better simulate music. This showed the A21a gives 24watts into 8ohms and 36watts into 4ohms, if it clips only occasionally with music. Pushed into excessive clipping, it may well start to limit. However, I used this amplifier with Heybrook Sextets, which at 86dB are not especially efficient, and I did deliberately push it really hard at times; it never shut down or went funny on me. Yes, I did like its sound a lot; good Class As are excellent. I would describe this one as unusually crisp and clear, very 'solid' and with incredibly firm, controlled bass. It has a tight, forceful sound, but this will be more fully described elsewhere.

On CD, frequency response reached down low to 6Hz, allowing the A21a to reproduce subsonics. However, it is band limited at high frequencies, hitting just 31kHz (-1dB) at certain volume control positions. This meant that high frequency

output starts to roll off at 10kHz and is -0.5dB down at 20kHz. I did hear this initially in the amplifier's basic tonal balance, but it has such innately bright, clear and strongly-etched treble that after acclimatisation I became unaware of this.

Channel separation was good and hiss low, but at 1.5mV there was a little hum. This again is attributable to Class A working, the power supply reservoirs being heavily discharged all the time. A choke is the best answer, but at 1.5mV this hum won't be noticeable unless really efficient speakers (better than around 95dB) are used. All the same, an upper limit of 1mV hum output is still advisable.

Distortion was mainly second harmonic in nature, which is subjectively innocuous. It measured around 0.01% in the midband, rising to 0.03% at 10kHz. Distortion increased toward full output, reaching around 0.2% at -1dB below clipping. Run within its limits, the amplifier is a low distortion design.

Sugden have incorporated a warp filter into the disc stage, which rolls off bass below 30Hz (-1dB). An attenuation of -9dB or so at 10Hz is enough to be useful. Across the audio band, equalisation was accurate, staying well within 1dB limits. Sensitivity was fine at 3mV and overload high at 200mV. The input load measured 47kΩ with 220pF in parallel.

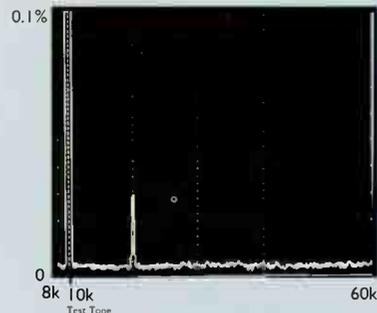
Noise measured -77dB and the equivalent input noise was 0.42μV, both low values. So the A21a is quiet on disc. Sugden have engineered the disc stages well.

The A21a is well designed, being correct right down to the finest details. It sounds pretty amazing too. **NK**

TEST RESULTS

Power	24watts
CD/tuner/aux.	
Frequency response	6Hz-31kHz
Separation	62dB
Noise	-93dB
Distortion	0.01%
Sensitivity	150mV
dc offset	4/5mV
Disc	
Frequency response	30Hz-30kHz
Separation	45dB
Noise	-77dB
Distortion	0.01%
Sensitivity	3mV
Overload	200mV
Input R/C	47k/200pF

Distortion



At 10kHz, just 0.03% distortion, second harmonic only.

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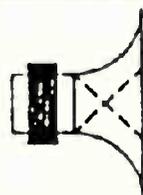
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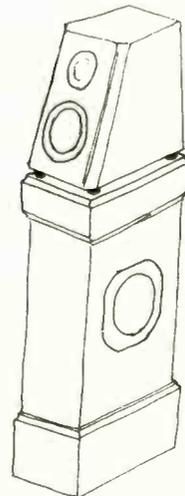
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GETTING THE BEST FROM CASSETTE

Noel Keywood, excited by the arrival of Sony's new £330 TC-K61 IS Dolby S deck, decides to look at the competitors it will have to face.

Quite what sort of recording medium you choose to buy depends very much upon your particular requirements. Here are my own very personal views and advice.

Most enthusiasts appear to treat cassette as a recording medium, understandably preferring LP or CD for quality replay. I have a reasonably large collection of commercially pre-recorded tapes that I play alongside CD and LP. They're bought mainly for Walkman use, but since they contain music I don't have on LP or CD, they get played seriously at home, on a Nakamichi ZX-9. This machine, and its more automated

metal tapes account for just 0.7% of the total tape market, with chrome taking about 26% and ferric the rest, it looks like chrome has it for representing

the upper end of the quality recording market.

With this in mind, here are three cassette decks aimed at that quality market. Sony's new TC-K61 IS offers Dolby S for an incredibly low £330. The Yamaha KX-650 with three heads and Play Trim represents one of the best £260 decks and the Nakamichi DR-2 is included as a 'control' at around



£500.

successor, the CR-7E, define what can be done with cassette and they are quite breathtaking in their sound.

Not everyone shares my enthusiasm for tape though. Most people, I believe, use cassette mainly for recording off radio, and for putting LP or CD on to tape for a car player or personal stereo. Their priority will be recording quality alone, and since



YAMAHA KX-650



The KX-650 hasn't got a powered door, nor slick feeling controls, but it does have a great range of useful features and, best of all, it's available at something of a bargain price: £260. For this you get a dual-capstan tape transport mechanism for good speed stability, three heads (record, replay and erase), variable bias for matching-in blank tapes and, unusually, Play Trim, used to banish dullness or the muffled sound that so commonly afflicts pre-recorded tapes.

That's a fine range of primary features and facilities, yet the KX-650 has a relatively uncluttered fascia and, even though the transport buttons are a little small, I found the deck easy to comprehend and use. To make tape handling easy Yamaha have fitted an interesting dual-speed fast wind ability in both forward and reverse, allowing the deck to go from fast local search to very fast end-to-end reeling.

Yamaha fit a long record level display that lights yellow up to 0VU and red above. But where Sony put 0VU peak record level high at the IEC tape flux, Yamaha place theirs no less than 5dB lower down at the traditional level of -3dB below Dolby flux. So recording to 0VU on the Yamaha results in a considerably hissier recording and in truth there is enough leeway to take recording levels right up +9 or so with good metal tapes.

Bias adjust works with all three tape types: ferrics, chromes and metals. The influence upon frequency response with metal tapes was small, but still enough to tune them in. The final frequency response of the KX-650 was very flat right up to 20kHz, even with ferrics, our tests showed, so it can deliver tonally balanced recordings with any tape brand or type.

SOUND QUALITY

Play Trim fulfilled its promise with pre-recorded tapes, livening dull recordings and taming a few that were too bright, from Madonna and John Fogerty to name two. I found that generally bass was light and lacked impact, but the midband and

treble regions were quite well handled, some top end muddle and loss of definition being obvious against my reference Nakamichi ZX-9. In spite of these effects though, the KX-650 proved better at handling pre-recorded tapes than most; it was able to banish their dullness, sharpening images in particular.

Recordings on TDK MA metal tape came over well. Taking music peaks up to +6 I could detect only a little background coarseness to vocals, some of that slightly harsh 'grey' colouration that typifies cassette, plus a slight loss of bass impact and power. Otherwise, with Dolby B the KX-650 made correctly balanced recordings on metal tape, with just a trace of background hiss being audible, but absolutely no hum or motor drone. This was a fine performance, musical dynamics coming across virtually unhindered.

TDK SA-X chrome tape turned in excellent results with Dolby B engaged. Recording to +3 on peaks, hiss was nearly inaudible from this extremely quiet chrome. However, chromes do tend to overload at frequency extremes when pushed a bit and I did notice some added 'politeness', due to rounding of treble and bass dynamics. I find classical benefits most from SA-X, the lush strings from Rachmaninov's Piano Concerto Opus No 3 sounding smooth and relatively free from graininess.

Some extra bass slam appeared with TDK AR ferric tape (+4 peaks), but at the expense of some treble muddle. Bias had to be backed off quite a lot to get this tape into correct tonal balance, but AR delivers a beautifully smooth, easy sound and is a fine general purpose tape. It worked well on the Yamaha.

CONCLUSION

At £260 Yamaha's KX-650 is the least expensive of the three, yet offers a fine balance of performance with facilities. It does well all-round, an ability that eludes most cassette decks. Most have one or two significant weaknesses; the KX-650 has only minor blemishes. It's worth auditioning.

MEASURED PERFORMANCE

Play Trim adjusts high frequency response in the replay amplifiers, like a treble control, but it is placed before Dolby expansion so that Dolby tracking is corrected too. With this emphasis on replay performance I was expecting the replay frequency response to be flatter than usual, perhaps up to Nakamichi standards. In fact, upper treble rolled off due to a small amount of head azimuth error.

For the price, however, the KX-650 was acceptable in its state of alignment and Play Trim proved man enough to correct the response error. This means that the KX-650 is able to play pre-recorded tapes unusually well by correcting their commonly dull sound.

Replay speed was a little fast at +0.8%, and hiss in the replay amplifiers 3dB higher than usual at -58dB, which may well be the reason Dolby C didn't quite give the -76dB Nakamichi get from it; the KX650 managed -74dB. None of these minor blemishes would unduly affect pre-recorded tapes though.

Although the KX-650 had small blemishes, at the price Yamaha offer a lot of performance, plus useful facilities. **NK**

TEST RESULTS

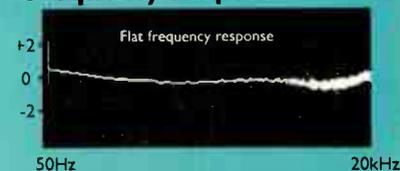
REPLAY (pre-recorded tapes)

Frequency response (-2dB)30Hz-8kHz	
Speed accuracy	+0.8%
Hiss (70uS, Dolby out)	-58dB

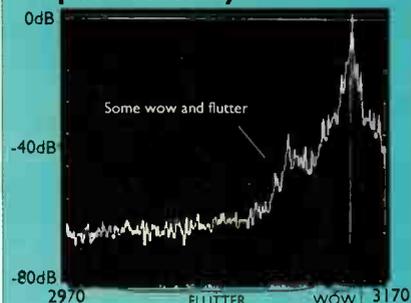
RECORDING (blank tapes)

Frequency response (IEC Primary Refs.)		
ferric (IECI)	11Hz-20kHz	
chrome (IECII)	11Hz-20kHz	
metal (IECIV)	11Hz-20kHz	
Separation (1kHz)		-57dB
Distortion (315Hz)		0.8%
Hiss (70uS, Dolby out)		-56dB
Speed variations (DIN total)		0.08%
Flutter energy (3-3.13kHz)		-28dB
MOL/SAT (IEC Refs)		315/10k
IEC I (ferric)		4dB/-10dB
IECII (chrome)		2.5dB/-6.5dB
IECIV (metal)		3.5dB/-1dB

Frequency Response



Speed Stability



SONY TC-K611S



We winkled this one out of a friendly hi-fi dealer. "They're selling as fast as we can get them in - and we can't get enough," he told us, "so don't damage it." One hour later I had our TC-K611S on the bench, top cover off and with a host of wires connected up; it was in for analysis, but not *post mortem*; this deck is very alive. It's rumoured to be a DCC spoiler, punted out by Sony at a silly price - £330 for a cassette deck equipped with every gadget possible, including Dolby S. Was it as hot as rumour would have it? Or are the eager hordes being deceived?

Comparison with a good three-head deck like the Denon DRM-710 puts the 611 in a different light. The Denon costs £260, yet it has a complex and expensive dual-capstan transport. Sony's TC-K611 would seem to have a plenty wide enough price differential (+£70) to pay for the inclusion of Dolby S and a powered door, since powered doors haven't commanded much of a price premium to date.

It's easy to use too. Even operation of the bias and rec. level calibration system on the fluorescent display was pretty self-evident. Tapes can be tuned in seconds and adjusting bias affects all three tape types equally, an unusual, but useful property; many decks will not tune in metals. A music search system detects silent gaps and worked well, even in reverse where these things often fail. The measured performance was good in most areas too.

SOUND QUALITY

Quality cassette decks are best used with good metal tapes. With TDK MA and bias at the median or 'zero' position I noticed some upper midrange emphasis from the '611, which gave a light and forward sound. With bias advanced (raised) to around 3 o'clock the tonal balance of recordings well matched that of the original. Using +5 as an absolute maximum for music peaks I found that hiss was inaudible with Dolby S and barely audible with Dolby B.

After some careful tuning of bias and

record level the TC-K611S produced some excellent recordings with TDK MA and Maxell Vertex (expensive), coming close at times to my own Nakamichi ZX-9 reference and the DR-2. The Naks were cleaner sounding and recorded +5dB higher, no less, but the Sony never seemed to get into trouble anywhere. It offers a natural tonal balance and recordings with fine dynamics.

It was with one of my favourite budget tapes, TDK AR, that the Sony excelled. Its combination of good head, high treble overload ceiling due to low-ish bias/Dolby HX Pro and Dolby S really transformed this quality ferric by largely eliminating the treble messiness and softness indicative of treble overload (Dolby S has an overload prevention system). Transients sounded strong and the music coherent; bass quality was well maintained too.

Performance with pre-recorded tapes was less impressive. Every one I played sounded dull and warm unless Dolby B was switched out. Whilst Sony have correctly adjusted head azimuth, in line with Dolby recommendations, they've got replay equalisation wrong, which is a bit silly considering Nakamichi showed Japanese industry how to get this parameter right a long time ago.

The single-capstan transport was just adequate to provide steady pitch with sustained piano notes. I did occasionally become aware of a slightly 'cracked' pitch on Ashkenazy's lightly held sustains, but not blatant slurring, wowing or pitch changing. There was a slight increase in tempo from raised speed, but I am not especially sensitive to absolute pitch. More trained ears could well object to the +1.4% speed error.

CONCLUSION

My conclusion is that the eager hordes are getting a bargain with the TC-K611. It has all the necessary gadgets, including the ability to match and tune in all tapes easily and quickly. It's easy to use and it delivers superb recordings with ferric, chrome or metal tapes. Only with pre-recordeds does it conspicuously bomb out - they sounded as muffled as ever.

MEASURED PERFORMANCE

Frequency response was flat-ish to 20kHz with ferric, chrome and metal tapes - a fine result. Our response analysis shows a small +1dB treble lift with metal (IEC IV Primary Reference Tape) with bias set at its centre 'median' position; it will add some brightness to recordings. The head has an especially level bass response too, reaching low - right down to 9Hz (-2dB). With whatever tape you use, the Sony gives a 20Hz-20kHz response within tight 1dB limits, which is a superb result.

Head overload levels were respectable. TDK MA gives +3 MOL315 in the midband and -2 at 10kHz. Since Sony have put 0VU high, right up at IEC 0dB flux, music peaks can be taken to around +4 on the record level indicator when using metal tape, but around +2 with ferrics and chromes.

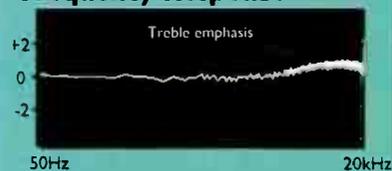
Overall, this deck measured well, except for its replay equalisation which should have been more accurate. **NK**

TEST RESULTS

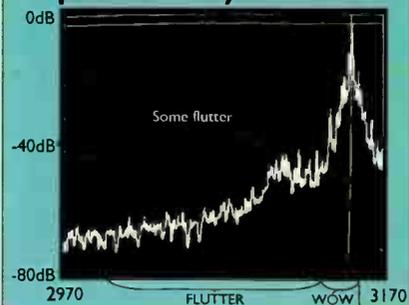
REPLAY (prerecorded tapes)
 Frequency response (-2dB) 30Hz-16kHz
 Speed accuracy +1.4%
 Hiss (70uS, Dolby out) -59dB

RECORDING (blank tapes)
 Frequency response (IEC Primary Refs.)
 ferric (IECI) 9Hz-20kHz
 chrome (IECII) 9Hz-20kHz
 metal (IECIV) 9Hz-20kHz
 Separation (1kHz) -51dB
 Distortion (315H) 1%
 Hiss (70uS, Dolby out) -56dB
 Speed variations (DIN total) 0.08%
 Flutter energy (3-3.13kHz) -29dB
 MOL/SAT (IEC Refs) 315/10k
 IEC I (ferric) 3dB/-6dB
 IECII (chrome) 1dB/-5dB
 IECIV (metal) 3dB/-2dB

Frequency Response



Speed Stability



NAKAMICHI DR-2



A Nakamichi is always a shock after other cassette decks - they seem a world removed, able to conjure up a sound from cassette that seems almost unreal by everyday standards.

There are good reasons: Nakamichi make their own discrete heads, rather than buy in standard Canon or TDK off-the-shelf types. Their design is specialised, possessing unique features like complex head location and adjustment mechanisms, a tape pressure lifter-pad to lessen modulation noise and special tape guidance.

SOUND QUALITY

My view is that Nakamichi magic really starts with their least expensive three-head, dual capstan, model which in the current range is the DR-2. I reviewed this model in our March '93 issue. The 'magic' is an uncanny ability to pull singers and instruments out of the somewhat flat and papery sound of cassette and put them out on to a credible stereo stage. I use a variety of badly duplicated, but musically enjoyable, cassettes to check for this ability, most of which are dull and can be unintelligible on poorly set up machines. Roy Orbison's *Mystery Girl* album is one, where Orbison's drawl combines with a muffled sound to make the lyrics difficult to follow. In pulling Orbison out of the usual wash of instrumentation, putting him centre stage and giving his image some body and his voice some clarity the DR-2 made Elvis Costello's cutting lyrics on *The Comedians* discernible; giving the song the exposure it deserves. Orbison handles the song well; it's a good counterbalance to the maudlin lyrics of some of his own compositions, and the DR-2 allows a listener to appreciate this.

John Fogerty's preoccupation with using the Southern weather as a metaphor for events came over well on 'Change in

the Weather', from *Eye of the Zombie*. This a pre-recorded cassette is too bright. Its treble possessed obvious spit on the DR-2, yet although the effect is unusual from cassette, it didn't detract from this machine's ability to get the singer and the lyrics out of the backing and into the open. Replaying pre-recorded tapes, the DR-2 makes sense where to others there is little, Sony's TC-K611S included.

Against the Sony TC-K611S, the DR-2 more than holds its own when recording, unless you judge recording quality mainly by hiss level. Using Maxell Vertex metal tape with Dolby B, the DR-2 gives a subtly enhanced sound, with extra low frequency body, yet it has the smoothest and most natural treble possible from cassette, plus a superbly open and well defined midband. Whilst the Sony, with its single-capstan transport and conventional head, couldn't reach the high overall standard of reproduction of the DR-2, it was quieter, due to Dolby S; the DR-2 exhibited a slight background hiss with Dolby B.

The Nakamichi, like the Sony, possesses a near-miraculous ability to raise a budget ferric tape, TDK AR, up to metal standard quality, banishing treble saturation (magnetic overload) and the muddle and smearing it produces. Bass distortion and overload also plummet to one-third that produced by other recorders, resulting in cleaner, stronger bass lines, something that is very noticeable with TDK AR, due to its enormously high low frequency saturation limit.

CONCLUSION

The DR-2 sets standards all round. It doesn't really have weaknesses, only strengths. My reacquaintance with it showed me what an impressive piece of engineering this recorder is and what a

MEASURED PERFORMANCE

The DR-2 hit +8.5dB record level on metal tape (TDK MA-XG), higher than any other cassette deck available by many dB. On ordinary metal tape, like TDK MA, it manages +6 and on ferrics and chromes +3.5dB - all these value higher than normal. The DR-2 makes exceptionally hiss free recordings as a result. Even budget ferrics like TDK AR sound like metal tape, because of the high treble overload value (SAT10k) of -4dB this deck achieves, without the aid of Dolby HX Pro.

Replay response measured flat to about 4kHz, then it dips just slightly (-0.5dB), before rising to peak by +2dB at 20kHz, something that ensures correct Dolby tracking and a bright, clear sound from prerecorded tapes.

The dual-capstan transport worked well, suppressing flutter successfully, and wow satisfactorily. The DR-2 is a Nakamichi through and through - which means different and better. **NK**

TEST RESULTS

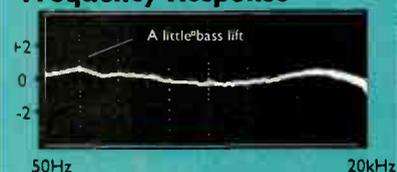
REPLAY (pre-recorded tapes)

Frequency response (-2dB)	50Hz-20kHz
Speed accuracy	+0.6%
Hiss (70uS, Dolby out)	-61dB

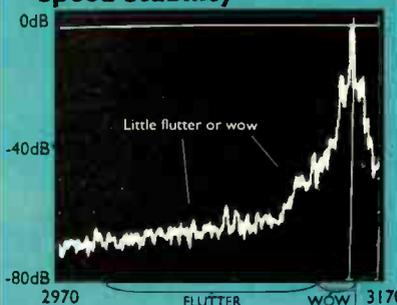
RECORDING (blank tapes)

Frequency response (IEC Primary Refs.)		
ferric	(IECI)	20Hz-20kHz
chrome	(IECII)	20Hz-20kHz
metal	(IECIV)	20Hz-20kHz
Separation	(1kHz)	50dB
Distortion	(315Hz)	0.3%
Hiss (70uS, Dolby out)		-56dB
Speed variations (DIN total)		0.08%
Flutter energy (3-3.13kHz)-32dB		
MOL/SAT	(IEC Refs)	315/10k
IEC I	(ferric)	3.5dB/-4dB
IECII	(chrome)	3.5dB/-5dB
IECIV	(metal)	6dB/-0.5dB

Frequency Response



Speed Stability



CONCLUSION

Is it best to buy a new-fangled digital DCC recorder, or a steam-driven cassette machine turbo'd by Dolby S? Or MiniDisc? Or nothing, in the hope that CD-R will be the answer? The situation has become complicated by the many options available.

Here are my own views, based on



using, testing and listening to cassettes for years, as well as testing and using DCC, MD and DAT. Unlike most audio journalists it seems, I actually enjoy listening to cassettes, mainly because I enjoy music on the move - in a train or plane.

Listening to recordings on Sony's TC-K61 IS Dolby S deck reminded me how decent cassette can be made to sound, but swapping over to my own Nakamichi ZX-9 reinforced the point that plenty more can be had from this medium. But what you choose may well depend upon your own priorities, as well as software costs, because they really can be the joker in the pack.

DIGITAL OR ANALOGUE?

Even though the cleverest part of Philips' Digital Compact Cassette (DCC) tape system is its low manufacturing costs, the music business has decided to slap a premium price of £14.99 onto pre-recorded. The same problem affects MD and will, I suspect, frighten away buyers. With a blank DCC (90mins) costing around £8 and a blank MD (74mins) around £10, both of these new media are expensive in software costs - and DAT is worse. There's no doubt that their sound quality is good, but user-friendliness is poor, due to the need for time-consuming and demanding tape compilation. Currently, neither DCC nor MD are doing well, and after the fitfulness and relative failure of DAT due to high prices, the outlook isn't good for the current crop of digital media.

Both the consumer electronics industry and the music business want to kill off cassette, because CD has shown them they can make more profit from less critical digital media. All the same, cassette

decks and blank tapes, which come from Japan, remain inexpensive at around the £1.49 - £3.30 (TDK MA) region. Pre-recorded cassettes come from the music business and now cost £8.99, which is steep, but overall cassette remains easy to use and cheaper than any other recording medium.

Dolby S encoded tapes are not yet common in the shops; I couldn't find any in Our Price or Virgin in fact, although our press releases tell us that a few classics from BMG are S-encoded these days. So cassette continues to suffer from poor pre-recorded sound quality, something both DCC and MD overcome.

CASSETTE

With so little interest in DCC, MD or DAT, it isn't surprising that Sony can sell all the TC-K61 Is they ship into Britain, since most people understandably treat cassette as a recording medium, preferring LP or CD for quality replay. Pre-recorded prices are not an issue to anyone just wanting to make home recordings. And the recording quality of the Sony deck was excellent, right up with that of a more expensive Nakamichi DR-2.

However, whether your priority is



making good recordings, or getting the best from commercially pre-recorded tapes, the replay characteristics of a tape recorder are important. You can only make compatible recordings, ones that will play properly on your car player for example, if certain critical replay parameters are absolutely right - and this is

where cassette becomes a very difficult technology, one that most manufacturers don't get right.

The solution is to buy a deck that is very carefully designed to replay pre-recorded tapes properly and make standard recordings that will transfer to other players. The Nakamichi DR-2 excels in this respect. Most recorders, including the £260 Yamaha KX-560 and the £330 Sony TC-K61 IS tested here have replay amplifiers that make pre-recorded tapes sound dull. You might say "so what, I never buy them". Trouble is, as a direct result of this, both recorders will make non-standard recordings that won't sound good on other players.

The Dolby S recordings the Sony TC-K61 IS put onto femc tape were impressive when replayed on the Sony, but few car players or personal stereos have S expansion systems. This is the difference between the £330 Sony and the Nakamichi. The Sony's recordings won't transfer as well, which may or may not bother you, depending upon what you want the machine for.

Yamaha's KX-650 might have been poorly adjusted at the factory, but it still remains an interesting possible choice of recorder, because it has Play Trim. It was a good all-rounder, but it lacks the sparkle of the Sony or Nakamichi.

To make a final choice, try and get a demo at a dealer's. Ask to hear these machines, armed with a good quality pre-recorded tape or two. Try EMI XDR tapes, since in my experience their general alignment and equalisation seems better than most.

In a nutshell Sony's TC-K61 IS is superb value for anyone wanting to make home recordings that will be replayed primarily on the Sony. If the recordings are to be transferred to other players, then the Nakamichi does better with Dolby B

and is, I feel, the better of the two. Yamaha's KX-650 is a budget deck of good value that recommends itself to those with a shallower pocket. It doesn't challenge either the Sony or the Nakamichi, but that is not to deny that it possesses a good balance of abilities, ones that may well appeal.

BACK TO THE FUTURE

"It's difficult keeping up with Audio Innovations . . . their amplifier range now totals 14 models."

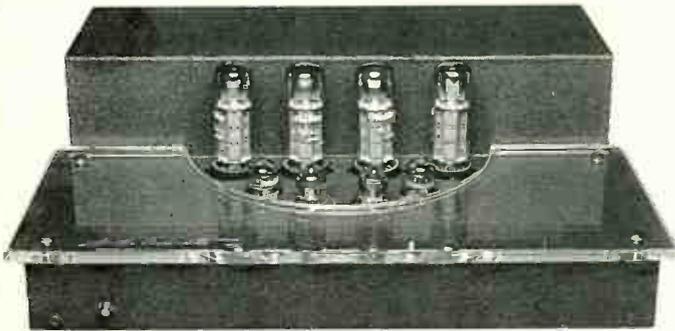
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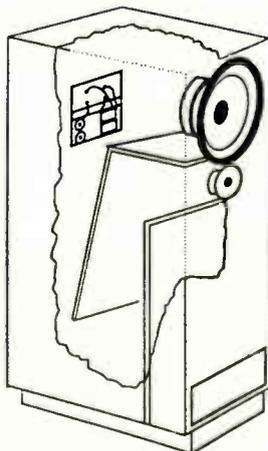
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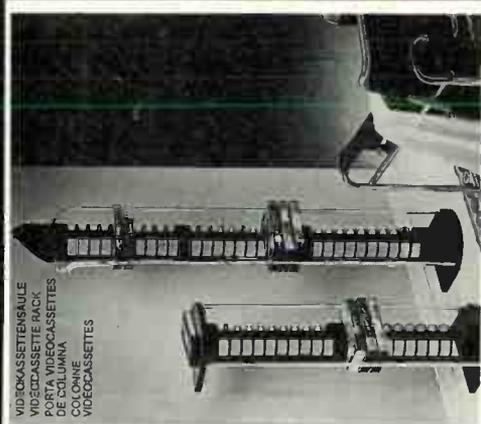
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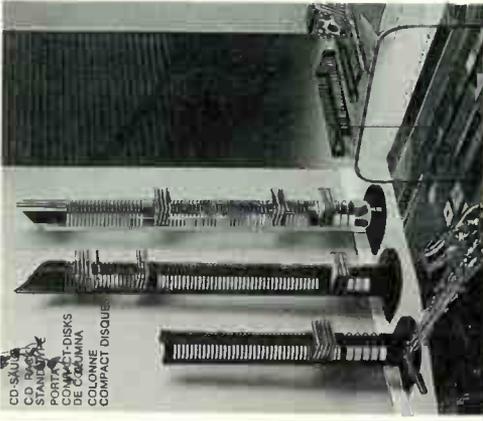


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World



SYSTEM TUNING

You and I are music lovers and hi-fi owners. However getting more music for your pound involves a different strategy if you live in a different part of the world. So it is, also, with technical problems.

I returned to Israel after an absence of five years with my hi-fi comprising Rotel RCD 965BX Linn LK1, Linn 280, Linn Sara 'speakers, Linn interconnects and cables. My pre-amp immediately developed a habit of losing the signal momentarily, not catastrophic, but annoying. A 'phone call to Linn in Scotland had them send me a PCB for me to replace. Trouble struck again. Linn happily obliged with another free PCB even though my pre-amp is over 4 years old with an expired guarantee, unfortunately Murphy's Law proved right again and in my desperation I wrote a letter to Mr Tiefenbrun complaining about my problem. Hey presto! Behind every cloud is a silver lining. I was sent a Dirak power supply (free again) to account

for the bad local mains.

Many thanks Linn for the wonderful service that puts customer satisfaction first. I wonder how many customers consider after-sales service when buying not inexpensive hi-fi.

Meanwhile my Rotel CD player was proving a bit anaemic musically and I decided to risk the Russ Andrews upgrade therapy. The parts cost me £80 approx. Fitting in Israel cost £120 (R. Andrews do it all for a cheap £120) the parts included Kimber Mains Kable, high quality power supply and analogue stage. I also decided to re-connect the main circuit board to the RCA socket using high quality Monitor PC cable (available locally). On top of the laser lens I installed a replaceable spatial filter which reduces jitter by reducing the lens aperture (Address: Laser Illusions Inc., 4504 Concorde Place, Lisle IL 60532 U.S.A. Enclose \$50 note with your order stating make of CD player).

A local dealer also

demonstrated the superiority of Audio Quest cables and interconnects, so I bought the Crystal speaker cable and the Emerald interconnect (the latter cost me £120 versus £180 in the U.K. He cut the Emerald and fitted special plugs to fit my Linn sockets (DIN Type) and I fitted the shorter lengths between CD player and pre-amp, and also pre to power.

At each stage I got an overall improvement and not a different sound. Singers now

pushed air through their lungs, removed their hands from their mouths and ceased shouting while performing. Musicians were given equal preference and interfered less with each other. They concentrated on playing their instruments clearly and cleanly, at their own pace and tempo. If one were to ask any of them what tune the other played, they could easily remember, so could I!

What is needed is a little

Letter of

RETURN VOLLEY

I've just bought my first copy of your magazine (Nov '92) and enjoyed your very different perspective on both equipment and enthusiasts.

As a 'Johnny-come-back' to hi-fi after a dormant period of some ten years, I note with some amusement - and chagrin - some of the equipment I owned in the 1970/80s (Gale 401As, Rogers valve amps, SME arms etc.) going in your classified columns for the same price I paid for them 20 years ago!

I also note with no amusement and total envy the sums your readers have for upgrades - in my formative days, you could have bought a top-end system for £2,000 - and it was the prospect of paying £300 plus for a turntable, when all I really wanted was a new ADC IOEIV

stylus, that made me sell the lot and buy a car, which brings me to the main point of my letter.

Most of us are searching for those marvellous "cheap upgrades" that can make major improvements for a modest outlay, yet very few dealers allow us to audition the vital extras that can deliver that superb combination.

There are a few exceptions; I bought a pair of Apollo speaker stands from a discount dealer (Richer Sounds) who actually advertise a "no audible improvement and we'll take them back" promise. Needless to say, I didn't take them back.

I found that when I wanted a digital link from a 'quality' dealer, I had to buy with no hope of return, even if I brought it back as new, in its resealable pack.

OK, it was only a

WIN HI-FI WORLD SILVER PLATED COPPER

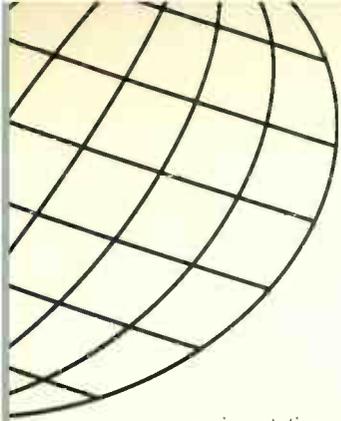
INTERCONNECT CABLES

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Nicolas Vassiliades
Israel.

DIY GADGETS

Your magazine comes as a welcome change to the mainstream, passive equipment review driven formats of others. Even the once more technically oriented publications have succumbed and

eliminated virtually all technical discussion articles. The space you devote to correspondence is able to offer a much broader view of subjective issues as well.

Although I find the concept of building your own an excellent way to achieve value for money, perhaps you might consider a number of smaller projects in your DIY supplement not generally covered in other 'practical' electronics magazines.

I am thinking here of

projects which would enable the performance of existing equipment to be maximised. For example cartridge demagnetisers, headphone amps, outboard power supplies for turntables, amps etc. and A/D converters.

A reply to a letter in the August issue on Townshend Audio's Rock Turntable invites my query in a similar vein. I have tried to find a suitable source of main bearing oil for my 1989 vintage Rock, but have had no response from

Townshend directly and my local dealer could only suggest 'light engine oil'. Can you help in supplying the manufacturers recommended type and grade?

I have been considering upgrading the crossover components of my 1984 Linn Kans (Mk1) for some time and your articles on such have prompted me to look again at a method of safely removing the drive unit(s) from the baffle. The commendable action of bonding the drivers in place with Silastic has me perplexed on how. Understandably Linn dealers are not too forthcoming with ideas. Any suggestions?

David Skinner
Ermington,
NSW,
Australia.

Our DIY projects are intended to appeal to as large an audience as possible, hence we have concentrated on amplifiers and 'speakers to date. We have talked about many smaller and simpler projects between us, but the interest and demand seems to be mainly for valve amplifiers and 'speakers at the moment.

If, for example, we did a DIY project upgrading the power supply of a particular amplifier or turntable, it would only appeal to those few who actually owned such equipment. The designs we do are not just knocked together, they take hours and hours of intensive engineering to ensure that they offer the very best performance for the price. So in some ways this time would be wasted if the end design only appealed to a minority. Your suggestion of a DIY DAC is one we have seriously discussed, and we

the Month

measly (!) £20, but with some interconnects costing £200-£300, there surely must be a case for seeing if the 'ultimate' interconnects are actually worth their money.

'Speaker cables are a prime example. They have to be cut to length to suit a particular layout when finally decided on, but why don't dealers have standard trial length packages to allow one type to be compared with another at home?

Your direct mail pages are full of tweeky bits - how can I decide between your own banana plugs and Michell's more expensive versions without trying? And if I buy the more expensive ones, have I wasted my money?

I've a multi-source system (CD, vinyl, cassette and tuner) so I'm a prime target for interconnect, mains cable and other types of non-hardware

improvements; but that very diversity makes interconnects a major investment, if I take your advice to upgrade. This is why the "try before you buy" approach is so welcome.

A final point: many of us older enthusiasts have to justify our expenditure to the boss; I'm fortunate in having a music teacher wife who can detect nuances in musicality that I'm trying desperately to describe, so my "cheap upgrades" (which have included equipment) have so far failed to cause a divorce.

Others are not so lucky - they need more help from the industry and yourselves.
Simon James Linton
Melton Mowbray,
Leicestershire.

I, like you, can see no reason why a hi-fi dealer should not lend out cables like any other piece of equipment on home

demonstration, especially if they do cost £200-£300. In fact, I am very surprised that the hi-fi dealer you purchased the interconnect from does not have such a policy. Nearly all reputable hi-fi dealers are more than happy to refund money spent on equipment as long as it is not damaged and there is a reasonable explanation for the return. After all, the hi-fi dealer knows that if he looks after you, the chances are you will come back to him next time you need some more equipment. And some manufacturers do provide their dealers with demo stock, bearing some of the cost in the process. Expect a deposit to be held as security.

I suggest that you either seek out an alternative dealer for future purchases or continue on with the one you have and hope that he is more understanding next time you meet. **DB**

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

continued on page 47...

AUDIO ILLUMINATIONS

Eric Braithwaite listens to a valve pre- and power-amp combination from Audio Innovations, and emerges glowing with pleasure.

For my part, I've no prejudices either way. I can butter a MOSFET for breakfast as happily as an EL34. In other words, I can live with the Audio Innovations LI valve line pre-amplifier and the 800 power amplifier as easily as a Michell Alecto or Conrad-Johnson Motif from the transistor stable.

Speaking of butter, a whole dairy farm wouldn't melt in the LI/800's mouth. It's synergy in action, and delectable at that. A full-cream mid-range, good churning bass and a treble sweet as buttermilk. All that, and exposed glowing EL34 valves on the 800 that make it look like Sellafield or Cap de la Hague at night. A pentode design, it offers an adequate 25watts with separate 4ohm and 8ohm taps for loudspeaker matching. The LI, with only a single ECC82 under its cage, is a bit of a glow-worm by comparison - if the room has any lights on, it takes close inspection to check it's working.

A line level pre-amplifier, so

on, volume and source selection. The whole is encased between four pillars, in Audio Innovation's now standard styling, and covered by a cage.

The 800 - perhaps it should be the 849 since that is what it costs in Royal Mint money - not only adds a couple of degrees to the central heating, but it warms up instruments in the lower register, like cellos, bassoons and double basses too. Not, mercifully, overmuch. Plucked strings down at the bottom end or *col legno* bowing are a delight to hear, not just from their tangible quality, but also because the bloom is far from overdone. Strings, woodwind and brass alike are extremely well-controlled. There is just a tinge of pink in the spectacles, but it doesn't distort the vision.

Vision, by the way, is what the LI pre-amplifier has a-plenty. At £299, this tiny affair is a show-

the equal of anything twice the price. Crisp sound, stable imagery, vivid and vivacious throughout. Decent depth, too, and with a splendidly spacious and broad soundstage. I had practically no reservations at all, apart from feeling that central images were a little over-expanded, and suspecting a degree of bitterness in violin tone. The LI is strong rhythmically; Rachmaninov's Symphonic Dances were, as they should be, more dance than symphony, with a spring-like step.

Alone - I'll come back to this later - the power amplifier is relatively less successful, but wire it to the pre and they work hand in glove. The silk lining, as it were, was provided by van den Hul's The Second carbon-fibre interconnect. It's a bit outrageous, costing nearly a quarter of the price of the power amplifier, but the better the cable, the better the synergy.

Between the two, there is a noticeable broadening of the soundstage, a graceful flow to the music and consistently delicate detail. Star



vinyl users will need a phono stage, the LI is fairly minimalist. Four inputs, including tape monitor, are crammed on to the back panel along with a toggle switch to change the output level to suit non-AI power amplifiers and an IEC mains socket. A second toggle switch grounds the chassis while decoupling the circuit ground, a neat device to avoid hum loops with an earthed power amplifier. Three controls on the front offer power

stealer. To check its claimed universality it was wired into a stereo Alecto and thence to ESL-63s. It was a revelation, confounding any prejudices about what you could expect for this price.

Listening to Panufnik's Violin Concerto first on Radio 3 and then on the CD, the quality of detail and downright smoothness of sound throughout was fully

performers here were Karajan's Berlin recording of Mozart's Great Mass in C minor K427 and the Boult/LPO recordings of Handel's Organ Concertos. The Berlin orchestra was grandiose, Handelian in scale (Beecham-Handelian, that is) lush in sound, broad in scope and splendidly atmospheric. Janet Perry and Barbara Hendrix could have done with a little more tonal colour and the top end could have had a little more power; there was a feeling that the shading and dynamic changes between piano and pianissimo or



on Pollini's piano above Middle C, for example, where the Argo pre-amplifier proved too revealing a partner for the 800.

Handel's Organ Concertos were both sweet and realistic, a degree of grittiness in violin tone excepted. The LPO plays like a

forte and mezzoforte were a bit beyond the 800, though grand climaxes were handled without stumbling. Dynamic headroom, however, does sound as though it's limited by comparison either with the EAR 834 or Copland designs. By comparison with the mid-range clarity, there is a trace of bass woolliness, but this is relative. My mental comparison for true-as-a-die squeaky-clean bass is the EAR 834 valve integrated, which is truly exceptional and weighs-in in the same price bracket as the Audio Innovations combination. A woodenness of tone and a degree of hollowness were perceptible

small Baroque ensemble in this recording, and the Audio Innovations setup had it down to a T. That's T for timing, T for timbre and T for the tapping noises coming from the pedals and air pump of the organ.

Timing with a big T made a wow of Bjork's 'Human Behaviour' - big and breezy, vocal well forward, maybe a fraction too far - and detailed. I still can't fathom more than ten per cent of the words, though the LI/800's mid-range crystal clarity brought out a few more. Since she lives in Maida Vale, could she stick 'em through the HFW letter box,

please? The Audio Innovations gear zipped with glee through New Order's 'Ruined in a Day' with a real up-beat vitality and crispness; it's a very nice little rocker. Even Jamiroquai sounded far less synthetic and more vivid than usual. The LI and 800 can very definitely be invited to the party. It has a beat in every watt and an attack that wouldn't disgrace a Heavy Metal fan with a motorbike chain. It splattered P J Harvey's 'M Bike' with graunchy grunge guitar, a smell of oil and a strong whiff of Hell's Angel jacket. One for the Nineties, this valve combination, all right.

More than simply a bread-and-butter valve combo, the LI and 800 come with jam - The Jam? - spread on both sides. At just over a grand it's well worth living on butties for a few weeks to save up for. But cut down on the butter to pay for some good cables ●

Audio Innovations LI pre-amp £299
Audio Innovations Series 800 power amp £849
Audio Components Ltd., Albany Court, Albany Road, Granby Industrial Estate, Weymouth, Dorset DT4 9TH. Tel: 0305 761017

MEASURED PERFORMANCE

The Series 800/III amplifier is a popular cost effective design that forms many people's introduction to valves. What you have to bear in mind is that valve amps are innately more expensive to make than solid state types, so although these units might look expensive, in the valve world they have to be viewed as budget designs.

Power output measured 24watts with one or both channels driven, due to Class A working, and the power amplifier moved smoothly into clipping, as only well designed valve amplifiers can. Distortion levels were not low, however, at low or high volumes, the saving grace being that at ordinary music levels second harmonic predominated. Since this is an innocuous sounding harmonic I wouldn't expect the 800/III to sound anything other than smooth when not playing too loud. However, it produced extended harmonics measuring 1.6% in total -1dB below maximum output (clipping), which for an EL34 design with feedback is on the high side. Whilst valve amps should not be expected to produce vanishing levels of distortion, neither must they veer too far the other way either, something the 800/III gets close to doing.

The output transformers just manage to swing full output at 40Hz, but they start

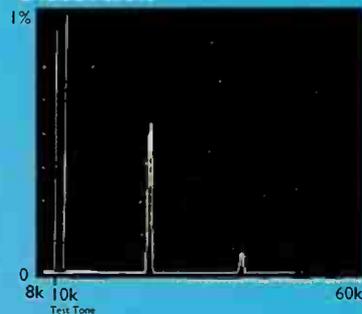
to flag below this frequency. It's an adequate performance, but still budget league. Audio Innovations do not include a low frequency filter, so subsonics will pass through and saturate the cores if an LP preamp that amplifies warp signals, like the Kinshaw tested in this issue, is used with it. Absence of a high pass filter allows the small-signal response to extend down to 6Hz; the high frequency limit is 30kHz (-1dB).

The power amp had some hiss on its output (-84/-88dB), but little hum. However, I would not expect either to be easily audible, except when close to the speakers, unless very sensitive loudspeakers are used (i.e. more than 90dB/watt). The preamp and power amp in combination were very sensitive, needing just 200mV for full output, or just 70mV with High output selected at the back of the preamp. This makes them capable of matching just about any source around, including a Troughline tuner.

In its measured performance the 800/III is satisfactory, but unexceptional. I would urge caution with LP, since the output transformers are not protected against warp signals. Otherwise, this combination works well enough, offering newcomers an affordable introduction to the valve sound. **NK**

Power	24watts
CD/tuner/aux.	
Frequency response	6Hz-30kHz
Separation	60dB
Noise	-86dB
Distortion	0.3%
Sensitivity	200mV
dc offset	none

Distortion



ORELLE ORISON



**Dominic Todd prays
silence for his
appreciation of
Orelle's new CD-10T
and DA-180 two-box
CD player.**

You might be forgiven for thinking that, with a name like Orelle, this particular company has to be French. In fact, it is a British firm that has, until now, kept a low profile in this country and tended to concentrate on exports.

The entry level CD-160 was tested in our December issue, and received a rather lukewarm review which, after listening to the player, I'd agree with. However, the two-box CD-10T and DA-180 combination tested here is a completely different kettle of fish; a real force to be reckoned with in the fifteen hundred pound sector. The price of £1400 is quite reasonable for a two-box player, especially when one considers the full and carefully chosen spec.

Central to the DA-180 DAC's performance is a rather unusual DA convertor. Rather than utilising one of the many Philips-based chipsets, as Orelle do in their cheaper models, an uncommon (and more expensive than usual) Analogue Devices AD1864N chip has been incorporated. This 18-bit device offers eight times over-sampling, and is used in conjunction with Yamaha and Toshiba chips that handle filtering and automatic switching between different sampling rates. Twin transformers (a

toroidal for the analogue circuitry and a cheaper frame type for the digital), are supplied. The circuit board has been well planned with much use being made of symmetrical board layout for even signal paths on both channels. Ceramic op-amps and a high quality double layered board also go to prove that much time and thought has gone into designing this DAC. Switching for two co-axial and one Toslink input from the front panel completes a competent spec. More's the pity then, that the DA-180 looks so ordinary. There's very little to actually criticise, except for the awkwardly recessed power button, but against competition from the likes of Micromega, Kinshaw and Select Systems' Dacula the styling is rather bland. Yet the finish isn't quite up to the understated looks of Quad and Linn equipment, either.

The sheer size of the CD-10T transport is the first thing to strike the user. It's big enough to dwarf many a VCR. This generosity is carried though to the large display panel, which in fact houses an LCD display only about a third the size. When the light is in the right place, one can see right through to the circuitry which is of dubious aesthetic value on a machine costing this much. The buttons are laid out neatly enough, but are rather flimsy in operation. The

whole effect reminds me of an upmarket version of NAD; even the matt grey front panel bears a certain resemblance. However, as with NAD, Orelle appear to spend money on what matters. Namely, the internal gubbins.

A Philips CDM-4 transport is a little disappointing at the price (although apparently it was chosen on performance rather than cost grounds). But pure silver internal wiring and a mechanically isolated PSU more than make up for this. The isolated Power Supply Unit is particularly interesting and consists of a transformer placed upon a suspension of foam and springs, and then grounded outside the casing via a sharp spike. Also supplied with the package is a high quality silver interconnect cable with decent phono plugs.

After a couple of hours' warming up, what first struck me about the combination was how like a good analogue system it sounded. The sound had true depth and a fluidity that was noticeable when comparing the Orelle with a Kinshaw and Dacula. In comparison, the two young upstarts sounded rather stilted; the music didn't seem to flow.

With Kate Bush's new album *The Red Shoes*, although the poor recording and mixing skills were shown up in the form of confusion and deliberate compression, there was a lack of 'glare' that has blighted many a multi-bit player in the past. Although vocals weren't quite as smooth and refined as the best one-bit machines, the Orelle never resorted to

grain and harshness in an attempt to extract detail. But fine detail wasn't glossed over in the quest for this natural and highly listenable sound. Playing the CD through a Lumley Stereo 70 amplifier and Ruark Broadsword 'speakers realised every nuance of Leonard Cohen's pitiful sighs and groans. You could almost hear him 'tighten up my gut'.

Yet you don't have to be plunged into the depths of depression by Leonard Cohen to appreciate the Orelle's sensitivity to music. On something more upbeat like 'The Invisible Man' from Elvis Costello's Punch The Clock album, the fluent qualities of the machine were evident once again. The lower frequencies were deep, sustained and satisfyingly punchy and rhythmical. The bass never made itself obvious by lagging ponderously behind the rest of the music, or by drowning out detail in the midrange. One complaint I had was that Costello's voice wasn't projected out of the mix quite as much as I'd like. This was especially disappointing after I'd heard the depth of soundstage that the Orelles are capable of with Cohen. Having said that, the rest of the instruments were well separated and contained within a broad soundstage.

The first track of Mary Black's Collection disc has a wonderful introduction where the bass unexpectedly reaches right down to shelf-rattling proportions for a brief

moment. On the wrong system it would go by unnoticed, yet with the right 'speakers and amplifier, a CD player like the Orelle really does show the listener how much more is obtainable from CD than lightweight (in build and sound quality) budget machines. It wasn't only the low frequency performance that impressed, either. Mary Black's vocals were smooth and beguiling, yet free from compression in the higher frequencies that can catch equipment out.

Certainly, many of the Orelles' competitors can match its performance thus far, but what made the CD-10 and DA180 special was their ability to really involve the listener. One got the impression, listening to Mary Black, that this is how the music sounded, unforced, natural and simply oozing atmosphere.

If there is a downside to the sonic side of things, then it would have to be with large scale classical music. Whilst being perfectly respectable, it comes as something of a disappointment that it is simply respectable and no more. Against certain one-bit and Crystal DAC-based machines, background noise was more noticeable on quiet passages, and when orchestral movements became especially complex, a slight confusion set in. Do bear in mind, though, that this is only when placed against a few highly revered machines that often are a good deal more expensive than the Orelle. The sound-stage width and depth, and the

sheer cohesion of the music still impressed.

By now you've probably guessed that I rather liked the Orelle, and you'd be right. I can't imagine anyone who purchases the machines being disappointed, unless they are a design freak or button reveller. What makes the Orelle's performance all the more satisfying is that it simply isn't expected from such a bland package using technology that isn't exactly at the cutting edge. It just goes to show that excellent results can be achieved through careful design and utilisation of existing technology.

If you're like me, still unconvinced of CD's domination over vinyl, then this is a player that goes some way to prove that, as with vinyl, there is more available from silver discs than we may have otherwise suspected. For this reason, the Orelles also act as a good diplomat, showing why not all CD players sound the same, and prove the old adage that you can't judge a book by its cover ●

Orelle CD-10T £799
Orelle DA-180 £599
Orelle Hi-Fi, Unit II, I-MEX House, 6 Wadsworth Road, Perivale, Middx. UB6 7JD
Tel: 081 810 9388

MEASURED PERFORMANCE

An obvious feature of Orelle's DA-180, at least in measured performance terms, is its rather odd looking frequency response. This is probably caused by the analogue filtering in the output stage, but it's not properly terminated electronically. However, because the trend is a downward one towards high frequencies, it should result in a warm and pleasant sound.

The Orelle does an especially fine job of converting analog signals using rapidly falling signal level. Interestingly, the 0.002% of distortion measured at -60dB is one of the lowest figures we've ever seen, but at -40dB it had risen to 0.92% - a poor figure. This limited dynamic range is a below-average 101dB, but since this is still 30dB or so better than vinyl, subjectively it is unlikely to be a problem in itself.

Separation was good, showing very little crosstalk between left and right channels, which suggests a sensible circuit layout. Noise was low, showing 100dB S/N there's no problem there either. One area that does slightly require some attention is the output level. The low 1.5V maximum gives the Orelle less volume than competitors' DAC's and may give the DA-180 an unfair disadvantage in the living room. Some DAC's give up to 1V more output, which will not only give their cir-

cuits a better signal-to-noise ratio, but also give a little more headroom - useful for positive line amplifiers.

The Orelle DA-180 measures reasonably well overall, and if not exceptional, it is at least competitive. The low output won't do them any favours, but this is hardly a fault. **DR**

TEST RESULTS

Frequency response: ±20.7% at 20kHz

Distortion %	0.002	0.002
-6dB	0.002	0.002
-30dB	0.032	0.041
-40dB	0.91	0.91
-50dB	15.2	15.2
-60dB	13.5	14.1

Separation dB	96	96
1kHz	106	106
20kHz	81	81

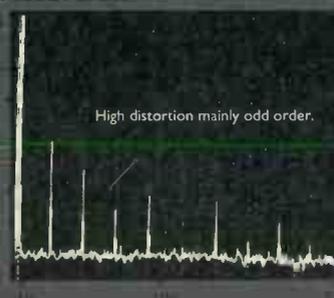
Noise	100dB	100dB
with amplification	100dB	100dB

Dynamic range	101dB	101dB
Output	1.5V	1.5V

Frequency Response



Distortion



**MAKE SURE YOUR SYSTEM
IS EVERYTHING IT COULD BE
WITH A FREE TRIAL AUDIOQUEST
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Face it...you probably already suspect that your cables aren't doing justice to your hi-fi system.

But, the problem is, how do you choose the right cables to bring out the best in your system? Especially when you have to go to a dealer and audition them on a different system and in a room with different acoustics from your own.

Now, there's an easier way. Those nice people at AudioQuest have come up with a solution that allows you to try out a whole host of their interconnect and speaker cables, in the comfort of your own home.

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What Hi-Fi? magazine's Trisha Mitchell-Vargas took up the challenge to see how much she could improve her system - without changing any of the components. She concluded: "It's like listening to different equipment. The improvement is enormous; the sound is more cohesive, more worthwhile." (What Hi-Fi?, October 1993.)

To make sure you're getting the best from your system, all you have to do is pop into your local participating dealer and borrow an AudioQuest Home Demonstration Kit for a few days. (As you'd expect, the dealer may need you to provide some form of security.) The Kit contains full instructions for a home audition. Then, sit back and listen to your favourite music using different combinations of the AudioQuest cables, to see which gets the most noticeable improvement in sound quality from your system. We believe you'll be so impressed that you'll rush straight back to your dealer and buy them!

Of course, you may find that your existing cables are perfectly adequate. In which case, simply return the Demonstration Kit to your dealer - there's no further obligation. At least then you'll be sure that the sound you're getting from your system is everything it could be.

To find out how, and where, to reserve your AudioQuest Home Demonstration Kit, telephone Arcam or write to Alasdair Patrick at the address below.

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 (0223) 440 964

Arcam, Pembroke Avenue, Waterbeach, Cambridge, CB5 9PB
Tel: (0223) 440 964. Fax: (0223) 863 384.

...continued from page 41

hope to have a project running later in '94.

As for the modification of Linn's Kans I spoke to Linn and they said that if you have had problems finding a Linn dealer who will carry out the modifications for you, try the Australian Distributor. You need to speak to -

Jim Tate
RPM Audio Imports
306 Unley Rd
Hyde Park
Adelaide
SA5061
Tel: 618 272 7922.

If he can't help, then Linn said that they could arrange for your Kans to be shipped back to Scotland, where they would carry out the modifications and test the 'speakers before returning them.

However, if you want to try and do the modification yourself, this is how to remove the drivers:

1. Remove the fixing bolts around the bass unit.
2. Tap slightly larger diameter bolts into the drive unit's fixing holes, just enough to get a good grip on the chassis.
3. Make sure that the tweeter and cabinet are well protected.
4. Use a pair of pliers or mole grips to pull the unit out. A little brute force is needed for this - but not too much. I would suggest that you pull firmly on each of the four fixings in turn until the drive unit starts to break away from the glue.

Obviously if you damage the 'speakers you will have to purchase a new bass unit, but if a little care is exercised there should be no problem.

Townshend tell us that their address change is the reason you probably have had no reply to your requests for oil. It is available ex-stock for £8.00, carriage to Australia being £9. Townshend also list Trough fluid, £8; Rock Belt, £12; Rock Reference belt £21; MkIII clamp (fits all Rock IIs)

£42 (all prices include VAT, which can be claimed back). Their address is -

Townshend Audio Ltd.,
Tim's Boatyard,
Timsway,
Staines,
Middlesex TW18 3JY
England.
Tel: (0784) 455866
Fax: (0784) 455044

Good luck! DB

SECOND OPINION

Early in the year I wrote to you asking your advice on an upgrade path for my Garrard 401/SME 3009/AKG P8ES combination (plus CD player recommendations). In the intervening period before your reply I had the opportunity of purchasing a 'mint' secondhand SME V arm which proved to be one of your recommendations, your reply however recommended scrapping the old AKG P8ES. Before using the arm I decided to get the unit checked out by SME and I made arrangements to take it to their service department in Steyning, and while talking to them asked their opinion of a short list of suitable cartridges.

Their reply was surprising in that some of their recommendations agreed with yours. However, their main comment was that I would be better to get in touch with a Mr Len Gregory of Croydon who specialised in rebuilding cartridges and in particular the AKG.

This I did and after spending an enjoyable couple of hours with Mr Gregory, talking and listening to records old and new, was very impressed with his products.

The end result is an exciting unit of 401/SMEV/re-built AKG supported on a Mana reference type wall shelf. The sound is very CD like in the best sense, i.e. very little background noise, great detail and depth of soundstage, but without the CD disadvantages.

I hope you will mention the efforts of Mr Gregory who I feel deserves great praise for his efforts, and the only point of disagreement with your recommendations would be the 'scrap the AKG' bit.

Many thanks again for your help and the enjoyment and information many of your readers get from a real unbiased hi-fi magazine.

**D H Lines
Benfleet,
Essex.**

I'm glad that you had such knowledgeable and helpful experiences - and that we were wrong! Our's was the minimum hassle route. We can recommend items offering the very best sound, like Tim de Paravicini's Troughline valve stereo decoder, for example, but the need for pilot tone phase alignment complicates matters horribly, meaning that although the item is one of the best, this may not coincide with your experience, whereupon we'll receive a stiff letter of complaint. Len "the cartridge

On setting it up, I was very disappointed to find an unacceptable level of rumble, or more accurately, mechanically-transmitted hum. The oscilloscope showed that most of the energy was at 50 and 100 Hz, whereas true rumble is mechanically generated and not necessarily related to mains frequency. The noise disappeared if the amplifier was switched to mono, indicating that it was due to vertical vibration. I would suspect that the Garrard was originally designed in the days of mono records and pickups which are insensitive to this.

A phone call to Garrard was not very helpful. I can't remember exactly what they said, but it did not solve the problem. After much fiddling about, I found more or less by accident that a weight near the pickup base reduced the noise. I melted some scrap lead in a tin, and screwed the resulting lump to the underside of the mounting board behind the pickup base. This reduced the nuisance to tolerable levels; it was now audible only between



The Garrard 401 - still going strong

man" has put a lot of effort into AKGs and as a result you doubtless have one of the best LP setups possible. NK

MORE RUMBLE

I was interested to read the piece in your October issue by Haden Boardman concerning rumble on the Garrard 401. Many years ago I purchased this turntable, with the SME plinth and the SME pickup arm, for what was then a very considerable sum of money.

tracks, or during exceptionally quiet passages of music.

I still have the same set-up, though with several changes of cartridge. As I am now getting long in the tooth, and increasingly cloth-eared due to presbycusis, I am sure it will see me out.

I was somewhat amused to read your DIY supplement. When I was much younger, the mainstay of the hi-fi world was

continued on page 53...



AFFAIR DEAL!

Noel Keywood and Simon Cooke are Intrigued by the 'Affairs' of Denon's new TU-580RD tuner, but is it really what they are looking for?

The wavebands are filling rapidly with new stations. Rajas from Willesden pounds out of our workshop at Nick, resident engineer, builds valve amplifiers. It's good reggae too; some of these stations may be small 'community' operations, but they can be a welcome alternative to standard fare. After all, don't Rankin, Miss P prove so popular that even the BBC ended up convinced and took her on?

Crowded air waves have placed an emphasis on tuners with plenty of presets. I filled twelve in an instant on NAD's wonderful new 402; Denon's new TU-580RD has no fewer than thirty that can be freely allocated to VHF/FM or to medium wave (no long wave). So it has plenty of room on board for storing myriads of stations.

It has plenty of other extras, including remote control for armchair station hopping and Radio Data System (RDS) for - well - messages. I've yet to discover the real value of RDS in a domestic receiver, partly because it isn't yet being fully utilised by radio stations, and partly because those that need it most use it least. Recognising Sunrise radio is more of a problem than Radio 1, yet the latter will inevitably identify itself on RDS, whilst the

former won't. Perhaps time will alter this. RDS certainly seems to have a lot to offer, even if its use does currently demand arcane knowledge of radio engineering jargon, such as Enhanced Other Networks, plus a sharp cultural understanding of the differences between Pop, Rock, Easy listening, Light and Serious, Classical and such like. There's a

“ Apart from that, the Denon coped admirably with the upper 'fast' bass and midrange frequencies, and extended its repertoire well into the treble. ”

minefield of jargon waiting to confuse and amuse us all here. I see a BBC brochure refers to Easy Listening as a PTY (Programme Type, you ninn!), but Denon don't list it. They do list MOR though, which is more than likely the same thing, our Japanese friends not realising this is a mildly disparaging term. For truly confusing categories, like Rave, Disco, World and Techno, the BBC engineers have given us two PTYs - Varied and Other. One that may interest Sun and News of the World readers is Affairs. Whose, we want to know?

Anyway, enough of RDS. Suffice it to say that when you are driving along with

your TU-580RD it will change stations automatically as you move into a new service area - that's providing you have a 240V car of course. When you are sitting at home with it, which is more likely, the handy remote control (widest range) which there's a wide range of stations, some of which are things with which it is unusual to see the least.

SOUND QUALITY

So there I was, sitting in my car, listening to the first line I heard - that's the Denon tuner on, and a sample of the 'BBC' button on the habitat of my TV set.

My first impression was that the display meant that I had changed to Affairs, but then I noticed the extended RDS tone. It's this kind of moment that puts a little humour into the day's listening. I was disappointed to find out - once the frisson of excitement had died - that I was actually

tuned to 'drama' in the form of the morning play on Radio 4, but that's life. The sound was very good all round, speech tones cutting cleanly out of the 'speakers', and even when they compressed into Evered's reality, the image stayed spaced exactly as it should have, with voices being generated from static points rather than moving across the stage as the tone changed.

The Denon was not quite in the 'tape hiss' category of tuner, however, where hiss on the studio recording can be plainly heard, but it was certainly capable of giving an adequate portrayal of the performance, especially with vocal tones.

Even Leslie Nielsen's curiously rounded tone was properly represented by the Denon, and a delight to hear away from the bustle of overrunning 'Naked Gun' or 'Police Squad' soundtracks.

The Denon was rather good with smaller musical arrangements, although the lack of bass - common with so many tuners - was a big disappointment with the selection of dance, rock and reggae on offer when I was listening. It can be really disheartening to hear a dirty, gutwrenching bass line reduced to the sort of muffled slap provided by just about every tuner available today, the Denon, unfortunately, included.

Apart from that, the Denon coped admirably with the 'fast' upper bass and midrange frequencies, and extended its repertoire well into the treble. It only fell down with high transients, such as triangles and smaller cymbals, which had a tendency to buzz, rather than ring. A commendable performance all round.

Larger works, on the other hand, gave the Denon quite a bit of trouble, as the stage became something of a vague wash of instrumentation. Time and again, with classical orchestral works, the separation of instruments left a lot to be desired, and this lack of definition caused the orchestras - especially the Berlin Philharmonic for some unknown reason - to sound as though they weren't interested in playing.

Returning to what the Denon does best, vocals and backing music, there's an advert for cars which 'spoofs' 'The Hitchhiker's Guide to the Galaxy' being broadcast on Capital at the moment. Since hearing this on my tuner at home, I've spent a while wondering whether the narrator really is Simon Jones - or somebody else - doing a bad impersonation of Simon Jones (as The Book). Here, the Denon - from first syllable to last - left me in no doubt. Whoever it is, it ain't Jones.

Overall, then, the Denon is an excellent tuner within its own limits, and if you don't ask too much more of a tuner than that it has a nice touch with rock and jazz, finesse and atmosphere with the spoken word, and a bit of reading matter on the display, this could well be the tuner for you. If you demand an imposing sweep of sound from Radio 3 or Classic FM, then I'm afraid you'll be disappointed. There are better tuners out there for orchestral music, but I don't know of any with RDS. If you want an RDS tuner, make sure you audition this one ●

Denon TU-580RD £219.99
Hayden Laboratories,
Chiltern Hill,
Chalfont St. Peter,
Bucks SL9 9UG.
Tel. 0753 888447

MEASURED PERFORMANCE

To date the RDS tuners I have measured have been hissy. Whether this is due to RDS directly, or more likely due to the need to make cost savings at the expense of performance to include it at all, I don't know. Whatever, Denon's TU-580RD reverses the trend by incorporating RDS whilst at the same time being quieter than the norm, with -75dB hiss level from a signal of 1.25mV or more from the aerial. That's low enough to mean tuner generated hiss will be inaudible in use, providing a good aerial is used. Perfectionists only then need note that a lot of material broadcast is taped and will hiss in any case. Live studio discussions usually reveal the truth though, as do news broadcasts.

Wide stereo channel separation and very low distortion were achieved, the distortion analysis showing that miniscule amounts of second and third harmonic predominated. Pilot tone (19kHz) and sub-carrier (38kHz) were very well suppressed, yet the filter affects audio frequency response little, as the response analysis shows. This reveals a flat characteristic right up to 16kHz, free from upward or downward trends, suggesting tonal neutrality.

Like so many modern tuners the Denon has selectable wide/narrow IF bandwidth. 'Wide' should give lowest distortion and widest channel separation, at the expense of selectivity (the ability to sort out stations). However, as usual, differences between Wide and Narrow were inconsequential in my view. These days, high selectivity (Narrow) doesn't compromise measured performance, so there's little apparent point in offering

Wide-IF. In truth, I suspect a truly wide-IF tuner (like a Leak Troughline) does possess sonic benefits, but then selectivity falls to 60dB or less, too low for Japanese engineers to accept I suspect. The Denon hits 70dB in Wide, but around 93dB in Narrow. In use, few people will notice any difference in performance between the two I suspect.

The signal strength indicator was similarly a little redundant. It has no fewer than eight sections, but they all light up when a gnat coughs, showing maximum with just eighty millionths of a volt, when a signal from the aerial fifteen times stronger than this is needed for best results.

However, perhaps with remote control and RDS, the TU-580RD has enough useful features not to really need more. Denon tuners usually manage to offer a high enough standard of sound quality to maintain a good and deserved reputation in the marketplace. This one measured well enough to be able to maintain it. **NK**

TUNER TEST RESULTS

Frequency response	5Hz-16kHz
Stereo separation	55dB
Distortion (50% mod.)	0.07%
Hiss (CCIR)	-75dB
Signal for minimum hiss	1.25mV
Selectivity (at 0.4MHz)	69/93dB
Sensitivity	
mono	1.6µV
stereo	20µV

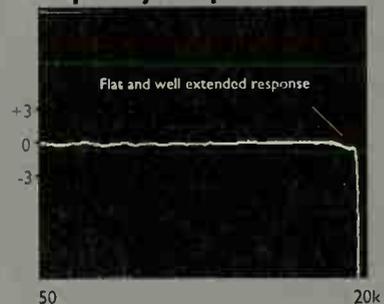
signal strength meter

LED No.	level (µV)
1	3
2	8
3	10
4	20
5	25
6	40
7	63
8	80

Distortion



Frequency Response



MARKETING TECHNICS

Simon Cooke takes a liking to Technics' latest budget SL-PG340A CD player, but has reservations about the facilities it provides.

It must be said that compact disc players around the £150 price point generally fail to inspire reviewers to the heights of rapture. Manufacturing costs are pared back to the minimum on these players, and it has a tendency to show in the reproduction of the music, which is often coarse and imitating, rather than easy on the ear.

Despite the necessity of low production costs, to keep the retail price acceptable and competitive, the Japanese hold fast to the belief that facilities sell hi-fi. Judging from their market presence, I have to admit that they must be right, and while the Technics SL-PG340A is not brim full of gadgetry - it doesn't even have a remote control - it isn't exactly a paragon of minimalism, either.

Technics tape deck is used, and if you have a separate Technics receiver, you can remote control the SL-PG340A CD player via that. Now ain't that grand?

Just bear with me a minute while I go over that again. This is a budget CD player, for which you need a Technics receiver to use a remote control that comes as standard with almost every other player on the market. So, effectively, that's a CD, tuner, and amplifier. Then, naturally, you'll buy their tape deck so that you can use all of those - useful, but surely not that useful - record functions and have a matching system. My, but that's got the lower end of the separates market sewn up, hasn't it?

To tell the truth, though, I was that cynical about this player before I'd heard

this machine was hiding real guts and muscle, but that it had chosen not to display it all, just yet.

Perhaps the strings did not quite have the detail and musicality of more expensive players, but the Technics certainly displayed more in this field than any similarly-priced player I know. There's a selection of sounds on the double bass CD which are made by bowing close to, or below, the bridge of the bass. More expensive players would have resolved enough information for the listener to identify the instrument from these un-basslike sounds, but the Technics could not. It still managed to resolve the actual mechanics of the bowing exceptionally well, however, and the weight and heft of the bass line left remarkably little to be



Apart from the usual CD facilities, such as random play, a numerical keypad to facilitate track access and a headphone socket with volume control, there are also facilities for editing onto tape; peak level search, tape length select (or you can key in your own time limit), auto fade at a selected time, and it will even store editing information for editing several CDs onto tape. More than that, the edit functions can be set to automatic when a

it, but I did wonder whether I was being unjust once I started listening. Want to know why? Read on.

Sitting down under a cloud of cynicism and despondency at Matsushita Corporation's marketing strategy, I put on a little esoteric double bass music, which suited my mood. The strings welled forwards out of the 'speakers and engulfed me in a sound which was big and easy, but not too full. I had a feeling that

desired. Bass drums also reproduced well, with a real slam.

Moving up into the midrange, the tones became even cleaner than they had been in the bass. All instruments and vocals were well produced, and although the overall impression was of a slightly over-hard presentation - like a four-minute egg - to quibble about this in a machine of this price would be churlish.

With the treble came a slight

compression and lack of sustain that could begin to irritate if you listen to a lot of, say, harp music or vocal mediaeval music. On the Tallis Scholars' 'Allegrì: Miserere', Stamp's highest 'treble' note failed to decay properly, as did the notes of Alan Stivell's Breton harp. Neither of these were

presented with quite the fullness of atmosphere and detail necessary to do them justice, but the Technics did not really fall so far short of the mark as to be disappointing. Treble transients, such as cymbals, were, after all, handled very well.

In fact, the Technics only really disappointed with its staging, which left quite a lot to be desired. Even with small groups, the Technics had difficulty spacing and positioning players, so that they had a tendency to overlap and move about the image, which was, at all times, flat and uninspiring. Orchestral works suffered

even more, reduced to a wash of instrumentation without even full differentiation of the parts of the

“The strings welled forwards out of the ‘speakers and engulfed me in a sound which was big and easy, but not too full. I had a feeling that this machine was hiding real guts and muscle, but that it had chosen not to display it all, just yet.”

orchestra, let alone the individual instruments.

All in all, a nice piece of equipment for the price. Okay, so I've grouched, quibbled, and grumbled about it (and I'll grumble a bit more later), but it really does its job admirably well within a few limitations, and I'd recommend it for any kind of music except orchestral, where the soundstaging disappoints. Given the quality of most recordings, the Technics' other peccadilloes simply are not worth mentioning: they'll only become a problem with very best quality cuts.

Time for that last grumble, as promised. There's no digital output on this player, and that makes it useless as a transport. That means that you have to buy a completely new player when you come to upgrade or even if you've fallen into that marketing trap that the boys from Matsushita have laid a whole new

system. That's one expensive upgrade, and it's this system philosophy, rather than the player itself, which actually prevents my recommending the SL-PG340A as a budget player. It sounds fine, but needs a different set of less system-orientated facilities to make it a really worthwhile hi-fi product. ●

Technics SL-PG340A £149.95
Panasonic (UK) Ltd.
Panasonic House,
Willoughby Road,

MEASURED PERFORMANCE

The SL-PG340A uses bitstream conversion to achieve low distortion at high signal levels on disc. However, as signal level went down, distortion rose, measuring 0.8% at -60dB, a relatively high value. Considering this is a budget player though, I couldn't be too critical about this. Down at really low levels (-90dB), distortion measured 30% or, with dither applied, around 5%, both values again being on the high side these days, albeit respectable enough for a budget machine. I have certainly measured a lot worse.

Frequency response varied slightly between the two channels, being flat on one and peaking slightly at high frequencies on the other (as shown in our response analysis). I would expect to hear just a slight sheen or possible brightness from this. Filtering was good though, suppressing aliasing products above 21kHz well, again if not down to the lowest levels achieved nowadays.

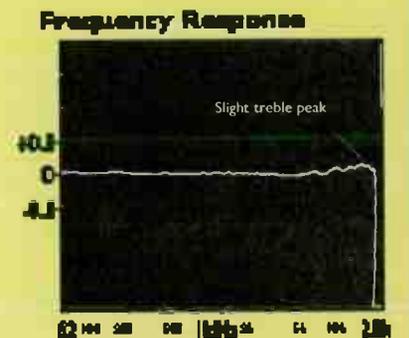
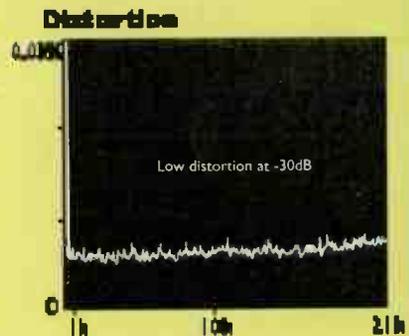
The '340A is a bit noisy, but again there are noisier machines around and at -103dB (IEC A weighted) the noise will not be audible, so there's no real concern here. Distortion and noise reduced dynamic range a little, measuring 104dB, against 110dB of the best machines around.

Channel separation was good and output healthy at 2.2V average, or +1dB up on Philips' recommended 2V.

The SL-PG340A puts up a respectable measured performance for a budget player of the price. It has no significant weaknesses, but understandably it doesn't match the best, nor some of the hotter budget Sony players around these days which measure unusually well. **NK**

TEST RESULTS

Frequency response	4Hz-21kHz	
Distortion %		
-6dB	0.005	0.005
-30dB	0.008	0.008
-60dB	0.83	0.83
-90dB	30	30
-90dB dithered	4.6	6
Separation dB	left	right
1kHz	108	111
20kHz	85	93
Noise	-103dB	
with emphasis	-103dB	
Dynamic range	104dB	
Output	2.2V	



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TDK TECHNICS

THORENS TOSHIBA

TRIPOD VAN DEN HUL

WADIA WHARFEDALE

...continued from page 47

home-built valve amplifiers, with heavy and lumpy transformers on metal chassis. (I still have a Williamson, tucked away in a cupboard.) Then came transistors, printed circuits, IC chips and plastic boxes. Now it seems that the latest thing is home-built valve amplifiers, with heavy and lumpy transformers on metal chassis. It seems the wheel has come full-circle. The main difference is the price. I would think £700 is a bit steep for an amplifier kit, even by 1993 standards.

**Derek. P. Winks
London.**

We do two power amplifier kits at the moment, the K588I at £395 and the 300B at £750. The 300B is not just a simple, conventional amplifier kit. It is a very special and original design using the best components to get the most from the 300B valve. There are various other 300B push-pull amplifiers on the market as fully built products, but I don't know of any that retail for less than £2000. And I would be surprised if the transformers they are using match the performance of ours.

Similarly a manufactured version of the K588I is not available even at twice the price. Our kits offer exceptionally good value for money and offer enthusiasts the chance to build an amplifier that they would otherwise never be able to afford. **DB**

Kits now and "then" (i.e. circa 1950/60s) are quite different in their philosophy, and in their manufacturing problems. When valve amps reigned, a kit was usually a cheap way of building what was commonplace. This is still the general perception of the role of a kit, but it doesn't apply to ours, nor Audio Innovation's.

Whilst the absence of labour charges makes our kits less expensive than built

product, the fact that they use the best components, sourced from what is now just a handful of manufacturers, inevitably pushes costs up. Try finding four 22µF polypropylene power supply smoothing capacitors in a commercial amplifier, for example. They were specially ordered and the batch took ten weeks to manufacture. Items of their quality, expense and specification were not, I can assure you, used in the past.

We see our kits mainly as an opportunity to build something that provides a lot of pleasure, both in the building and in the listening afterwards. Having spent our adult lives doing just this, we do it from our hearts. The gratifying thing is that others get as much enjoyment from it too - electric shocks and all! Quite what the magic is, even we're not sure, but since our DIY draws a strong response from around the world, it is pretty fundamental - and it sure as hell beats watching TV all night! **NK**

VINYL LOVERS' LAMENT

My friend and I who have been audio enthusiasts for 20 years wish to register our disappointment and not a little disgust regarding our visits to both the recent Hi-Fi Shows, Heathrow and Live '93. We both own Linn turntables, Naim amps & Rogers/Spendor 'speakers. We do not own CD players of which we are unimpressed, as we have been able to have for several days loans of players such as Naim, Meridian and Marantz. The main reason being that it was utterly impossible to become involved with the music compared with vinyl.

However, having been titivated by Hi-Fi magazines regarding valve amplification, our quest was to hear what they sounded like when fronted by a good turntable. We were aghast when we discovered only three turntables were on show, and

only one with valve amplification, which indeed sounded fine. Where were all the turntable specialists? Had they given up in the face of CD? And why did the amplifier and speaker specialists only play CD machines when a good turntable alongside would have shown them to their full potential? Indeed Naim didn't even have a Linn, stating that they now had nothing to do with them, anyway it would give them "too much hassle" to set up. What about their Aro arm or separate power supply? Were they rather afraid that the Linn would show up the shortcomings of their precious CD player? Even Linn appears to have given up. Their CD machine was sited on a rack with all their amps, and their LP's were sited on one side, on a wall shelf attached to a wooden wall (Wiv' the lid on!) It sounded awful! Eventually we came away utterly disillusioned. We felt that we had been swept under the carpet and totally ignored. In ending, we believe that Dominic Baker got it right in the October issue "Convenience now appears to rate higher than quality".

**L. J. Reed
Welling,
Kent.**

PS: When having a conversation with a staff member of a CD company (White T-Shirt logo an' all!) comparing CD and Vinyl, he was nodding his head in a rather bemused manner and when I had finished, he said: "Ah! but it doesn't have a repeat button!" Groan...

Quite a trek for you, but well worth it if you are into vinyl and valves, is the Chesterfield hi-fi show. The number of manufacturers is limited, this being a small specialist event, but the majority of systems are vinyl sourced. When I went up in mid April earlier this year there were turntables from Nottingham Analogue, Roksan, Origin Live, Avondale Audio, etc and valve

amps from Concordant, GT Audio, Groove Tubes, etc. The organisers promise that the '94 show will be even bigger, so it should be worth a visit. **DB**

BATTLE OF THE TAPES

There has been some discussion recently about cassette vs. DAT vs. DCC as recording media.

May I muddy the waters a little further, by telling you of a recent experiment?

I have tried recording some excerpts from CDs onto, firstly, true chrome tape using a good quality cassette deck with Dolby B type NR, and secondly, the same pieces onto the Hi-Fi VHS medium, using an appropriate grade of videotape.

I discovered, when I compared the recordings with the originals, that the VHS copies sounded "closer to the original" than the cassette copies; in particular, they were able to accommodate a greater dynamic range and gave a better rendition of the highest frequencies.

It seems that Hi-Fi VHS is rarely mentioned in magazines as a viable alternative to compact cassette, DAT or DCC. Have you any comment?

**David Smith
Bletchley,
Beds.**

I have also tried recording music onto videos, with similar initial success. But what I quickly discovered was that for the same money that a stereo video costs, you can go and buy a three head Nakamichi. This, when used with good chrome tapes, has far better bass depth, dynamics and a clearer treble.

I agree, however, that there is potential for video tape based machines to give superb subjective results, but I doubt if we will ever see hi-fi videos due to the inconvenient size of the tapes, they don't exactly lend themselves to personal stereos or in car audio do they? **DB**

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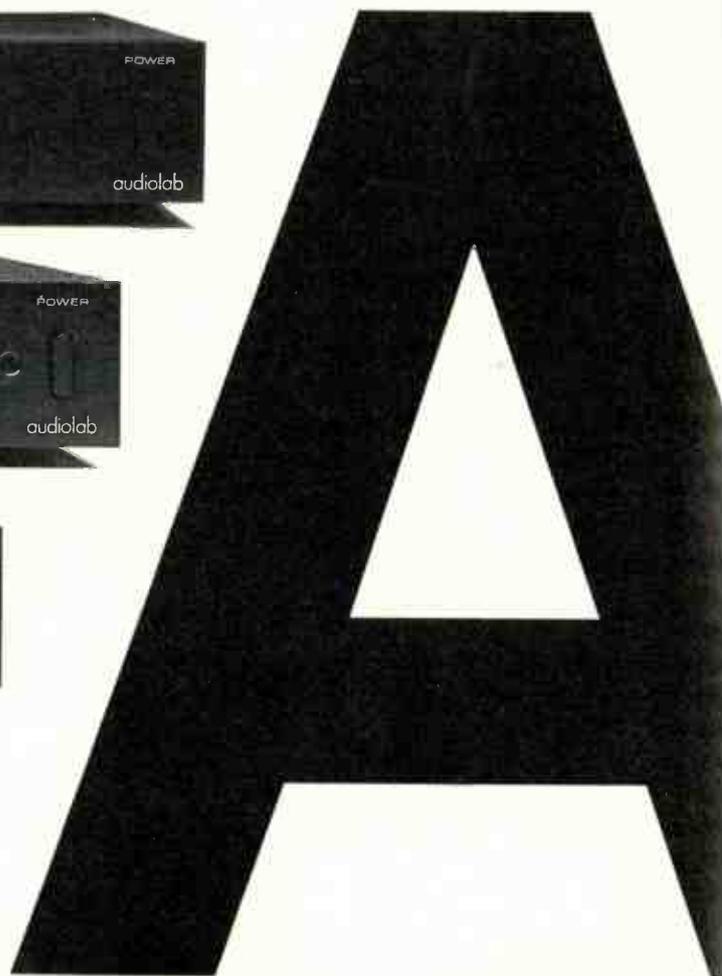
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World Radio History

My view has long been that conventional electrical measurements do not, except in one or two cases, correlate at all with our listening experience. Measurement is fine for telling whether something works, or to make it work, but it is pretty useless in saying how it will sound.

I'm in a fairly unique position here because, for a living, I measure and listen to hi-fi products all day long. This has been going on for some time now and all I have learnt is that there is something - something big - eluding me on this subject. How can it be that among amplifiers which distort, some sound awful, whilst others sound superb? How is it we apparently can't easily hear large speaker frequency response aberrations, but we certainly can detect minute ones in CD players? Why is it that loudspeakers that should, according to theory, image well, may not, whilst others that look all wrong in their design, image well? In audio, nothing quite seems to fit conventional theory, something that is deeply puzzling. It also suggests that conventional theory is very wrong or, more accurately, inappropriate. Linear electrical measurements do not assess or describe sound quality.

Over the last few years in particular I have come to the view that the brain and ear rely on clues, or triggers, more than on progressive effects and that the sounds that stimulate it are often deeply complex. Here's one of my favourite examples.

Testing a pickup cartridge, watching its distortion behaviour on a high speed digital analyser and listening to the test tone, I note that as recorded level on a disc rises, so does distortion - to many percent. Yet the tone I am listening to remains a tone, fairly clean except for some slight change in timbral quality. Suddenly, the cartridge starts to mistrack. My ear/brain hears something entirely different - not a tone, but a buzz. This to me, is a different sound altogether, yet the analyser

shows that whilst the harmonics are jumping up and down more, there hasn't apparently been an equivalently large change in distortion.

The answer here lies, I believe, in the fact that I am not hearing the distortion, so much as the modulation of the distortion, something quite different. If this is the case, then we need to be measuring not the steady state harmonic distortion produced by hi-fi products, but the way it is modulated by music signals. Or perhaps it is the way distortion products change with level



Reflections from Noel Keywood kaleidoscope

that matters, rather than their strength or constitution at any one level.

That's one small, simple example of the poor correlation between measurement and perceived sound. Now on to some fascinating features of aural perception that Sensaura and OM 3D exploit to achieve the most amazing perceived effects. Let's take inter-aural crosstalk. When sound is directed straight at one ear, the head effectively shields the other, reducing level by around 20dB into the far ear. There is a phase change too, at high frequencies. We perceive direction by both phase and amplitude differences between ears, so source position can be steered by altering both amplitude and phase. By feeding quite complex cancellation signals into one speaker, the sound from the other can apparently be moved out and right around to extreme left or right. Clever huh?

But consider another implication of this, one I have long been aware of simply from observation in listening tests. Stereo channel crosstalk values any greater than 25dB are

unnecessary and poor separation actually improves the solidity of the central image, which we perceive generally as a strengthening of reality. So a bad pickup cartridge with 15dB channel separation produces better stereo (i.e. more solid images) than CD with 80dB separation. That's the best example of all to show how conventional specifications and our current gross misunderstanding of cognitive processes not only worsen apparent sound quality, but may also result in absurdly expensive over-engineering. If, when Philips were devising CD, they had set channel separation at 25dB, another more important parameter might have been optimised.

Both Richard Brice and Dr Alastair Sibbald spoke interestingly of the 3kHz dip in our forward hearing. I have often noticed that loudspeakers with an impressive ability to project a sound stage forward, out of the box, commonly have a response lift in this region. I'd imagined that a little brightness just made the sound 'forward' as it were. However, Richard Brice suggested it was more likely that such a peak may well

defeat our ability to locate a sound, so subjectively eliminating the speaker as an apparent source. The sound therefore becomes detached from its true source - a fascinating way of seeing the phenomenon.

And there's more. Richard Brice explained that their OM 3D system can produce sounds behind a listener. This surely is magic? To an engineer it is. An engineer will analyse, from measurement, and a standard amplitude/phase model of the conditions and attempt to repeat them through signal processing.

This, Richard Brice told me, has been done and it works - until you move your head. Then you immediately realise, because head movement wrecks the necessary phase relationships, that the sound is coming from in front, not from behind.

Now for another fascinating and equally surprising fact. We rely on our shoulders to work out the height of a sound! As a sound source rises, reflections from the shoulders to the ears change phase relative to direct sound. The brain instantly assesses azimuth from this, Dr Alastair Sibbald told me. So whilst your stereo loudspeakers remain firmly planted on the floor, sound from them can be made to appear to rise upward; EMI have a helicopter recording to prove it.

The arrival of Sensaura will, I hope, cause the whole hi-fi industry to question what it is trying to achieve. In future we may be faced with some surprising developments based on this new understanding. I just hope the cheap transistor amplifier that sounds like a valve amplifier isn't one of them ●

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IN THE MARCH ISSUE

Planting daffs in the garden and perhaps an aerial on the roof will have to wait, until the snow has cleared. In the depths of winter Hi-Fi World's March issue looks at less strenuous matters.

DPA TEN TWENTY FOUR DAC

Aiming at the peak in digital convertors, DPA have abandoned chipsets, instead designing their own digital convertor. The first ever review of this radical new, gold plated, copper clad CD convertor will appear in our March issue. Don't miss it!

BATTERY POWERED DA CAPO CONVERTOR

Britain's other amazing CD convertor, the Pink Triangle Da Capo, now with added battery power and a host of special, plug-in filters. We look at one of the strongest performers in the market, to see whether the new additions keep it at the top.

HEYBROOK INTEGRA

Not averse to scaling lofty peaks in sound quality, Heybrook have another stab at the amplifier market with the new Integra. Will it bring them the same success as their loudspeakers?

BUDGET MOVING COIL CARTRIDGES

Is it worth upgrading to an inexpensive moving coil cartridge, one that won't whip up some chilly financial winds? We measure and listen to interesting designs from Glanz, Denon, Goldring and Ortofon.

NAD 602 CASSETTE DECK

NAD demonstrate their skills and ingenuity on a new cassette deck - the 602. Fitted with Play Trim, we test this new model thoroughly to see whether NAD can climb past the Japanese when it comes to cassette.

B&W620I

A new floorstanding loudspeaker from B&W that keeps to the lower slopes in its price, but tries to rise above rivals in other areas. Giving 90.5dB for just 1watt when we tested it, will the 620i be our choice for high quality low power amps, like the Sugden A21a reviewed in this issue?

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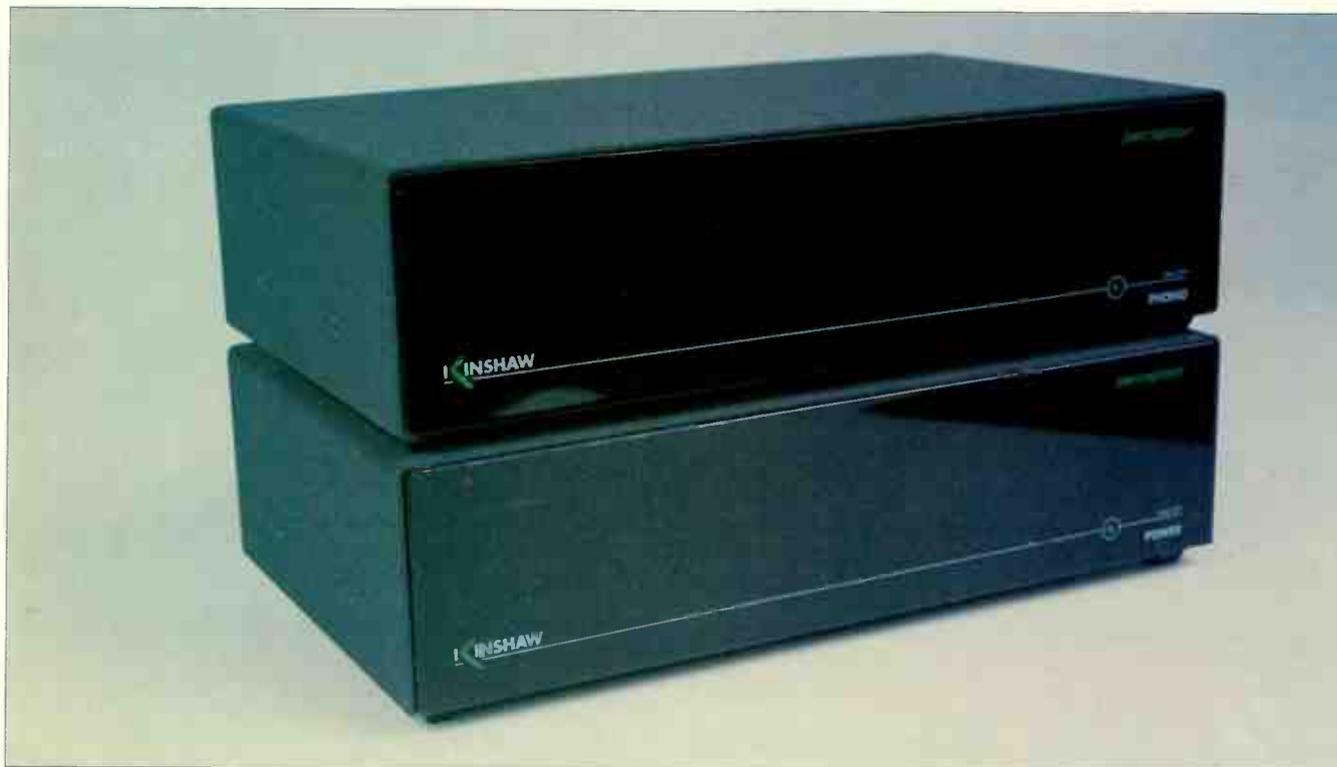
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KINSHAW PHONO CENTRE



An enthusiast's phono stage that's worthy of trading in the spotlight centre stage, reckons Dominic Todd.

I must admit that I was a little dubious when I heard that the Kinshaw Phono Centre was the product of a frustrated enthusiast. Home-designed products can often be well, a little hit or miss, shall we say. A design that proved a success in prototype form may well be found simply uneconomical to manufacture or greatly impaired once mass produced. Yet once in a while, a product like the Kinshaw PC comes along that does not simply compete with the major manufacturers, but raises the stakes.

Electronics engineer Peter Hawkins considers that there is a gaping hole in the market for a phono stage that offers truly low level background noise. Not content with making do or modifying an existing phono stage, he designed and built his own from scratch. It's to the credit of Hawkins' friends and the professionals consulted that a manufactured version made it on to the market. Without encouragement it could still have been the sole preserve of one man. Swapping my own home-built

phono amp for the Kinshaw I set out to see what all the fuss has been about, and what makes the PC so special.

The slick, yet understated boxes give nothing away. The phono stage and outboard power supply, now occupy narrow 'Naim width' cases that consist of a black acrylic front with a grey powder-coated steel wrap. Subtle green and white logos set the design off to create a classy and unobtrusive product.

What makes the Kinshaw special, though, is what's inside. The component standard is of a high quality throughout, which no doubt plays a large part in keeping noise to a minimum. The power supply shows intelligent design too. A toroidal transformer is fed via a mains filter, and the ripple free design also makes use of a RF filtered output for further noise reduction. Gold phono sockets and good quality, thick cable (especially the insulated mains cable which is as thick as a finger) neatly finish off a well thought out and professional design.

The selectable cartridge impedance

adjustment (on MC and MM), really appealed to me. One of the downfalls of phono stages such as the Michell Iso, is that not only are you restricted to Moving Coil, but impedance is now factory set to suit a specific cartridge. Fine when you first buy the amp, but not so convenient should you decide to upgrade or change cartridge brands in the future.

To call the 'Kinshaw dynamic' would be the understatement of the year. Half way through Sting's 'An Englishman in New York', the bass takes a break only to be replaced by drummer, Manu Katche, beating the drum kit to within an inch of its life. This particular section had a similar effect on my Celestion SL600s, whose woofer cones seemed close to leaping out of their cages. Quite a feat for a speaker of such a low sensitivity, driven by nothing more exotic than a Pioneer A-400.

The point is, that the Kinshaw's performance was so impressive that it had the effect of making the A-400 sound like over £1000's worth of esoteric kit. Rather than simply listening

to a new phono stage, it was like listening to a whole new amplifier. Dynamics weren't the only part of the music to flourish either. The PC had incredible depth. Depth that you only normally get from four-figure CD players. In short, I've never heard a mid-priced phono stage go so low and yet remain controlled and articulate.

Fleetwood Mac's 'Rumours' proved similarly dynamic and punchy, but by the same token, it wasn't quite as smooth as I was expecting. A slight harshness crept in on the vocals, and female vocals in particular seemed slightly recessed towards the rear of the soundstage. Having said that, this is being super-critical, and is only really made noticeable by the sheer depth given to lower frequencies. This was also offset by the introduction of 'The Chain' with its vivid strumming banjo and excellent definition and attack on drums. Again, the lack of background noise meant that just the right sense of tension could be created from the quiet 'BBC Grand Prix' section with its solo bass guitar.

In the light of such an involving performance, the soundstage fell a little flat. Imaging between the 'speakers was fine, presenting a stable rendition, yet little a lot came from the extremities of the soundstage. Although this is hardly a serious flaw, it does come as something of a disappointment when the rest of the sound proved to be of a first class

standard. Once again though, it's something one actually has to listen for, and in the context of simply listening for pleasure it went almost unnoticed.

With Acoustic Alchemy's 'Red Dust and Spanish Lace', a trace of harshness and forwardness came through. On the plus side, the sound was fast, lively, and rhythmical, the Kinshaw portraying instruments as though they were live in

"I found the Kinshaw phono stage a revelation."

the room. The instruments didn't have quite as much space as I'd have liked, but the guitar and bass were bubbling with such life and vibrancy that the tapping foot and nodding head proved this wasn't going to get in the way of my enjoyment.

Finally, Rocking Jimmy's 'By The Light Of The Moon' was firmly secured in place under the record clamp. This would prove a test for the Kinshaw, as the recording can sound rather veiled, but ultimately has that unmistakable 'live' sound. I sat back to be blasted by a raucous and rowdy ear bashing that had

the cat tearing down the door. Yet, after letting the cat out, I didn't act upon my initial reaction and reach for the volume control, but instead found myself sitting down and revelling in the presence and intensity of the vocals.

It wouldn't be idle hype to say that I found the Kinshaw phono stage a revelation. Indeed, it made me rethink the importance of a phono stage to a good quality vinyl system. Several amps I've tried costing between £500-£2000 simply couldn't match the £780 combination of A-400 and Kinshaw. Needless to say, when mated to some serious amplification (notably valve) the results were truly staggering. Yet the real shock comes to those with amps such as the A-400 which don't have a particularly good phono stage to begin with. Such is the contrast that you'll wonder how you ever managed without it. And returning to the system without it can bring about serious withdrawal symptoms, as I'll testify. Complaints to offset the superlatives are few and far between. Harshness in the upper-mid can occasionally tarnish an otherwise refined performance, and the soundstage is a little compressed in terms of width. Other than that, it's dynamic, rhythmical, detailed, fast, quiet, fluent, has superb depth and bass control, solid imaginary, and above all is musically involving. And I want one! Recommended with platinum stars on it ●

MEASURED PERFORMANCE

In places this disc pre-amp has an impressive performance, but then when you use top grade off-the-shelf integrated circuits, it isn't too difficult. In other places it departs from sensible and well tried industry standard rules of thumb.

The most unusual feature was a moving magnet input sensitivity of 10mV for 1V out. This will work with all pre-amplifier/power-amplifier arrangements - but only just. It's barely enough to drive an insensitive power amp (e.g. Quad II, EAR519) through a passive pre-amp, for example; volume will need to be turned right up to maximum.

With an active pre-amp having a 300mV input sensitivity, or a passive/unity-gain pre-amp like our own, feeding a sensitive power amplifier (like our own K5881), the Kinshaw won't demand that volume is turned right up, as it will with amplifiers of lower sensitivity.

It's usual to make MC sensitivity ten times that of MM; Kinshaw's is thirty times greater. It will suit very low output MCs.

Frequency response has been made ultra-wideband at 6Hz-136kHz. However, that means the IEC 5180µS warp filter time constant has not been included. You do get very deep bass from extending gain

down to 6Hz, but with reflex loudspeakers you also get a lot of cone flap from warps. We get a lot of queries about this problem, so it is very real. Ideally, a phono stage of this expense and complexity should have a switchable warp filter, removing information below 30Hz or so.

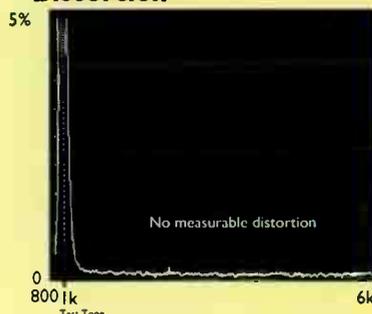
The Kinshaw was very quiet with moving magnet, but a little hissy with moving coil. Its equivalent input noise with the latter was poor at 0.1µV (CCIR); it needs to be half that value to be up with the best. Similarly, input overload margins were satisfactory, but not exceptional, especially if a high output moving coil is used, since the MC input ceiling was just 3mV.

This head amp is well built but it has some weaknesses. Used with reflex speakers and compliant MM cartridges, cone flap will occur. Used with MC cartridges, some hiss will be audible. Looking at the care taken in its design and construction and the quality of parts used, I'd guess it will sound OK. But, for example, against the less expensive EAR834P pre-amp I tested in our January 1994 issue, the Kinshaw looks none too impressive in its measured performance. **NK**

MM	
Frequency response	6Hz-136kHz
Separation	61dB
Noise	-94dB
Distortion	0.005%
Sensitivity	10mV
Overload	100mV
Input R/C	47k/100pF

MC	
Frequency response	6Hz-136kHz
Separation	51dB
Noise	-70dB
Distortion	0.006%
Sensitivity	0.3mV
Overload	3mV
Input R/C	25/30/100R

Distortion



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Why do interconnects sound different? I've frequently experienced the sonic effects of reconnecting my hi-fi equipment with different cables and I've read many theories to explain these differences. The question I want to consider this month is: is it really necessary to journey to the edges of our understanding in order to explain these effects? In some cases the causes are quite simple.

Most signal cables are of the coaxial type. This means that both conductors, the signal carrier and the earth return, lie about a common axis - hence the term co-axial. Almost without exception the outer conductor is formed of a fine wire braid which encloses the inner conductor. This conductor may be solid or formed from many smaller wires. The conductors are separated from each other by an insulating material known as a dielectric.

"Serious" audiophile cables are manufactured with two inner conductors twisted together. The overall braid of the cable functions as an electromagnetic shield only and carries no signal current. For this reason the braid screen is often only grounded at one end of the cable.

Many claims are made for the apparent audible signatures of different cables, but I have come to believe that the dominant "cable effect" is capacitance. It is the size of the cable and nature of the dielectric that determine the capacitance per metre of any cable, so cable construction affects the sound.

So does this mean I think all cables sound the same? Most certainly not. Although I do believe there is no such thing as the "sound" of a cable, it is certainly possible for a change of cable type to bring about a noticeable change in a system's performance, because of the effect each cable has on the

partnering equipment. I often read that signal cables have other parameters that affect their sound besides capacitance, but I do not believe it. I cannot accept either that high frequency cable effects such as skin effect or metallic, inter-crystal boundary, low-level distortions are audible, because no scientific evidence exists that can unequivocally support such a belief. Capacitance, on the other hand, can certainly make itself be heard - and not always in straightforward ways. We



recorded message

Left by Richard Brice

can measure capacitance and quantify its effect upon performance.

A vulnerable victim of the capacitive effects of interconnect cable is the passive preamplifier. This is because its large output resistance forms, together with high cable capacitance, a low-pass filter. For instance a 20k Ω passive volume control will have a maximum output resistance (at -6dB) of 5k Ω . If this control 'sees' a high capacitance cable (Silver Sounds 12/3 and Straight Wire Laser Link for instance) the result will be a reduction of treble energy in the audio band. Replace this cable with a low capacitance type (Furakawa FD-1010 for example) and the difference will be clearly audible either as a welcome increase in high-frequency detail and transparency or possibly as an unwelcome 'spitty' harshness, depending on the rest of the system. (In the latter case the high frequency roll-off due to the pre-amp and high capacitance might have been compensating for fierce tweeters.)

This may seem to be an unfortunate audible by-product of the passive pre-

amplifier but such effects are, at least, predictable. The message here must be: don't use high capacitance cables with passive pre-amps. The same general advice cannot be applied to active pre-amps because they invariably have a low output impedance, but then being active they also have other problems.

Contrary to popular belief, employing an active pre-amp does not guarantee immunity from cable capacitance effects. For instance, many solid-state output circuits are susceptible to considerable response peaking (and even sometimes incipient instability) due to capacitive loading. I have observed this effect many times in both consumer and professional audio equipment and the audible results are, mostly, unpleasant.

Valve output stages can suffer as well. Loaded with a large capacitive load, all sorts of unwanted effects start to occur. Take, for example, the classic single-ended triode cathode-follower circuit. This type of circuit is prone to a particularly nasty form of asymmetric slew-rate limiting when heavily

loaded by cable capacitance. The distortion occurs at high signal levels when the valve moves into overload as a result of the output circuit's inability to discharge the cable capacitance (via its cathode load) as effectively as it can charge the cable capacitance (via its forward conductance). The upshot is asymmetrical waveform distortion where the rising edge of a symmetrical signal is much faster than the falling edge.

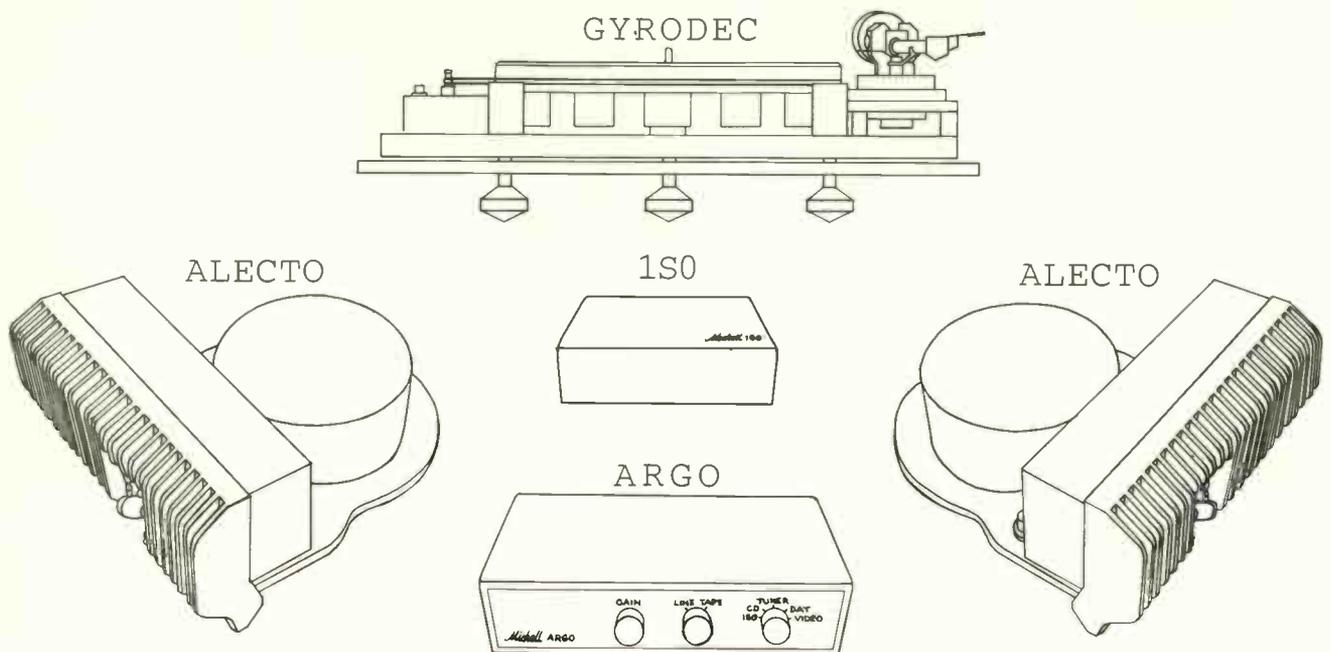
Subjectively this causes a glassy, muddled sound as

the circuit overloads. This shows how heavy cable capacitance can affect sound quality and the subjective outcome. Many people believe heavy capacitance dulls the sound, but in many cases - this one included - it results in brightness.

As you can see, cable capacitance causes many subtle and varied effects in a hi-fi set-up and accounts for many more audible effects than is often believed. This leads me to offer a few rules when choosing cables. Remember, when you choose interconnects, that capacitance is the parameter most worth seeking out in manufacturer's (or review) information and that low capacitance is the property that least upsets all surrounding circuits.

In your own system, try to audition a cable in one of three categories; high, medium and low capacitance. Remember too, that whilst passive control units will lose top-end when used with a high capacitance cable, active pre-amplifiers will also be effected, and that may well be altering the sound in one of the subtle ways I have described ●

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“A hi-fi can range from £159 for the Samsung PCD-730 portable “ghetto-blasters” to £1,000 for a Dolby Pro Logic Midi system from Sony.” wrote a journalist in The Independent last week. It’s not only hi-fi that’s suffering in the recession, but investigative journalism as well! Unwilling to pick up a telephone to a local hi-fi dealer, who could have told him otherwise and provided a free demonstration too, the writer instead appears to have decided to base his article around a couple of midi-system brochures from some Japanese manufacturers.

If, with all the resources available to him, and some small input of effort, this journalist can’t find real hi-fi, then how can we expect the general public to be made aware of it? Even those middle class, educated readers of The Independent who had all along suspected that something better than Samsung or Sony existed, perhaps from a glimpse in a shop window, have just had their hopes destroyed. Hi-fi is a midi-system and a British hi-fi is a midi-system with a pair of British loudspeakers!

The writer even swallows the notion that Dolby Pro Logic is all about hi-fi, and even his understanding of it or surround sound appears dubious. I’m not asking for national newspaper articles on Yoshinos, electrostatic loudspeakers, or even valve amplifiers, but at least budget British hi-fi separates should have got a mention.

For the various systems that he mentions in the article, all midi or mini systems, there is a brief assessment of sound quality for each. The £159 Samsung gets an ‘average’, the £1100 Sony ‘superb’, the £1000 Technics SC-CH 950 ‘good’. This does not help the non-enthusiast at all, who could only draw the conclusion that for £800-900 more than the Samsung you get something which sounds ‘good’ or even ‘superb’ as opposed to ‘average’. How

does the sound improve? Is there more bass, does it go louder, does it sound clearer? A simple subjective description may have helped the readers to understand a little more about what you get for all that extra cash, and a dealer could again have provided an unbiased view. Then some readers may have been persuaded to go in to their local hi-fi shop and have a listen - who knows?

The music press have also been showing an interest in hi-fi recently, although their coverage has been more enlightened and



Dominic Baker

db on the level

even entertaining. Vox have run features on valve amplifiers and Q magazine on equipment tables, to name but two esoteric subjects. This is commendable, and their use of known writers from the industry gives the articles credibility.

Recently Vox have run an interview with Ivor Tiefenbrun of Linn. This company has taken a very different direction over the

have set about advertising these systems outside of the normal hi-fi circle to attract the average man on the street, albeit with a few grands worth of disposable income, into British hi-fi. And no doubt they will have some success with this marketing approach, being able to offer a serious alternative to the midi system that sounds better, is reliable and widely available.

man at The Independent has already shown this. He’s convinced that an AV system offers better high fidelity than a standard two-channel system. Sadly, British hi-fi manufacturers have already jumped onto this bandwagon, hoping that AV will provide the route to a degree of commercial success that eludes them in their core business. Little do they know that people’s idea of a hi-fi is already changing from a midi system to a midi system with an AV amplifier, and that they’re very unlikely to buy twice as many black boxes for their living room because they have an AV ‘turbo-sticker’ on them.

The British hi-fi industry remains very strong in terms of the quality of the products it designs and manufacturers. It’s very good value equipment too, not unattainable high-end of questionable ability. And the British hi-fi market influences many other markets around the world. It seems ironic and shameful that the majority of Britons are unaware of this, and buy a midi system, not out of choice, but because they are unaware of alternatives, just like The Independent ●

“British hi-fi is a midi-system with a pair of British loudspeakers!”

last few years. Linn now aim their equipment at the completely non-technical customer who wants the best sound in their home, saying that they can no longer be supported by the primitive, hobbyist market of years past.

What Linn have done is to develop a range of hi-fi separates all in the same size and style casework. A system can be linked up to be fully remote controlled, offer all the ease of use of a Japanese midi system, yet give true high fidelity reproduction.

It’s a nice idea, and Linn

Half the battle in all this is to remove current preconceptions that most people have about hi-fi. Not only the one about a £1000 midi system being the best hi-fi available, but about a British hi-fi system being a collection of odd shaped and randomly styled boxes that look unattractive in the home. Or about valve amplifiers being unreliable, or that an 80watt amplifier is better than a 30watt amplifier. Hopefully anyone reading this will have long ago disposed of such thoughts.

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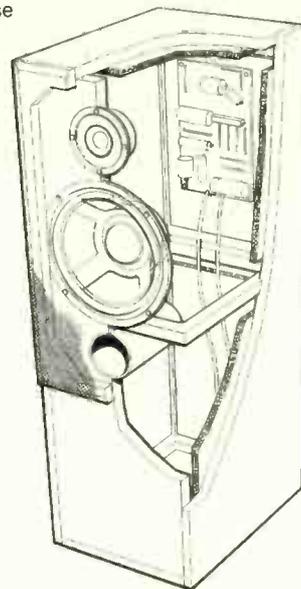


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With Christmas over and pockets suitably empty, now may not seem like a good time to be buying hi-fi. If this is the case and someone forgot about that Yoshino amp with Atlantis MCI speakers you'd been promised, fear not, because there are literally thousands of tweaks that can transform your hi-fi, and you can have fun too. The secret is not to dive in at the deep end and commit major surgery as it could end in tears (and disqualification from manufacturers' warranties). The beauty of it is that there is plenty of simple stuff that won't cause major breakdowns (to you and the equipment!). Many tweaks I've tried are reminiscent of a farmyard smell. Others are negligible, but add up. And then there's the tweaks that really work. Here's a few that will transform your CD player.

An idea pillaged from a Sonographe CD player I've used is a mass-damped disc clamp. If you have a machine with Philips based transport, or even anything with a pressed plastic clamp, then simply lift the clamp (taking care not to knock the laser). You should find the underside heavily grooved. Simply fill the grooves full of either putty or even Blu-Tack, so that the underside surface is flush across its entire width. As you replace the clamp you'll find it snaps back into place with a solid thunk, demonstrating its damping properties. Do be careful not to foul the clamping wheel or disc itself, though. Whilst the clamp is up take the opportunity to clean the laser with gentle pressure using a cotton bud and meths. It saves £20 on buying a widget to do it, and if the machine is old, should markedly improve the sound quality as the error correction doesn't have to work so hard (especially if the machine has been used in a smoky room).

Simply placing something on top of the CD has the effect of mass damping, and to help kill unwanted resonances there are two areas to look at (without going into serious

surgery), the lid and base.

Attaching Blu-Tack, or better still strips of Sorbothane, to those parts of the lid that come into contact with the chassis and front panel, should have some benefit. This can be extended to the whole of the inside surface, although a square foot of Sorbothane isn't cheap. It does work though, as a simple tap on the lid will prove. A dull thud should replace a hollow sounding "twing".

The general principles of isolation are rigidity and damping, utilising a selection of materials that



Fair Views

- from Dominic Todd, our man in Scarborough

are beneficial at damping particular resonances. After much experimenting I found one of the best materials to be humble bubble wrap! Sandwich a sheet of large-bubble wrap between a piece of glass or marble and medite. Attach spikes and then place four pieces of Sorbothane underneath the CDs feet, and you'll have one of the best isolators in the business! A deeper, tighter bass and improved imaging should result, and all for around thirty pounds or so.

All the rage over green pens seems to have died down a little. They created a mixed response, and whilst being beneficial, proved too much of a hassle to really catch on. A far better idea is to use the special pens to paint the upper surface of a disc drawer.

So far I've tended to look at the mechanical side of things, yet there's also plenty to attend to on the electrical side. If you're like me and end up with more dry joints than an orthopaedics operations list when soldering, fear not, because none of these involve the slightest hiss of a soldering iron. Most, in fact, are alarmingly simple.

The first is to fit a high

quality mains plug such as an MK or one of the many gold varieties. If you have a detachable mains lead then upgrading that can be of value too, although make sure you have a listen before parting with cash, as some have no effect whatsoever. Also, those with a two core mains cable can simply change the polarity by turning the plug at the CD end around. An upside down plug - i.e. reversed polarity - can sometimes have the effect of slightly improved integration. Cleaning all the phono and mains sockets (amps, turntables, and 'speakers as well) with either meths or, better still, a formulation designed to improve electrical connections can improve subtle detail, and even had the effect of

improving my radio aerial signal a little, when used on the contacts.

Tightening the mains transformer down is as relevant in a CD player as it is in an amplifier. Alternatively, try isolating the transformer. Whilst reviewing an Orelle CD player recently, I noticed that the PSU was mounted on a foam type bungee and spiked through to the surface that the machine sat on. This should mean that the transport is mechanically isolated from the power supply unit and vice versa. To simulate this on an

unisolated unit try placing a piece of high density foam or Sorbothane underneath the transformer, and then bolting it down firmly.

Well there you have it. By no means the definitive tweaking guide but, if all are carried out, a concoction that's bound to prove that there's life in the old dog yet. You may even find that these simple tweaks whet your appetite for something a little more adventurous, like building a World Audio Design valve amp. But at the end of the day, as well as having a couple of evening's fun with a large sheet of Sorbothane(!), the tweaks should have the effect of making you want to sit and listen to your CD collection for longer. And that, after all, is what it's all about ●

WARNING

Any modifications made, are done so at your own risk. Your manufacturer's guarantee may be affected. Dangerous voltages exist within any electrical product. If you would like to try these tweaks, but are unsure about doing so yourself, contact a qualified service engineer at your local hi-fi dealer.

WIN A NAD402 TUNER

COMPETITION ENTRY FORM

- 1) To which tuner did Noel Keywood compare the NAD 402 in his review?

<input type="checkbox"/> Denon TU-580RD	<input type="checkbox"/> Audiolab 8000T
<input type="checkbox"/> Technics ST-GT550	<input type="checkbox"/> Leak Troughline

- 2) What wave bands does the NAD 402 tuner offer?

<input type="checkbox"/> FM only	<input type="checkbox"/> FM and AM
<input type="checkbox"/> FM and SW	<input type="checkbox"/> AM only

- 3) What kind of design is used in the Mission 760i SE loudspeakers?

<input type="checkbox"/> Two way infinite baffle	<input type="checkbox"/> Three way reflex
<input type="checkbox"/> Two way reflex	<input type="checkbox"/> Reflex transmission line

- 4) Who reviewed the Mission loudspeakers?

<input type="checkbox"/> Noel Keywood	<input type="checkbox"/> Dominic Baker
<input type="checkbox"/> Dominic Todd	<input type="checkbox"/> Eric Braithwaite

- 5) What price are the Mission 760i SE loudspeakers?

<input type="checkbox"/> £170 per pair	<input type="checkbox"/> £160 per pair
<input type="checkbox"/> £150 per pair	<input type="checkbox"/> £140 per pair

THE TIEBREAKER (Obligatory)

If you'd like to win a NAD 402 tuner, complete the following tiebreaker:

*The 402 tuner makes music for me
its tones are superb, being open and free
there's not even a hiss, on Radio 3*

If you'd like to win a pair of Mission 760i SE loudspeakers, complete the following tiebreaker.

*I aim to find a natural sound
an image that's big and tonally round
these Missions are the best 'speakers I've found
because*

Please complete one tiebreaker ONLY in less than thirty words.

This month we have a real bonus for you, as we're giving away SIX separate prizes to the lucky winners of our competition. We're not being boring though, because you get the choice of a NAD tuner, the luscious 402, or Mission's 760i SE loudspeakers which amazed us when we first heard them last month. How's that for an offer? Fill in the coupon and then choose your prize!

But, of course, you won't enter the competition unless I whet your appetite with a brief description of the prizes first, so here goes.

The NAD 402 tuner was reviewed by Noel Keywood in our January '94 issue, and his nib veritably flowed with fulsome praise from beginning to end. So impressed was Noel, in fact, that almost his first sentence of the review was "here at last is a solid state tuner that does start to approach the magnificent sound quality of the Leak Troughline". That's praise indeed from a man who eats tuners on toast (what do you mean, you've never heard of a toasted tuna sandwich?).

But enough of this levity! Noel had only praise for this FM/AM tuner, and that includes its price, which at £160 could hardly be said to be bank-breaking, but if you want yours free, enter the competition!

The two-way, reflex, Mission loudspeakers were auditioned by Dominic Baker, who said of them "you get a surprisingly huge sound from such a small box" and mentioned that they "have plenty of punch" and "once they get hold of a bass line they refuse to let go". Simon Cooke also used them in his £700 CD system, and mentioned the Mission's "musical and metronomic rhythm" and the fact that "they can be driven quite hard without complaint, and paint a room-filling and believable picture".

Again, at £150 a pair, the Missions aren't going to give your bank-manager a heart-attack, so even if you don't win one of the three pairs we're giving away, you could still afford a pair. But you won't win if you don't enter, so get writing!

Yes, you know what to do, just answer the easy questions on the form opposite, and then complete ONE of the tie-breaker ditties, for whichever prize you want to win, it's your choice!

Please send your entries on a postcard, or the back of a sealed envelope, or in an envelope. Complete your entry in block capitals. It must arrive no later than Friday 4th February.

- OR A PAIR OF MISSION 760i SE LOUDSPEAKERS

competition

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

No employees of Mission Electronics Ltd, NAD Marketing Ltd, or Audio Publishing Ltd may enter.

NAIM/EPOS
SYSTEM WINNER
NOVEMBER ISSUE
COMPETITION

There was a great response to our November issue competition, and we spent quite a while laughing, and groaning, at the entries. The eventual winner was Mr D J Desmond of Crewe, Cheshire, who has undoubtedly earned the envy of all the other entrants. Happy listening Mr Desmond!

Photograph
by Paul Hartley

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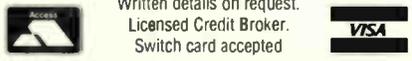
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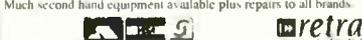
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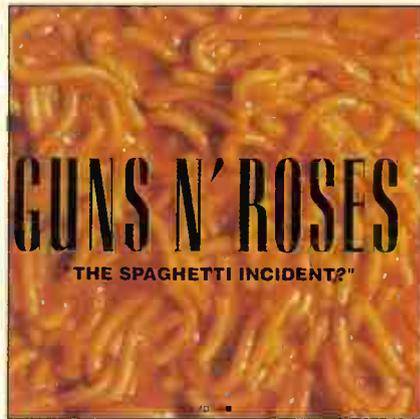
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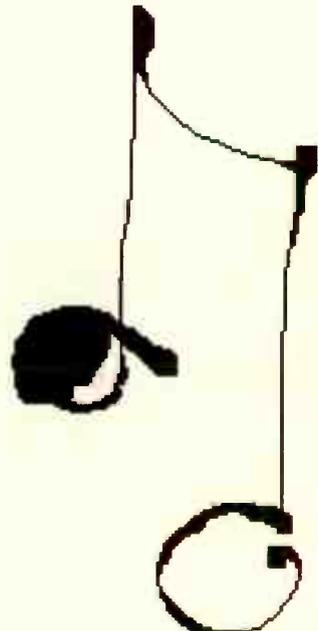
All the more surprising therefore that the set - sorry, album - should open with 'Since I Don't Have You', a regular Fifties-style slab of quasi Doo-Wop whose heartfelt vocalising and poignant piano are suitably spiced up and dragged into the Nineties by Slash's distinctive

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● So we come at last to the much-anticipated Guns 'n' Roses punk rock covers album, a disc which by the group's own admission includes some of their - ergh! - seminal influences from the era when they were nowt but peach-fuzzed eager adolescents looking for the proverbial kiss.

Now, you may disagree with me (not to mention a few million others) but I happen to believe Axl Rose & Co are one of the cracker bands of the decade, probably the only contenders to the Greatest Rock n 'Roll Band In The World tag previously held by the likes of the Stones (indisputable), The Who (arguable) and U2 (discuss) etcetera, etcetera, etcetera, to quote that late great rocker Yul 'The Original Skinhead' Brynner.

So here are Guns n' Roses eschewing



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● That great American genius Lenny Bruce spoke the truth when he commented that there's nothing sadder than an ageing hipster: by extension it's just as true that there are few things more sad than a hip phrase that's long past its sell by date. In these days of anything goes catholic sensibilities in most popular music (we'll forget Mr. Blobby ta very much) the term 'country rock', just sounds corny, a supermarket heading at best. But when Gram Parsons turned former popster-folkie-pyschedelics The Byrds in the cowboy direction with the evergreen 'Sweetheart Of The Rodeo' in 1969 it was as extraordinary in its way (and just as heretical) as Bob Dylan choosing to electrify his guitar and get a backing band - and thereby divide his fans into vociferous pro and anti camps - a few years previously.

Parsons' is the classic rock n' roll tragedy in almost too many ways to count - like Hendrix, Joplin, Morrison and others - he died of chemical self-abuse while still in his Twenties. And if his mark was made slowly - via the Byrds, the Flying Burrito Brothers and these two extraordinary solo LP's - his influence has been long and lasting. The Stones discussed making him a full-time

member way back when, and since his untimely death he's been hailed by everyone from Elvis Costello to Evan Dando and everyone in between.

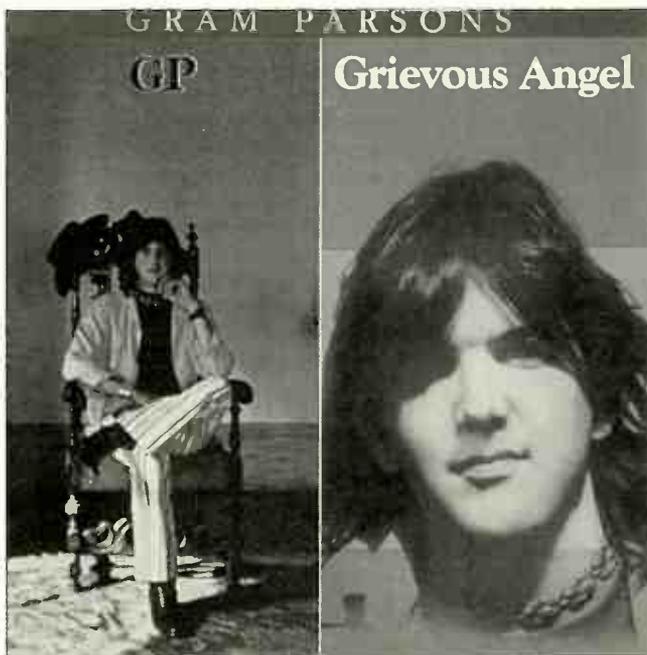
There's no point (and far from enough space, as usual) in going into details here but that's unnecessary anyway as GP's history is faithfully recorded in the booklet that

magical and resonant as that of Lennon and McCartney or Don and Phil Everly. Plus, starting with master guitarist James Burton, Parsons used a brilliant selection of musicians who'd made their name backing Elvis Presley in his glory days. This, accompanied by the man's almost alarming ease with a diamond tune and fascinating lyrics, is the reason for the

continuing fuss, and Parsons' perennial influence on successive generations of musicians and fans.

Here are aching songs of love and loss, 'Cry One More Time', the classic 'Love Hurts' revisited. 'We'll Sweep Out The Ashes In The Morning' et al. Here is joy unconfined, 'I Can't Dance', the wry 'Cash On The Barrelhead' while the likes of 'She' and 'The New Soft Shoe' are just too sublime for mere words to even attempt to do them justice. No-one who truly loves music can fail to be touched, moved, exalted by this remarkable and tragic young man's work. For my part, I just feel honoured to have been on the same planet at roughly the same

time. It has enriched my life for almost twenty years and every time I rediscover it I'm moved to that special place way beyond words. Twenty years after his death 'GP' and 'Grievous Angel' are still two records everyone should own, period.



accompanies this budget re-issue of his genius at its purest and truest.

Released in 1973 and posthumously the following year, 'GP' and 'Grievous Angel' united Parsons' frail but hugely emotive vocals with the pure hot ice of Emmylou Harris. It was a pairing as

dragon's breath guitar stylings. We're on more obvious ground for the bulk of what follows: The Damned's punk classic 'New Rose' gets a somewhat perfunctory and hardly eyebrow-raising thrash, but the band fare much better on items from the back catalogues of punk's elder statesmen The Stooges and New York Dolls. And it's a shame that Johnny Thunders isn't around to reap the benefits of his solo item 'You Can't Put Your Arms Around A Memory'. To my mind at least, Guns 'n' Roses are at their very best on soulful ballads (viz 'Knockin' On Heaven's Door') and this is an admirable addition to the group's slow bumer catalogue.

Ultimately what we have here is Guns n' Roses treading water until their next 'proper' studio long-player. That accepted, this is an entertaining enough stocking-filler any time of the year.

MUDHONEY
Five Dollar Bob's Mock
Cooter Stew
REPRISE 9362-5439-2



● After Nirvana, what? I'd say the answer to that particular question is a fairly even split between Dinosaur Jr and the outfit currently being considered. Mudhoney are between long-players at the time of writing, so this sturdy and admirably 'nasty' electric soup is more than enough to keep the converted happy - even qui sait - to add to the flock.

Certainly there are strong influences at work here: Iggy's ever-present, give or take a song, but in between the obvious there are signs that Mudhoney have had earfuls of other stuff too, notably the Fall, Bo Diddley, early Stones and 172,309 other artists whose sound crossed my mind while I was enjoying this fine and feisty recording from one of America's hottest pop agglomerations. All done between 9.30 and 10.15pm says the sleeve. Fancy a roll in the mud, honey?



THE SOFT BOYS
The Soft Boys 1976-1981
 RYKODISC 10234/35

● Robyn Hitchcock seems finally to be crossing that sometimes huge border between cult figure and star in the US. It's been a helluva long haul but that he's as worthy as they come is more than evident on this double collection featuring his original combo, The Soft Boys.

Emerging at the same time as punk but totally at variance with the sounds of the times - much as the now celebrated Velvet Underground were in their day - the group were a late addition to Britain's grand and eccentric strand of psychedelia. Certainly Hitchcock had (and has) more in common with Kevin Ayers and Syd Barrett than Siouxsie, Rotten et al.

Sadly their records were largely overlooked at the time and the band never progressed beyond the pub/small club stage. And, as is so often the case with these things, passing time's made not a jot of difference to the weird power and glory of Hitchcock's oddball collision of madcap lyrics (Hitchcock then was really big on crustaceans for some reason) allied to strong melodies and playing that nearly always fit perfectly with what the band were trying to do. Catch the sturdily Dylanish 'Kingdom Of Love', the sublimely catchy 'Underwater Moonlight', the wryly bitter 'Insanely Jealous Of You' and a good score of other beautifully ragged glories.

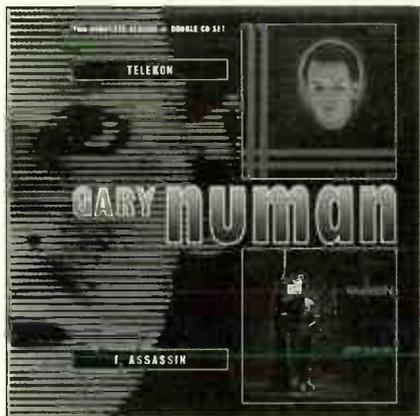
An extensive history comes with the package and there are rarities galore. Proof positive that great music always transcends fashion, this is not to be missed.



Eric Braithwaite

- GARY NUMAN**
- Tubeway Army/Dance:**
BEGA 151;
- Replicas/The Plan:**
BEGA 152;
- The Pleasure Principle/**
Warriors:
BEGA 153;
- Telekon/I. Assassin:**
BEGA 154

● Only a total Gary Numan nut, an obsessive completist - or a reviewer - would sit through practically the whole of Mr Webb's prolific output in one sitting. But Beggars Banquet has just reissued the lot in double-CD sets, from the first demo tapes right the way through. In some ways, I prefer him as semi-Punk rocker; the early stuff has a raw energy that's worth hearing. Interesting to hear how proper studio sessions cleaned it up. Only in one sense - despite the pretence at poesie concrète there are some elliptical



lines about dark-corned encounters and the bottom-of-the-psyche desires he liked to lay bare.

Though the somewhat hagiographical sleeve-note writer makes a good case for Numan's innovativeness in developing synthesizer music (and where would we be now without it?), I still reckon his love affair with the Moog overtook his musical invention; too many samey intros, too many of the same chords. Credit where credit's due, it's no more shaky than M. Jarre can be, and it can be quite revealing. I was a fan of M Factor, as well, and in Telekon and elsewhere there are Bowie-ish (as in Low and 'V2 Schneider') foretastes as well as precursors of Techno and the current run of sampling bands.

I still reckon the ones after his early podgy-androgyny period, post Tubeway Army, like I, Assassin and Warriors are two to keep, where the music is fleshed out with saxes, more drums and even viola: too much Moog sends me into a blue funk - a kind of Moog Indigo. Well worth reviving, especially as this set really is complete, including singles, B-sides and out-takes - but not to be taken all at once!



TEN YEARS AFTER
Original Recordings
 SEE FOR MILES SEECD387

● Remember Woodstock? O.K., then. Seen the film? If either, you might just recall a steaming, thrashing guitar-led piece called 'I'm Going Home.' which somehow took off into 'Blue Suede Shoes'. It put Ten Years After up there with the Stones, Deep Purple . . . oh, the lot.

You don't have to be a retired hippy for this expert band to grab at your guts - just keen on serious rhythm guitar, blues-rock and one Alvin Lee who was brought up on 12-bar Blues and made a hero of Big Bill Broonzy. Lee was a speed merchant - guitar, not the chemical kind, which probably accounts for the band disappearing from the annals. Apart from the lead track, which can't match the Woodstock heights, amazing playing - this is raw, fast, immensely talented Sixties rock. All with real instruments, Marshall amps and even a Hammond organ. I played it through and came out the other end high without even a whiff of one of those funny bent cigarettes you see those long-haired bearded guys smoking in the film.

Rock & Pop.

rock & pop record review

Classical

Peter Herring

British composers dominate this month, about fifteen of them at a rough count. The music ranges from the fifteenth century to the twentieth, and even the performers are largely from this country, including one of our finest pianists in works by one of Hungary's greatest keyboard masters. There is a surprise package, however, if something recorded over four decades ago can still qualify as such.



MALCOLM ARNOLD
String Quartet No. 1
Op23/String Quartet No. 2
Op118
The McCapra Quartet
CHANDOS CHAN9112 (DDD/45.48)

● For many composers, the disciplined austerity and intimacy of the string quartet has proved the vehicle best suited to expressing the most profound and searching thoughts. Malcolm Arnold has bared his soul just twice in the quartet medium – his musical development is fully mapped out in his symphonies – but what extraordinary, even revelatory works they are. Incredibly, this is their first recording, which is sadly reflective of the ambivalence with which Arnold's music has been regarded in the upper echelons of British music-making. All credit to the young McCapra Quartet, and to Chandos, for at last supplying the opportunity to explore these succinct distillations of the composer's psyche.

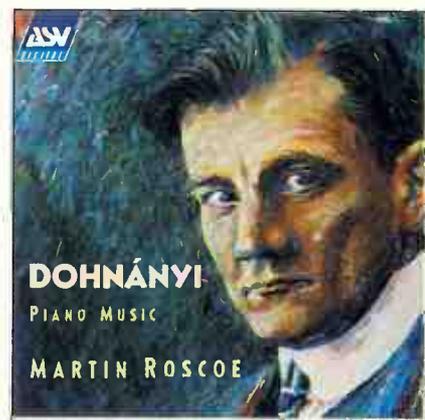
The difficulty is that too many commentators still assess Malcolm Arnold as a gifted lightweight and it is true that he has been responsible for some of the most tuneful and entertaining music written in recent years. Why that should lead to his more serious music being hugely undervalued is incomprehensible. No one dismisses Shostakovich because he, like Arnold, wrote music for the cinema.

The First String Quartet, composed in 1949, paints a bleak landscape, exploiting the most astringent sonorities of the quartet. The influence of Bartok is apparent from the outset, but Arnold does not ape the style of the Hungarian. These are his own ideas and his own means of deploying them. The scherzo is typically pungent and the elaborate counterpoint of the last movement cannot suppress the composer's humorous side, as he despatches a delicious little tune to dance between the instruments. The work ends gently, quietly, almost like a dying breath.

It was nearly thirty years before Arnold returned to the quartet medium. The Second String Quartet was first performed in 1976 and is a work where the composer lets his ideas have full rein.

The result is idiosyncratic, enigmatic, but – as in all of Arnold's music – admirably crafted. In the second movement, for example, after a rhapsodic solo, the first violin sets off on a quasi-Irish jig, only to be sternly interrupted by the rest of the quartet. The free spirit of the composer encountering the crude prejudices of the establishment? Perhaps. And why the chorale-like benediction slap in the middle of the slow movement? Then there are the melodic transformations of the first and last movement, bringing a benign radiance to troubled turbulence. Whatever, this is not the music of a 'lightweight'.

The performances of the two quartets are both technically assured and brimming with enthusiasm and understanding: clearly, with Fiona McCapra and her partners we have another very fine British chamber ensemble. The recording is vivid and very resonant, in the Chandos manner, but I detected no blurring of detail and the 'bite' on the strings entirely suits the mood of the music. The string quartet can be as sweet as you want, or as sour, and Malcolm Arnold is not afraid to exploit these two expressive extremes.



ERNO DOHNANYI
Four Rhapsodies Op11/Three
Pieces Op23/Pastorale/Four
Pieces Op2
Martin Roscoe, piano
ASV CD DCA 863 (DDD/75.50)

● Erno Dohnanyi, also known as Ernst von Dohnanyi, was born in Bratislava, in

When it comes to recordings of British music, the first record labels that spring to mind are Decca, EMI, Lyrita and – more recently – Chandos and Hyperion. CBS of America would probably be placed well down the list. Yet it is the CBS library which the label's new owners, Sony Classical, have trawled for their 'British Pageant' series and with more success than might generally be anticipated. There is a surprisingly idiomatic mid-seventies performance of Elgar's Violin Concerto

from Pinchas Zukerman; more Elgar from Daniel Barenboim; and further violin concertos by Walton and Maxwell Davies. Other CDs offer music by Britten and Delius and there are two compilations embracing Dowland and Purcell along with Bax and Walton.

One recording, however, stands out even above Zukerman's Elgar. It offers two of Vaughan Williams' 'middle-period' symphonies (and, I would argue, his two greatest symphonies) and the Tallis Fantasia, a work whose quality

always transcends its popularity. Even after countless hearings, this work retains its power and mystery, and – as the recording here illustrates – its scope for different dimensions of interpretation.

Aside from its musical stature, this issue also has considerable historical importance. It offers the first-ever recording of the Sixth Symphony and – surprise, surprise – it is neither by an English orchestra nor conducted by an Englishman.

**RALPH VAUGHAN WILLIAMS
Symphony No. 4 in F minor*
/Fantasia on a Theme by
Thomas Tallis* /Symphony
No. 6 in E minor.
Strings of the New York
Philharmonic; New York
Philharmonic Orchestra.
Conductors: Dimitri
Mitropoulos*, Leopold
Stokowski.**

**SONY CLASSICAL BRITISH
PAGEANT SMK58933 (ADD/75.09)**

● More than any other work by Vaughan Williams, the Tallis Fantasia has held a fascination for foreign conductors. I still treasure a stirring performance by Constantin Silvestri recorded in Winchester Cathedral. Even Herbert von Karajan, in his EMI days, was persuaded to record the piece and the result still stands the test of time. Now, out of the old CBS vaults, emerges this thrilling interpretation by the strings of the New York Philharmonic under Dimitri Mitropoulos. It dates from March 1958, yet the sound has a remarkable richness and freshness; none of the sumptuous beauty of Vaughan Williams' scoring is lost.

Mitropoulos' reading emerges as one of the most intense and passionate I have ever encountered, far removed from the lofty solemnity of many British versions. It still has the awesome grandeur of a great cathedral, yet here the faces carved in the stone exude an unexpected wealth of human emotion. Seldom can the inner fire of Vaughan Williams' score have blazed as incandescently as here.

Mitropoulos brings a similar

commitment and intensity to the Fourth Symphony, in a recording made in January 1956. Again, the technical quality is wholly acceptable and the transfer made by the Sony engineers is astonishingly clean: tape hiss is minimal, even on headphones.

In the composer's own words, the Fourth was a symphony for a "violent and harsh age" (he wrote it between 1931 and 1934) and the harsh, grinding

Fourth Symphony's claim to being one of the most important examples of the genre to be composed this century.

And surely the extraordinary Sixth Symphony deserves a similar status? It was started in 1944 and completed four years later and, like the Fourth, begins violently, even brutally. Vaughan Williams admonished those who saw literal references to the recently-experienced horrors of war in the work, especially in the strange, unearthly soundscape of the last movement. It was all too easy to perceive its eerie stillness – the movement never rises above *pp* – as a representation of a land devastated by nuclear attack. The composer used a quotation from Shakespeare's *Tempest* to provide a clue to his intentions: "We are such stuff as dreams are made on, and our little life is rounded by a sleep".

It will come as a surprise to those who – like me – were convinced that Sir Adrian Boult conducted the premiere of Vaughan Williams' Sixth to discover that he was pre-empted by a few days, on February 21, 1949, by Leopold Stokowski. The playing of the NYPO is less disciplined here

than for Mitropoulos seven years later and the recording has a restricted range (although, again, the transfer emphasises its virtues). Stokowski is less incisive, less revelatory in the Sixth than Mitropoulos in the Fourth, but the performance offers more than historical value.

Congratulations, therefore, to Sony Classical for resuscitating these valuable recordings, and cleaning them up so successfully. Makes you wonder what other treasures are tucked away in the old CBS tape vault.



clashes of the opening are immediate evidence of his intentions. The restless, agitated nature of the work is fully communicated in Mitropoulos' performance, as is the spiky humour which characterises its third movement. The finale, with its bluster and swagger, and its powerful fugal conclusion, is also superbly brought off. It is a performance such as this which illustrates the pan-national quality of Vaughan Williams' music – it is not a peculiarly British idiom; Mitropoulos also reinforces the

what is now Slovakia but – in 1877 – was part of Hungary. His pianistic talents were swift to emerge and, at the age of twelve, he was playing Beethoven's Fourth Piano Concerto under the baton of no less than Hans Richter. He was also a gifted teacher and held a post at the Berlin Conservatory for ten years between

1906 and 1915, when he returned to Budapest. There he founded an orchestra and was responsible for introducing Hungarian audiences to the music of Debussy and of his fellow-countrymen, Bartok and Kodaly.

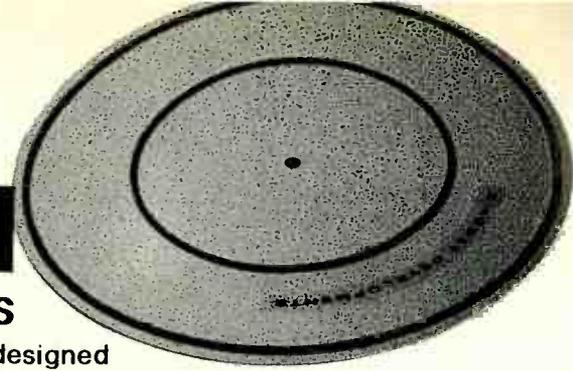
In his own music, however, Dohnanyi was a conservative. Some Hungarian

commentators saw him as the natural successor to Liszt and, as a pianist, he probably merited that accolade, but as a composer, he emerges as more temperamentally attuned to Brahms and the arch-dinosaur of romanticism, Rachmaninoff. He even appears to have shared, in some measure, Rachmaninoff's

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Andrew Marshall (AUDIO IDEAS GUIDE, Winter '94)

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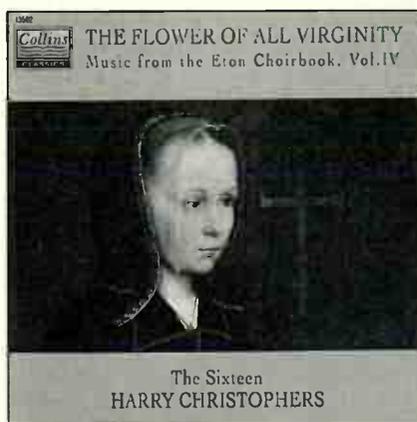
TAIWAN: Taifu Electronics Corporation, Taipei. Tel: 8862 341 9137

obsession with the Dies Irae (Day of Wrath) plainchant: it is the basis of the last of the Four Rhapsodies Op11.

The Rhapsodies date from 1902 and, unlike the Op2 pieces recorded here, which strongly display the influence of Brahms, have the stamp of a distinctive musical personality. The third Rhapsody is full of vitality and exuberance while the elaborate figuration of the first has strong Magyar overtones, with echoes of the cimbalom, the instrument which adds such a brilliant touch of colour to Kodaly's Hary Janos suite.

Though all in minor keys, the Four Pieces Op2 of 1896-97 have their share of wit and lyricism and – like all of the music to be heard on this generously-filled CD – display musical craftsmanship of a high level. The Three Pieces Op23 are especially finely-wrought. The Aria has an elegaic, melancholy beauty while the Waltz has a bittersweet nostalgia suggestive, perhaps of the faded glories of Vienna. The concluding Capriccio is an unshamed virtuoso showpiece.

The final work is a Pastorale composed in 1920 and taking its theme from a traditional Hungarian carol. Its simple, almost child-like charm is most affecting and illustrates that Dohnanyi did not have to rely on pianistic fireworks to make an impact. It is sensitively played by Martin Roscoe who, throughout this recording – which, I should add, is technically first-rate – displays both an empathy for Dohnanyi's overall conceptions and an insight and intimacy with their often telling detail.



THE FLOWER OF ALL VIRGINITY
Music from the Eton
Choirbook Volume IV
The Sixteen; director, Harry
Christophers
COLLINS CLASSICS 13952 (DDD/62.52)

● When Henry VI founded Eton College in 1440, he ensured its constitution included provision for a professional choir of men and boys to participate in the daily services of its chapel. The music for the choir came from its Choirbook, a parchment volume large enough for the whole choir, standing around a desk, to read from.

The Choirbook, which is still held by the College, once consisted of ninety-three works by twenty-six composers. Around fifty-six of the compositions have survived to supply a fascinating and often very beautiful picture of choral compositional technique in the pre-Elizabethan period.

In 1440, the cult of the Virgin Mary still maintained its grip and it was unsurprising that Henry VI dedicated his new college to this 'flower of all virginity'. Consequently, much of the music in the Choirbook is written in her honour: there are, for example, no less than twenty-four settings of the Magnificent and fifteen of the antiphon *Salve Regina*, one of each of which is recorded here. Yet, alongside these devoutly spiritual texts, we encounter a work such as Robert Fayrfax's *Most Clear of Colour* which speaks of "her bounty, beauty and womanhood" and is clearly espousing a more secular ideal of feminine perfection.

Fayrfax, along with John Browne, is the most notable of the composers represented here; others are Hugh Kellyk, the Scot, John Nesbitt, and the inevitable 'anon'. Series editor, John Milsom, has chosen the works well, opening and closing the programme with two of the most splendid pieces which would have been performed only on special occasions: Kellyk's richly sonorous setting of *Gaude Flore Virginali* and Browne's 8-part *O Maria Salvatoris Mater*. Kellyk, especially, underlines the joyfulness of his chosen text with a brilliant interplay of rhythms within a luminous texture. It is one of the musical jewels of its period.

The recording, made in St. Bartholomew's Church, Oxford, strikes me as ideally balanced and convincingly atmospheric, allowing the listener to become immersed in the sound and readily transported back five centuries in time and, culturally, into another realm altogether. Of course, the glorious singing of the men's and women's voices of The Sixteen makes an immeasurable contribution, as does Harry Christophers' direction, bringing out all the colour and fervour of this music.

ELIZABETHAN AND
JACOBEBAN CONSORT MUSIC
Songs and instrumental
pieces by Brade, Byrd,
Campion, Coleman,
Holborne, Jenkins, Lauder,
Lupo, Maynard, Melvill,
Morley and anon
Catherine Bott, soprano;
Michael George, baritone;
New London Consort;
director, Philip Pickett
LINN RECORDS CKD011 (DDD/58.28)

● Following up his first recording for Linn Records (Music from the time of Columbus), Philip Pickett now explores the treasure-house of English secular music from the sixteenth and seventeenth centuries. It was a period which saw a remarkable flowering of



talent, beginning with William Byrd and extending through the likes of Jenkins, Bull, Morley and Campion to Purcell. The seeds in this English musical garden were Italian, both vocally and instrumentally (as eloquently demonstrated by Brade's splendid *Coral*, with its rich solo writing for violin, memorably played here by Pavlo Beznosiuk).

But if the idiom was Italian, the substance was thoroughly anglicised with the use of popular English folk tunes; one of the best-known, still to be heard at folk festivals everywhere, 'Now is the Month of Maying', supplies an appropriately lively opening to the New London Consort's programme. Delicately-spun musical and vocal dialogues, usually romantic trysts between nymphs and shepherds, contrast with the more earthy broadside ballads which enjoyed wide currency by being printed on single sheets and sold at a penny a time.

Consort music evolved out of the simple lute song, with the solo instrument being replaced by a group – or 'consort' – of viols. This became known as the 'whole consort'; where a variety of instruments was employed – as here – the name given was 'broken consort', and what a delicious instrumental palette it offers, with the combination of violin, recorder, cittern, lute, bandora and viol. Here, a selection of almans, galliards and pavans gives a glimpse of the glories contained in this music, and the playing is wonderfully sympathetic. As are the vocal contributions of Catherine Bott and Michael George. The former's soprano is especially seductive, with its combination of grace, lightness, poise and enchanting innocence. And how entertainingly Catherine Bott colours the tongue-in-cheek lyric of 'Mother Watkins' Ale.'

The twenty vocal and instrumental pieces on this CD have been well-chosen, the result a well-rounded and enjoyable introduction to this highly-productive period in English music. The recording, made in the Temple Church, maintains the high production values of previous Linn recordings and the presentation of the booklet is first-rate, reproducing some delightful drawings by Inigo Jones, giving full texts – and being blessed with legible typography!

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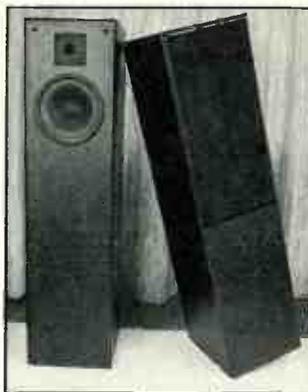
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JEFFRIES HIFI, 69 London Road, Brighton, East Sussex, Tel. 0272 603431. 2 dem rooms, closed Mon, late night Wed. free parking and credit facilities.

THE POWERPLANT "Brighton's Leading HiFi Shop". 66 North Street, Brighton, Tel. 0273 775978. Comfortable listening rooms. Knowledgeable and approachable staff. Roksan, Micromega, Musical Fidelity, Exposure, Audiolab, Onk, Epos, Rola, Marantz and more.

WORTHING AUDIO, 20 Treville Gate, W Sussex, BN11 1VA. Tel. 0903 212133. "The friendly shop with the best sound systems in the South". Friendly advice, 3 yr guarantee, easy parking, open Mon-Sat 9-6pm. Late night Wed. Arcam, Exposure, Naim, Pioneer, Marantz, Ruarik, Mordaunt Short, Audio Technica, Target, Tripod, Sennheiser, AR and many more.

SUSSEX (WEST)

AUDIO DESIGNS, 26 High Street, East Grinstead, West Sussex, RH19 3AS. Tel. 01424 314669. Friendly understanding HiFi specialists. Audiolab, Arcam, Cyrus, Epos, Linn, Marantz, Mission, NAIM, NAD, Nest, Quad, Rola, Sony, Stax, Tannoy, Target, Thorens, Yamaha. Dem rooms, free installation, service dept, credit facilities, mail order, credit cards, 9.30-6.00 6 days a week.

BOWERS & WILKINS Ltd. (est. 1945), 1 Becket Buildings, Little Hampton Road, Worthing, Tel. (0303) 214141. Top names in HiFi and audio visual including B&W, Nakamichi, Castle, Denon, Philips, Quad, Technics, Aura, Thorens and many more. 3 dem rooms (budget-high end) expert friendly advice, service dept, local installers free, one minute from A24 & A27, free local parking, Access/Visa. Instant Credit up to £1,000 subject to status. Open 6 days.

CHICHESTER HIFI, 7 St Pancras, Chichester, W Sussex, PO19 1SL. Tel. 0243 776402. Linn, Naim, Rega, Creek, Nakamichi, A&R, Denon, Roksa, Epos, JMW, Ruarik, Pioneer, QED, Sennheiser. Evening apps available.

JAYSOUND AUDIO, 5 Waterloo Square, Bognor Regis, Tel. 0243 826355. Awa, B&W, Beyer, Denon, Dual, Goodmans, Heo, Jamo, JVC, Marantz, Mitsubishi, Pioneer, QED, Samsung, Sennheiser, Sharp, Shure, Teac, Whatfordale. Free local delivery and install. Part exchange welcome, licensed credit broker. Repairs on all makes of HiFi & TV/Video. Open 9am-6pm. Cf. Weds.

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STRATFORD HIFI, 25 Henley Street, Stratford-upon-Avon, CV3 0W. Tel. 0789 414533. Pioneer, Technics, Denon, Marantz, NAD, Rola, Musical Fidelity, Monitor Audio, Mission, Tannoy, Quad, TDL, Sennheiser, Philips. Finance is available on selected products and all major credit cards accepted. Dem Rooms. Service facilities, open 9.30-5.30pm. Late night Thursday until 8.00pm.

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MUSIC MATTERS, 361 Hagley Road, Edgbaston, Birmingham, B17 8DL. Tel. 021 429 2811. Roksan, Nakamichi, Arcam, Audiolab, Musical Fidelity, Mission, Cyrus, Meridian, Kef, Monitor Audio, Pink Triangle, Ruarik, Epos, Exposure, Pioneer. 2 single speaker dem rooms. Apps necessary. Home trial facilities and free install. Service dept. Access/Visa/instant credit up to £1,000. Interest free credit available also. Tues-Thurs 10.30-6pm, Friday 10.30-8.00pm, Saturday 10.00-5.30pm.

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AMADEUS SOUND & VISION, 10 Boldmere Road, Sutton Coldfield, West Midlands, Tel. 021 354 2311. Audio Innovations, B&O, Castle, QED, Whatfordale. Single speaker demo, apps preferred, service available, installers, B&O link install, home trials. Access/Visa, interest free credit available subject to status. 9.30-6.00pm 6 days.

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WEST MIDLANDS AUDIO, 158 Ombersy Road, Worcester WR3 7HA. Tel. 0805 58046. Fax. 0805 57586. Naim, Rega, Rola, Marantz, Nakamichi, NAD, Audiolab, Roksan, Meridian, B&W, Audio Research, Krell, Martin Logan, Arcam. 9.5-30 Mon-Sat, eves by app only. Free.

YORKSHIRE (SOUTH)

HIFI STUDIO'S, Sunnyfields, Doncaster, Tel. 0302 781387. Heybrook, Monitor Audio, Art Audio, Michell, Suggden, Acoustic Energy, Aphron, Teac, AYC Valves, Ruarik, Albany, Proac, Impulse loud speakers, Rei sub-woofers, Yamaha surround sound, Project, TDL. Listening room dems. Home trial, free install. Licensed credit broker, 2 yr guarantee on all equipment, service available. Access/Visa. 10-8pm 6 days, phone for further information and free fact pack.

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THE SOUND ORGANISATION (YORK) 2b Gillygate, York, YO3 2T. (0904) 627108. Linn, Meridian, Micromega, Naim, Rega, Arcam, Creek, Nakamichi, Mission, Denon, Epos, Royd, Rola. 3 single speaker dem rooms, apps preferred, home trial facilities, free install, service dept. Credit facilities on request. Access/Visa. 10.00am-5.30pm. Tues-Sat. Sony dealer award nominated 86, 87 and 88.

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YORKSHIRE (WEST)

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IRELAND

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ACOUSTIC DIMENSION, 67 Mountjoy Street, Dublin 7. Tel. 305633, Fax 305639 (from UK + 0103531). Stockists for speakers: ATC, Acoustic Energy, JMW, Triangle, ProAc, Ref 3A, Ruark, Heybrook, Pink Audio, TDL, Impulse, Chario, Audio Static. Amps by: Albany, AVI, LFD, NVA, Achromat, Marantz, Audio Innovations, Rola, CR Developments, EAR, Kinshaw, CD Players and DACs by: AVI, Pierre Lume, Micromega, Kinshaw. Turntables by: Prolect, Tables-Standis, Apollo. Cables: Straightwire, bos, M.S, Eagle. Credit cards and mail order.

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ZEUS AUDIO, 6 Hope Street, Belfast, (0232) 339522. Audio Innovations, Pink Triangle, Roksan, Marantz, Celestion, Meridian and more. Mon-Sat 10.00-5.00pm. Late night Thursday.

COUNTY DOWN

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ZEUS AUDIO, 23a Kingsgate Street, Coleraine BT52 4LB. Tel. (0265) 56634. Marantz, Mission, Cyrus, Awa, Aka, Aphron, Sony, Pink Triangle, Celestion, Rola. Mon-Sat 10.5-3.0pm. Closed Thurs.

WALES

CEFYD

ACTION GATE AUDIO, 4 Rladdon Road, Wrexham, North Wales, Tel. 0978 364 500. Arcam, B&W, Marantz, Mission, NAD, Quad, Rega, Rola, Tannoy, Yamaha, etc. Dem facilities. AV on dem. Mail order. No apps nec. home trial fac. Free install. Service Dept. Access, Visa. 9.30-5.30 closed Weds pm.

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A reference guide to Britain's Manufacturers and Distributors.

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DBS AUDIO PO Box 91, Bury St. Edmunds, Suffolk, IP3 0NF. Tel: 0284 828926. Fax: 0284 828026. The DBS6 loudspeaker kit, as designed by Dave Berriman and featured in Hi-Fi News Feb/Mar 92, is still available - only from DBS Audio. To find out what these comprise, cost and how to order plus any other information on DBS products please telephone, fax or write in to the above address and numbers.

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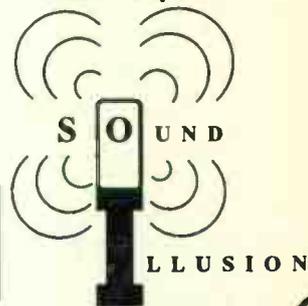
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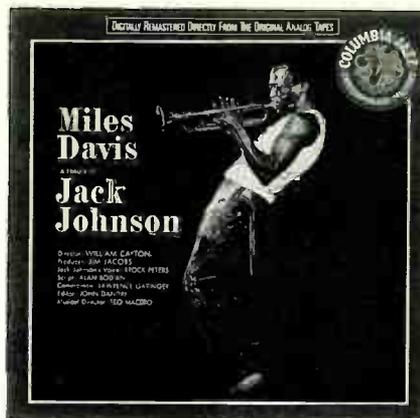


MILES DAVIS
Kind of Blue
CBS 460603 10

● One of the most famous albums in recording history, widely regarded as one of the (and by many as THE) greatest jazz records of all time, *Kind of Blue* remains one of the coolest records ever made. From the opening vamp of 'So What' (now, if anything, over-familiar) the album is a blueprint for immaculate, sharp, unattached, rigorous, intellectual - and yet beautifully swinging - instrumental jazz. The end of bop, the birth of modal jazz, a milestone which alone would have guaranteed its creator's position in the jazz pantheon; but God knows, he'd added much more than just this to the jazz canon.

Forests' worth have been written about the LP, about Davis' scorched, increasingly desolate trumpet, about Coltrane's gradual emergence here as the greatest saxophonist of the post-war period, about pianist Bill Evans' haunted, impressionistic chording, somehow perfectly draped over the cool grooving of Jimmy Cobb's bass and Paul Chambers'

drums. Beyond criticism, beyond history, *Kind of Blue* is the sort of Sgt Pepper-Love Supreme-Pet Sounds-Electric Ladyland record that no listener should be without. So don't be.



MILES DAVIS
A Tribute to Jack Johnson
CBS 471003 10

● The funny thing about Miles Davis was that despite making records that even non-jazz people not only own but love, he spent a good half-decade making music which even the jazz establishment forgets - and at its peril. *A Tribute To Jack Johnson* got forgotten partially because it was the soundtrack to a documentary film, and partially because it helped spawn jazz-rock (a monster to the critical consensus; expect dissidence here, though). But along with *Bitches Brew* and *In A Silent Way*, this 1970 release helped Davis kick into a period of involvement with electric music at least as important and satisfying as any other of the half-dozen or so jazz movements he'd been involved with, or, indeed, had created.

Two long tracks, relatively straightforward static rock grooves, accommodate some magnificent soloing: John McLaughlin beginning to show signs of the blistering attack destined to make him a guitar god; Steve Grossman spinning a fine web on soprano saxophone; Herbie Hancock tuning in (to these ears, at any rate) some of the best playing of his entire thirty-year career (and with one of the coolest organ sounds ever!); and Davis' trumpet the ice cold answer-rebuff to the everyday-rock of its surroundings.

MILES DAVIS
Agharta
CBS 467897 10

● Someone at Sony UK is to be congratulated for letting this album finally see a domestic British release, the horrific 'Columbia Jazz Contemporary Masters' motif and generic turd-brown border on the CD sleeve notwithstanding. Recorded live in Tokyo in the February of 1975, *Agharta* (along with the other live double LP *Pangaea*, recorded the same day) is



where Jack Johnson (and even, to be honest, *Kind Of Blue*) inevitably led. Davis' fascination with funk (especially Sly Stone), rock (Hendrix) and contemporary composition (particularly the architectural and mystical abstractions of Stockhausen) had melded into this.

The band on this record - as integrated and yet as psychedelic as any that jazz ever laid claim to - is at critical mass, truly teetering on the apocalypse. Jazz-rock - and *Agharta* really is jazz-rock, if much else besides - is traditionally dismissed as anodyne. But *Agharta*, along with the rest of the trumpeter's 70s output - *Pangaea*, *Dark Magus*, *On the Corner*, *Live Evil* and so on - is like no other ever recorded. A music begging to be discovered: help it out.



DEREK BAILEY
Duo and Trio Improvisation
DIW DIW358

● Originally released on the defunct Jap label Kitty, now available on CD-only import (and, er, expensive at that), *Duo and Trio Improvisation* features British improvising guitarist Bailey in various collisions with Japanese fellow-travellers: altoist Kaoro Abe, tenor-altoist Mototeru Tagaki, drummer Toshi Tsuchitori, bassist Motoharu Yoshizawa and the phenomenal trumpeter Toshinori Kondo, whose wah-wah and distortion drenched playing with his own group IMA has often threatened to follow in the footsteps of *Agharta*-period Miles.

Those of you new to Bailey's abstract playing - his is a style shorn of all pulse,

harmonic structure and idiom - may want a more famous-name laden (and, indeed, cheaper) set to get acquainted. But for followers of one of the last three decades' most significant innovators on the world's most over-played instrument (and Bailey is all that, at least) this is essential stuff, if only to hear him in such rarely-heard company. And as for any serious guitarists and/or guitar junkies who've still not heard or got Bailey: why the hell not?

Interestingly, the last few years have seen the emergence of a whole generation of Japanese noise-guitarists - KK Null and Haino Keiji and others have graced these pages, at any rate. It'd be nice to think that Mr Bailey's oriental excursions had played their part in this. It'd be even nicer to hear some of them play alongside him. Fingers crossed.



BOREDOMS
Wow 2
AVANT AVAN026

● The connections to the kind of jazz my colleague, the other Simon, writes about, are pretty tangential here; regular readers shouldn't have a problem with that, of course. Boredoms is one of Japan's strangest musical exports, and that takes some doing, believe me. And for more on errant Jap culture read the Derek Bailey review elsewhere this month. Melding punk, free jazz, metal, non-idiomatic improv, musical non-sequitur, bizarre and impenetrable-anonymous presentation/stage-show/LP sleeves/titles, they're the perfect summation of Japan's frenetic cut-up, taste-bypass aesthetic.

There have been connections with New York's new jazz scourge-hero John Zorn, and not just aesthetically. Singer Yamamoto Eye, performer of the most excellent 'blabbermouth' vocals, has been a regular guest member of Zorn's group Naked City since their 1990 splatter soundtrack-thrash metal masterpiece 'Torture Garden'.

The band now appear on Zorn's own Avant label, with the altoist-collagist himself in the producer's chair. I envy anyone who comes to this band for the first time - theirs is a unique world, not so

much unserious as hyper-serious, a sound world where the everyday and the bizarre collide, with magical consequences, and to encounter it for the first time is to come across an enchanted forest, complete with gingerbread house. For you lucky people who already have some idea of what Boredoms have in store, rest assured, this is one band that hasn't mellowed with age: 'Wow II' is their best yet.

Simon Cooke



CLARK TRACEY
We've Been Expecting You
33JAZZ 007

● Once there was a multi-billionaire who lived on a private tropical island, and he had a dream of an international rescue organisation for those in mortal danger. Who cared if his clean-cut, all-American sons were a bit wooden? They were all F.A.B. boys.

Young Clark, though, had bad blood in him, cut his strings one day and hit out for the lights and glamour of the big city.

All fantasy of course. Tracey is actually one of Britain's best drummers in any idiom, and among the best and most talented in European jazz today. He has the pedigree, as son of Stan Tracey, and is one of the 'young guns', who are cutting their own furrow in the family estates of jazz, as is Alec Dankworth, who plays trumpet on this album. 'Expecting' shows Tracey at his rhythmic best, in a band which includes some of the best younger talent currently playing, and running through a string of tracks in a modern, structured mode, with a few bebop influences thrown in. Well chosen, well played, well recorded. Well, what more can I say?



TINA MAY
Fun
33JAZZ013

● The light, MOR jazz sound of vocalist Tina May, running through a set of songs such as Nat Adderley's 'Having Fun', an upbeat version of 'Dam That Dream', and the stunning Bernstein/Sondheim standard 'Somewhere'. The production values are up to 33's usual standards, and the musicians, David Newton on piano, Dave Green on bass, Clark Tracey on drums - along with Don Weller and Gerard Presencer making appearances on sax and trumpet respectively - all play to the standard you'd expect from a line-up of that calibre.

Fun is pleasant enough as a recording, but I have to say that it's Tina herself who lets the side down. She's got the voice - and a very nice voice it is too - but she just doesn't have the strength or stamina to carry the eleven tracks here. The vocals lack presence and focus, and so the album does, too. 'Dam That Dream', for instance, should have been left as a ballad, because May's power on vocals is not enough to carry it at this pace, and she sounds muffled and confused, rather than forward as a lead singer should. 'Somewhere' seems to be taxing her range too far, although it did not have the ignominy of tempo-tampering piled upon powerlessness. It's a song that really requires potent, sustained notes, as well as delicacy and finesse, as on the Te Kanawa/Domingo recording of West Side Story, or the film soundtrack. For my money, even these pale into insignificance beside Tom Waits on his Blue Valentines album, where power and broken vocals coalesce into sublime melancholia. But please, Tina, train your voice before you go near it again.

When all's said and done, I can't recommend this album to anybody except cut-and-dried May fans, despite the fact that she lacks nothing as a vocalist when she sticks with the slower, quieter tunes. To anybody else out there, I'd say 'watch out for this lady'; given a less physically taxing, lighter style of material, she'd produce some stunning work. Give her 'I wanna be loved by you' and she's got an adult charm to knock Monroe's saccharine little-girl simper into a cocked hat.



transmission line speakers

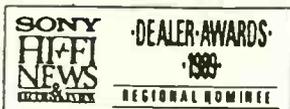
Transmission line speakers have a reputation for reproducing lower bass frequencies than other loudspeakers of a similar size. TDL now complements its range with a series of 'reflex transmission line' speakers. Incorporating a truncated line to preserve the special bass performance for which TDL is renowned, they are sufficiently sensitive to operate optimally with almost any high fidelity system. They should be judged in performance against speakers beyond their size and price category - affordable TDL!

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



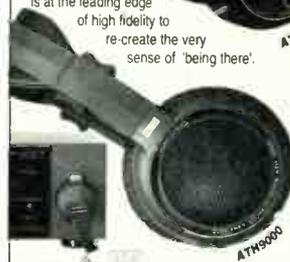
The more you put in
INPUT

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



&
The better it comes out
OUTPUT

From the wide A-T headphone range we can offer **ATH308** (and sister model 309), the perfect mid-size headphones. High sensitivity, low weight and extreme comfort make them stand out from the crowd. Our 900 Series offer a 'larger than life' sensation courtesy of large diameter drivers and copper clad aluminium voice coils. Top of this range **ATH915SV** is packed with sound enhancing features including 'High Energy' Neodymium magnets. For ultimate audiophile listening **ATH9000** is a very special headphone/transformer combo which sits in a direct line between your amplifier and loudspeakers. Its electroret condenser system is at the leading edge of high fidelity to re-create the very sense of 'being there'.



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SEE THEM AT GOOD HI-FI STORES

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K5881 KIT

£395 ▼



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

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 ▶

We now have finished the design of a super high quality chassis for the line level pre-amplifier. It is constructed from heavy gauge steel with an aluminium anodised and polished front panel. This new chassis comes with the complete kit of parts necessary to build the valve line level pre-amp.

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



HIGH DEFINITION LOUDSPEAKER

£295

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.

As well as being just about unmatched as a partner for esoteric amps, this speaker is also unusually suited to low powered vintage amplifiers, such as Quad IIs, Radfords, Pye Mozarts and such like.

The High Definition DIY loudspeaker is available as a complete kit, including flat pack cabinet, drivers modified and tested by us, all crossover components and hardware. The flatpack cabinet is finished in an attractive satin black and requires no further finish, but for those who prefer something a little more traditional a mahogany veneer is an option.

If you would like to build your own cabinets we are also offering a drive unit pack that comprises two tweeters and two woofers, modified and tested.

KLS2 LOUDSPEAKER

Satin Black/Mahogany Veneer
Drive Unit Pack

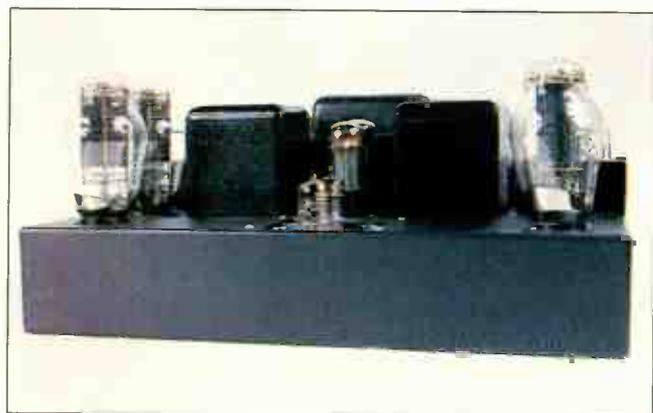
£295/£345
£145

WORLD DESIGNS

by Mail Order

300B VALVE AMP KIT

£750



This is a specialised amplifier based on the highly linear 300B triode valve. Tim de Paravicini designed it - including the massive transformers - for minimum distortion without overall feedback. If you want feedback (tertiary or overall), it can be applied without difficulty.

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

The kit comprises a strong 16-gauge mild steel chassis, fully punched, welded and ground smooth. Finish is a durable 'powder coat' black. A protective bottom plate is provided for safety; a protective top cover is an optional extra. Output terminals (one pair) take 4mm plugs axially and radially for bi-wiring, or heavy gauge bare cable. Output options of 4/8/16Ω are selected internally at the transformer. A small circuit board carries most of the components. 240/220V and 110/120V versions available - see Overseas details and prices on Order Form.

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

A fully built version from an approved build service is also available for £1050 (valves extra). Availability - end of January 1994.

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)

DEMONSTRATIONS!!

By the time you read this we hope to have our K588I 20W valve power amplifier and KLP-I valve pre-amplifier on demonstration at Hi-Fi Confidential, 34 Buckingham Palace Road, Victoria, London. Phone the patient and understanding Luigi on 071-233-0774 to check availability. He's a valve afficianado, knows Tim de Paravicini and is still sane, and stocks plenty of good products - including World Audio Design. So hear us against the others - and don't you dare buy them

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: 490V-0-490V, 6 x 5V, 1 x 6.3V. Primary 220/240 or 110/120 - please state which on order form. Drop through fixing.
- 2) Output (2 off) Designed for low distortion and broad load compatibility from the 300B. Cores with centre-hole fixing to avoid corner flux concentrations; laminations of grain orientated silicon steel. Output tapped 4/8/16Ω. Drop through fixing.
- 3) Intervalve/phase splitter (2 off) Special Tim de Paravicini design, potted in steel for secrecy. Drop through tags.
- 4) Chokes (2 off) For smoothing of the H.T. lines, two 5H chokes that fix under the chassis. Frame mounting.

HIGH PERFORMANCE 3-WAY SPEAKER £729

Our high performance 3-way DIY loudspeaker featured in Supplement Nos. 3 & 4 is now available as a kit. The cabinet has been designed to be extremely easy to build (even though there are 36 panels for the pair) requiring only wood glue and stretchy carpet tape to clamp the panel in place. All drive units and hardware are supplied.

When built, the loudspeaker is comparable to those costing more than twice the price, with a transparency and openness in the midrange that is unmatched by most. The price for this entire kit, including VAT and p&p is £729.

See page 91 for order form...

WARNING

THESE ARE EXPERT KITS, NOT FOR THE INEXPERIENCED.
THE VALVE KITS CONTAIN LETHAL VOLTAGES. WE CANNOT BE HELD RESPONSIBLE FOR ANY ERRORS ARISING FROM THE CONSTRUCTION OF THE KITS.

ORDER FORM

Please send your completed order form to: WORLD AUDIO DESIGNS, 64 Castellain Road, Maida Vale, London W9 1EX
Tel: 071 266 0461 Fax: 071 289 5620

240/120 option - delete the voltage NOT required.

Valves included except where stated.

'BUILT' - we can supply the amplifiers built up and tested by an approved service, for safety and guaranteed performance to specification.

PLEASE PHONE FOR DETAILS OF THE FORTHCOMING 4W SINGLE-ENDED VALVE AMPLIFIER AND PHONO HEAD AMP KIT.

DESCRIPTION	ORDER No.	QTY	PRICES	
			UK (inc VAT & carriage)	OVERSEAS. (net)
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K5881 20W budget valve amplifier				
KIT	K5881-K240/120	<input type="text"/>	£395	£350
BUILT	K5881-B240/120	<input type="text"/>	£595	£550
transformer set	K5881-TR240/120	<input type="text"/>	£220	£180
300B 28W specialised valve amplifier (prices do not include valves)				
KIT	300B-K240/120	<input type="text"/>	£750	£650
BUILT	300B-B240/120	<input type="text"/>	£1050	£950
optional top cover	300B-C	<input type="text"/>	£70	£60
transformer set	300B-TR240/120	<input type="text"/>	£430	£370
KLPI line preamplifier				
KIT	KLPI-K240/120	<input type="text"/>	£295	£250
BUILT	KLPI-E240/120	<input type="text"/>	£395	£335
KLS1 3-way floorstanding loudspeaker				
KIT	KLS1-K	<input type="text"/>	£729	£650
Drive units and hardware	KLS1-D	<input type="text"/>	£429	£370
KLS2 2-way, high definition, floorstanding speaker				
KIT (Satin Black)	KLS2-K	<input type="text"/>	£295	£250
Mahogany veneer	KLS2-KM	<input type="text"/>	£345	£295
Drive units	KLS2-D	<input type="text"/>	£145	£120
Loudspeaker measurement				
mic and preamp + test disc	3382B	<input type="text"/>	£440	£390

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Constructed from strands of solid core silver wire and silver soldered to the excellent Neutrik Profi phono plugs which are probably the best available. These line level

interconnects offer the ultimate in transparency, openness and detail. The plugs are bonded to the cable with adhesive heatshrink to ensure that

the cable has a long life without fatigue occurring at the plug join. Available exclusively through Hi-Fi World Mail Order

HI-FI WORLD SOLID SILVER CABLE.....£139.95/1M PAIR.



HI-FI WORLD SILVER PLATED COPPER INTERCONNECTS.

These have a similar construction to our solid silver cables, but use silver plated copper and standard Gold Phono plugs. Because the majority of the audio signal is

passed through the skin of a cable these can approach the quality of a silver cable with the cost of a normal high quality copper

cable.

HIFI WORLD SILVER PLATED COPPER INTERCONNECTS £69.95/1M PAIR.

HIGH QUALITY MAINS CABLES.

Supplied to Hi-Fi World by Campaign Audio Design these mains cables are screened to reduce Radio Frequency and Electromagnetic Noise. They also come with a VDR fitted which protects equipment from mains spikes. The MK plugs have a silver plated fuse and holder for the cleanest supply. Available with IEC or Figure eight (Marantz/Philips CD players) equipment plugs or with a hard wired, soldered 4-way mains block.

1M WITH IEC PLUG.....£19.20

1M FIGURE 8 PLUG.....£15.75

1M 4-WAY BLOCK.....£31.95



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Designed to hold about a hundred LPs, with an internal width of 37cm, height of 32.5cm and depth of 32cm. The cubes can be stacked or placed alongside each other - and are even strong enough to be used as seats! Made from 15mm MDF (Medium Density Fibreboard) with a smart durable black paint finish, the cube is supplied in flat-pack form ready for home

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20 RECORD SLEEVES WITH 2 CUBES

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6 CUBES FOR THE PRICE OF FIVE.....£210.00

8 CUBES FOR THE PRICE OF SEVEN!.....£294.00



specially made in Japan to Arcam's specification, will accept cable up to 7mm in diameter. The body is nickel-plated, the contacts plated in gold. Supplied in pairs marked with either one ring or

MICHELL ENGINEERING PLUGS

Craftsmanship marks out Michell Engineering's rage of gold and rhodium plated plugs from the competition. Simple but elegant.

GOLD-PLATED SIDE ENTRY BANANA PLUGS (4).....£10.00

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ARCAM RCA PHONO PLUGS

This heavy-duty phono plug,

two to allow directionality to be taken into account. **RCA PHONO PLUGS (4).£15.50**

GOLD PLATED 4MM BANANA PLUGS

We have a new style, heavy-duty, gold-plated banana plug with a unique type of axial solderless connection for loudspeaker cables. The cable is stripped back and pushed into a clamping collar which is then screwed down tight, accepting cable up to 6mm external diameter and 4mm core diameter. Supplied in sets of four.

BANANA PLUGS (4).....£8.00

AUDIO ACCESSORIES

AUDIO-TECHNICA RECORD CLEANING SYSTEM

Removes both dirt and static; a tiny amount of cleaning agent in the handle removes fingerprints, oil and film, while a pad lifts off dust. Pad brush and fluid are supplied.

AUDIO-TECHNICA RECORD CLEANING SYSTEM £10.50



AUDIO-TECHNICA COMPACT DISC LENS CLEANER

A disc the size of a CD, with fine brushes - one of which is dampened with cleaning fluid. As the disc spins in the player, the brushes clean the laser lens. It may not suit all machines.

CD LENS CLEANER.....£16.25



KONTAK

An effective cleaning solution that removes contaminants from electrical connections. After application, a system regains its original life, sparkle and vigour.

KONTAK£19.00

HI-FI WORLD DRY STYLUS CLEANER

Keep your stylus sharp and bright for perfect tracking without using fluid. Cut a strip about the size of a matchbox striker off this sheet of card and draw it gently under the stylus from back to front. One sheet of this card, with its aluminium-oxide micro-abrasive coating, should be enough to clean your stylus at least forty times.

DRY STYLUS CLEANER ..£1.95

GOLDRING EXSTATIC MAT

For vinyl users, the Goldring Exstatic is a felt mat made with fine carbon fibre strands. This helps to reduce positively charged static electricity that builds up on the surface of records.

GOLDRING EXSTATIC MAT £7.50



SUPER EXSTATIC CARBON FIBRE DISC CLEANER

Effectively removes dust and grime from record grooves, this cleaner is a combination of one million carbon fibre filaments and a soft velvet cleaning pad.

EXSTATIC CARBON FIBRE CLEANER £9.75



BUG AUDIO

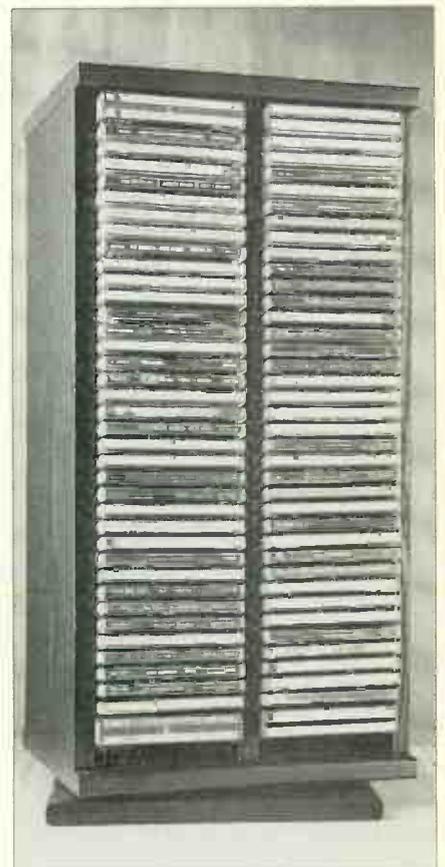
A fascinating little device no larger than a hand-held remote which allows the user to adjust bias on any cassette deck perfectly for any tape. You can check the state of your cables and connections with it, too! Supplied with a cassette test tape and full instructions. (See review, Nov. 1992 issue.)

BUG AUDIO£59.99

SOUND SWIVEL

A rotating, upright, double-sided, storage cabinet with space for up to 160 Compact Discs, including 8 double jewel-cases. Mounted on an all-steel turntable, it swivels smoothly through 360 degrees giving easy access to the storage compartments either side. Manufactured in durable MDF with a Black Ash effect finish, the Sound swivel comes packed for self assembly with full instructions.

SOUND SWIVEL £49.95



AUDIO ACCESSORIES

LASAWAY GREEN PEN

When red laser light hits the reflective surface of a CD, some of it can be scattered off the edges of the disc, causing optical interference. Applying this green coating, formulated by Japanese company Mitsubishi, to the inner and outer edges of the CD reduces this interference, improving sound quality.

LASAWAY GREEN PEN£8.50



ANTI-STATIC RECORD SLEEVES

Translucent sleeves, treated to reduce static and dust attraction, supplied in packs of fifty.

They will fit inside ordinary printed inners.

LP SLEEVES (50) PRICE £7.50



MILTY TRIPLE A

Suitable for all types of cassette players including auto-reverse, the Milty Triple A wipes clean single/dual capstans and pinch rollers with a non-abrasive cleaning action.

MILTY TRIPLE A £6.50

MILTY MAGNET IX

The Milty Magnet IX comes complete with battery. It requires approx one second to de-magnetise the heads removing magnetic charge build up. Recommended after every 30 hours of playing time.

MILTY MAGNET IX £10.50

HI-FI WORLD SPECIAL AUDIO ACCESSORIES ORDER FORM

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- Audio Technica Green CD Ring Stabilizers.....£6.50 (Pack of 5)
- Audio Technica Record Cleaning System.....£10.50
- Automatic CD Cleaner.....£21.95
- Bug Audio Biasbug.....£59.99
- CD sound swivel.....£49.95
- Gold plated 4mm plugs.....£8.00 (4)
- Goldring Exstatic Mat.....£7.50
- Goldring Super Exstatic Carbon Fibre Disc Cleaner.....£9.95
- HFW Silver Plated Copper Interconnects (1m pair).....£69.95
- Hi-Fi World Dry Stylus Cleaner.....£1.95 per sheet
- Hi-Fi World Solid Silver Interconnects (1m pair).....£139.95
- Kontak cleaning fluid.....£19.00each
- Lasaway Green Pen.....£8.50 each
- Laserguide.....£14.95
- Michell Gold-Plated Side Entry Banana Plugs (4).....£10.00
- Michell Gold-Plated Speaker Cable Connectors.....£10.00
- Michell Gold-Plated Sure-Loc Banana Plugs (4).....£14.95
- Michell Rhodium-Plated Sure-Loc Banana Plugs (4).....£18.95
- Milty Magnet IX.....£10.50
- Milty Triple A.....£6.50
- Nagaoka Anti-static record sleeves.....£7.50 (50)
- ON Stylus Cleaning Kit.....£2.50
- Pixall MkII Record Cleaner.....£10.75 each
- Pixall refill roller.....£2.75each
- Record storage cube.....£42.00 each
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- Screened Mains Cable With Fig 8 Plug (1m).....£15.75
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- TDK Head Cleaning Kit CK-A1 (double bottle).....£5.50
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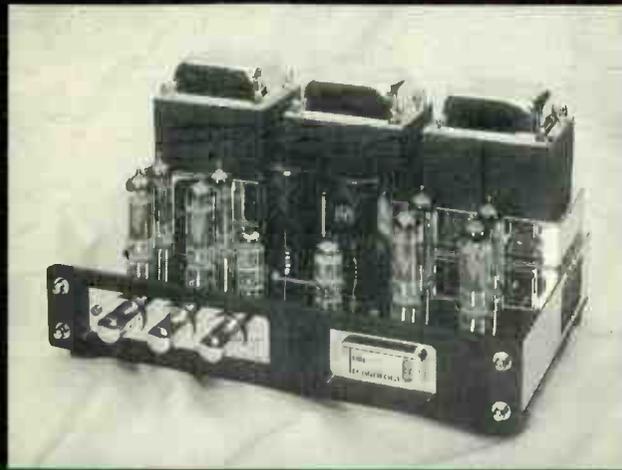
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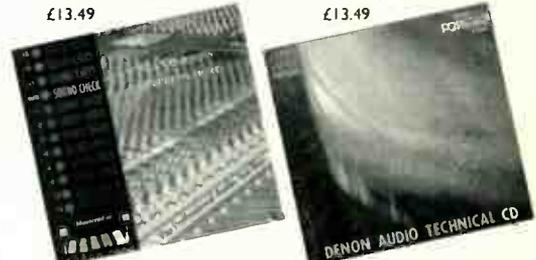
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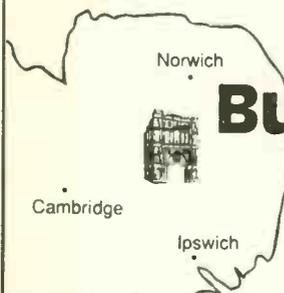
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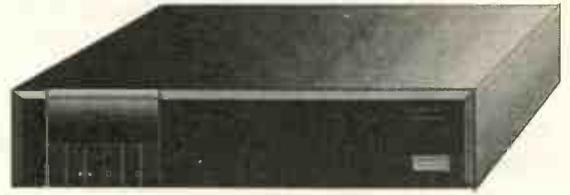
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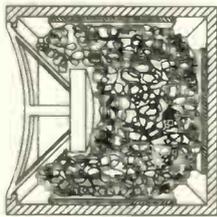
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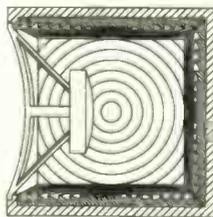


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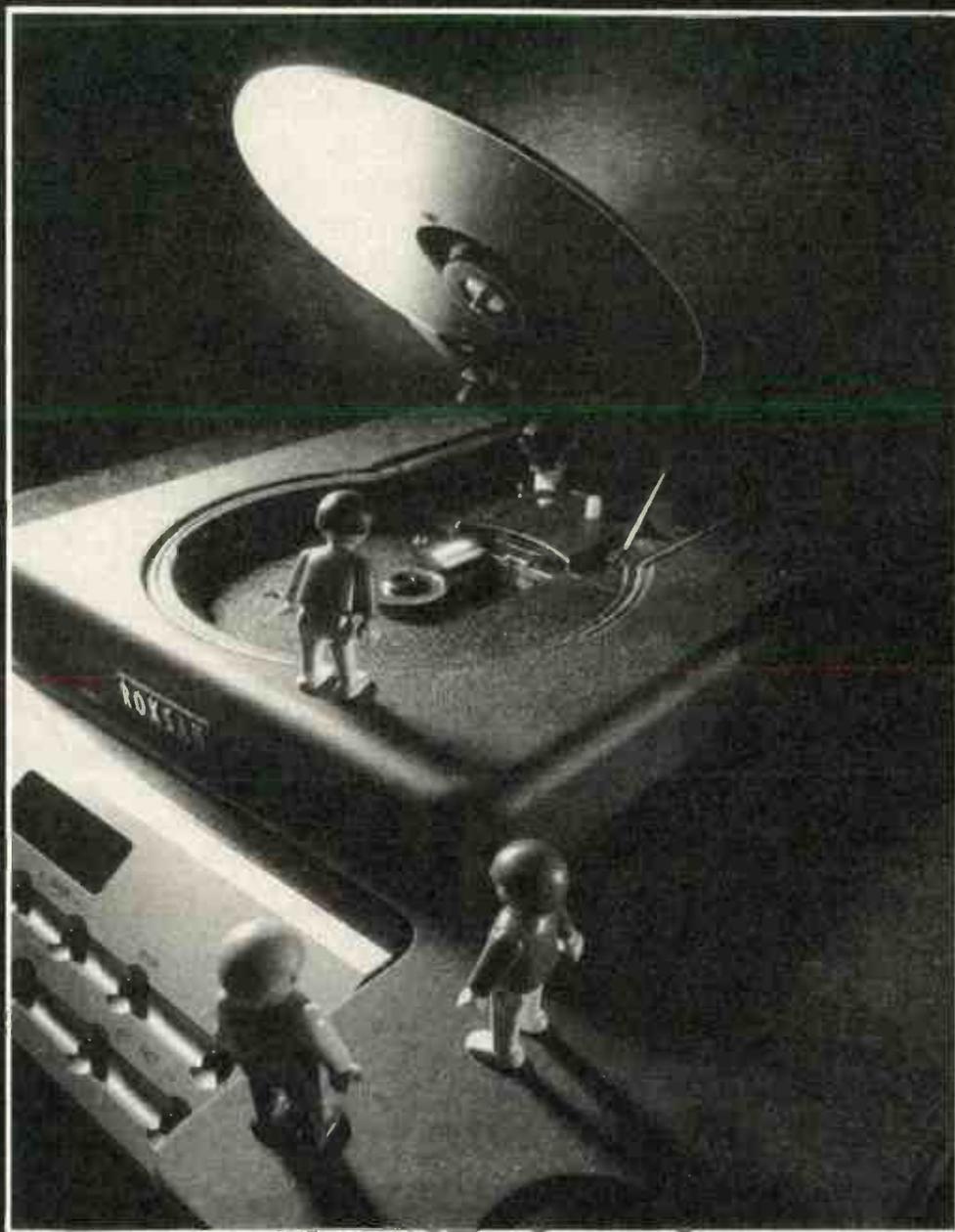
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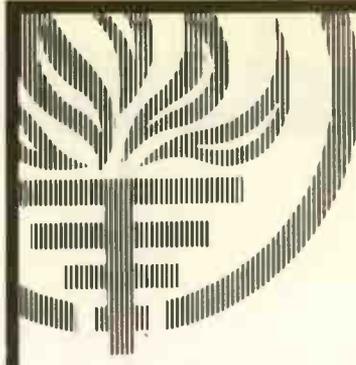
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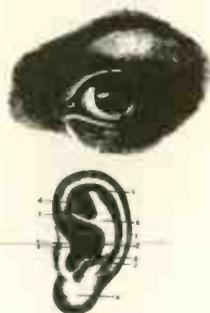
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We have decided to offer a range of the ultra high quality components used in most of the Audio Note amplifiers to the discerning "do-it-yourself" valve amplifier enthusiast. These components include specially made valve bases, paper in oil signal capacitors, copper & silver foil signal capacitors, Black Gate graphite electrolytic capacitors, acid/corrosive-free silver solder, audio output transformers, valves and many other useful bits for upgrading old or constructing new valve amplifiers.

All prices are excluding Vat, which, if you live inside the EEC will be added to your purchase, after the addition of postage and packing costs.

We accept VISA, Mastercard, Access, Diners, and Amex, and pay this way, we will need your address, card no. with start and expiry dates. You can also pay by bankers draft, Eurocheque or cheques drawn on a UK bank account. Please note that there is a minimum charge on credit card transactions of £20.00.

Delivery is normally about 7 days from receipt of cleared funds, but please allow up to 60 days for some items, if not stock at the time or order.

If any of you reading this have possession of any subjects which contain information relevant to the subject of Audio Design and which would be useful to share with others, please let us know either by fax or telephone. There is an award of £20.00 (payable in valves or other bits, post free) to anybody who sends us a book which contains useful information about valve amplifier design or theory.

Circuits, Valve Data & Basic Technical Information.

If you would like some suggestions to base a future project around, then we shall be happy to provide you with a circuit pack containing good circuits like ONGAKU, KEGON/KASSAI, NEIRO, GAKU-ON plus several other power amplifier circuits and the MTTube pre-amplifier, which is the best pre-amplifier circuit we have come across. Just send a stamped self addressed A4 size envelope, together with £4.00 in small denomination, or if you live outside the UK a US\$ 10.00 bill will do, please do not send International Response Coupons or International money orders, as they cost more to cash than their value.

We can also supply a set of data sheets for the most commonly used valves, ECC82, ECC88/6922, 12AX7/6072A 7025/12AX7WA/ECC83, 6SN7, 300B, 211VT4C, 845, EL34/6CA7, 2A3, 6X4, 5U4G, GZ34/SAR4, EL84/6B05, 6V6GT, 6L6G, 5881/6L6WGC/KT66. Again send a stamped self addressed A4 envelope together with £3.00 in small denomination stamps or if outside the UK another US\$ 10.00 will suffice.

Since nothing really exists which gives a reasonable background to the subject of valve amplifier circuit design, Guy Adams and I have written and assembled a number of articles and extracts from old books which give some background to the subject, do not expect to become an instant expert, but it will serve as a useful reference, for the beginner as well as the more advanced. Again a small charge is required, this time £5.00, in small denomination stamps with a stamped self addressed envelope, outside the UK, please send US\$ 20.00.

We do accept a UK cheque or bankers draft in Pound Sterling for the above charges as well.

SOUND PRACTICES.

If you are seriously interested in the subject of valve amplifier design, without the usual preconceived notions of what is "good" amplifier design and technology (the traditional view, which has brought us the blessings of the transistor amplifier, has obviously disqualified itself quite monumentally), then SOUND PRACTICES is the magazine to read, here you will find articles about design parameters, DIY articles for amplifiers and speakers, reviews of new and old. In other words the very subjects that none of the self-serving, advertising led traditional press will touch as they do not enhance the business of their normal advertisers. You can buy SOUND PRACTICES from us at £5.00 per copy (there are currently 4 issues available) or by subscription from SOUND PRACTICES P. O. Box 19302, Alexandria, VA 22320, USA. A regular modern world bargain, and there are practically none of those in Audio today. With enough subscription support SOUND PRACTICES may just bring about the "sound practices" that the hi-fi industry has abandoned for so long. So get a subscription!

OUTPUT TRANSFORMERS.

Specifications:
PP = Push-Pull, PPP = Parallel Push-Pull, SE = Single-ended, PSE = Single-ended Parallel UL signifies 43% ultralinear taps, as a general rule we do not condone the use of UL-taps, as we consider these detrimental to sound quality. ** Dynaco replacement.

All primary impedances are calculated for Class A operation the main consideration given to maximum dynamic power transfer ability and minimum distortion, rather than meaningless steady state sine- or squarewave conditions.

All our single-ended output transformers are airgapped, and the maximum standing current allowed before saturation is shown in column 5.

All our output transformers have a frequency response well beyond the audible range, typically 20Hz - 40KHz with 1.5dB, all are IE-cored with high grade silicon steel laminations, wound with oxygen-free copper wire and supplied with either bell-ends or frames, both with flying leads.

We generally overspecify our transformers by 50% power in Push-Pull (which means that a transformer stated as 25 watts will allow about 35-38 watt peaks. Our single-ended outputs are generally over specified by 100%, which means that they will instantaneously allow peaks of double the given maximum power through undistorted.

We do not give any further technical information on our output transformers, as we do not wish to take part in technical competitions, our products are designed to criteria which are and will be understood once they are listened to!

In addition to the output transformers offered below, we offer a design service, where we can supply almost any requirement for wideband transformers, whether for microphones, moving coil cartridges, line input, phase splitter, interstages, driver or power output, we design and manufacture prototypes in-house, the cost for the paper design is £200.00, prototype cost is calculated on a per case basis. We can also produce production quantities.

Sizes are given as Width/Height/Depth, where depth is the depth of the coil itself and width is the depth of the core.

CHOKES & INDUCTORS.

Value	Size	Price Ex. UK Vat
3H/1 00mA		14.00
5H/1 50mA		21.00
10H/125mA	63x74x76 mm	26.00
10H/200mA	98x65x83 mm	33.00

PAPER IN OIL SIGNAL CAPACITORS

These handmade signal capacitors are sonically superior to any of the plastic or other paper types we have come across. If you have never experienced the difference that a really good paper/oil capacitor can make in a valve amplifier, then you really should try. Our specially made paper/oil caps have a like, colour, lack of harshness and evenness of dynamic behaviour across the frequency range, which is guaranteed to brighten up your day! Recommended as replacements in old and new valve amplifiers alike (and even in the odd transistor amplifier), and essential for OIY projects.

Value	DC Voltage	Size	Price ex. UK Vat
0.015mF	400 volt	21x9mm	2.85
0.022mF	400 volt	35x10mm	3.70
0.082mF	400 volt	33x14mm	4.25
0.12mF	400 volt	33x14mm	4.75
0.18mF	400 volt	32x16mm	5.15
0.22mF	400 volt	35x18mm	5.85
0.33mF	400 volt	43x18mm	6.75
1.4mF	400 volt	70x24 mm	14.95
0.0015mF	630 volt	17x9 mm	2.85
0.022mF	630 volt	20x10 mm	3.25
0.082mF	630 volt	33x16 mm	3.75
0.18mF	630 volt	43x18 mm	4.75
0.22mF	630 volt	52x19 mm	5.75
0.33mF	630 volt	52x22 mm	7.25
0.39mF	630 volt	52x26 mm	7.95
0.22mF	1000 volt	56x26 mm	6.95
0.39mF	1000 volt	61x26 mm	11.65
1.2mF	1000 volt	72x40 mm	16.75
0.22mF	1600 volt	60x26 mm	9.65
0.22mF	2000 volt	70x29 mm	11.55

All Audio Note paper in oil signal capacitors are axial type. We are preparing a range of very small picotard value paper in oil capacitors at the moment in addition to the above.

PAPER IN OIL COPPER FOIL SIGNAL CAPACITORS.

We are currently developing a range of paper in oil capacitors where instead of using aluminium foil as in the above paper caps, we use an oxygen free copper foil with 99.99% pure solid silver lead out wires, to "bridge" the price-quality gap between the more standard paper/oil caps and the Japanese handmade Silver foil signal capacitors. For the time being we will only have two values available.

Value	DC Voltage	Size	Price ex. UK Vat.
0.15mF	630 volt	32x16 mm	16.45
0.22mF	630 volt	56x20 mm	19.75

AUDIO NOTE SILVER FOIL SIGNAL CAPACITORS.

Best signal capacitors available, quality really speaks for itself, used in amplifiers like ONGAKU, KEGON, GAKU-ON and MTTube Silver, handmade in very limited quantities at Audio Notes facility in Tokyo, Japan.

Value	DC Voltage	Price ex. UK Vat.
0.02mF	500 volt	211.75
0.05mF	500 volt	346.75
0.1mF	500 volt	645.75
0.2mF	500 volt	995.75

AUDIO NOTE PAPER IN OIL RESERVOIR CAPACITORS.

Mainly for use in inductor power supplies, but have other uses.

Value	DC Voltage	Size	Price Ex. UK Vat.
2mF	400 volt	30x40x55 mm	26.75
2mF	630 volt	35x45x72 mm	33.65
2mF	1000 volt	45x45x72 mm	41.75
2mF	1600 volt	50x70x72 mm	45.95
4mF	1000 volt	45x45x120 mm	49.95
4mF	2500 volt	70x70x120 mm	265.75
10mF	1000 volt	70x100x100 mm	96.75
12mF	1000 volt	70x100x120 mm	109.95
12mF	1600 volt	100x100x120 mm	136.75
12mF	2000 volt	100x100x220 mm	159.75

AUDIO NOTE ACIO & CLODR FREE SILVER SOLDER.

The best solder we have been able to find, does not contaminate the junction, which over time increases junction resistance. Used in all our amplifiers from OTU to the GAKU-ON.

Weight/Measure	Price Ex. UK Vat.
50 grammes or about 8 meter 1 mm diameter	19.95
1 kilo roll of 1 mm diameter	299.95

AUDIO NOTE CABLES & WIRES.

We are proud to offer the AUDIO NOTE range of high quality copper and silver coax, speaker and wiring cables, which, depending on the overall price of the project will do justice to any hi-fi system, regardless of price.

Solid 99.99% Pure Audio Note Silver Wire

Gauge	Insulation Material	Price per Meter Ex. UK Vat.
0.05mm	Polyurethane	16.75
0.2mm	Polyurethane	22.75
1 mm	ML	36.75

The above solid silver wires are suitable for inductors for speaker crossovers, both active and passive or for internal wiring in tonearms, amplifiers etc.

AUDIO NOTE HIGH QUALITY STEPPED ATTENUATORS & SWITCHES.

These handmade attenuators and switches are manufactured by a friend of Mr. Kondo of AUDIO NOTE, and represent the best available volume controls and switches you can use in your pre-amplifier, the attenuator is 48 steps and with silver/rhodium plated contacts/brushes made with an array of tantalum film resistors. The switches feature silver plated contacts and self cleaning action.

Type	Value	Price Ex. UK Vat.
Stereo Potentiometer /Attenuator	50KOhms	198.75
Stereo Potentiometer /Attenuator	100KOhms	207.75
2 Channel switch	6 - way adjustable	78.75
4 Channel switch	6 - way adjustable	101.75

AUDIO NOTE HIGH QUALITY CERAMIC VALVE BASES

All of our valve bases are of the highest possible quality, made from stellite and using the best metal parts from alloys which retain their spring tension around the valve pin for longer. They are recommended as upgrades to most old valve amplifiers and should be an essential part of any OIY project.

Type Mounting Plating Price Ex. UK Vat

4-pin UX4 for 300B /2A3/801A Chassis	Gold	8.25
4-pin UX4 for 300B /2A3/801A Chassis	Nickel	7.25
4-pin UX4 WE-type for 300B/2A3/801A Chassis Silver		14.75
4-pin Jumbo 4 for 211/ V14C/845 Chassis with bayonet	Silver/chrome	159.95
5-pin UY5 for 807	Chassis/Gold	9.75
7-pin B7 for 6X4, OA2	PCB Silver	6.15
7-pin B7 for 6X4, OA2	Gold	7.85
7-pin B7 for 6X4, OA2	Chassis from above Silver	6.75
7-pin B7 for 6X4, OA2	Chassis from above Gold	7.95
8-pin UX8 for EL34, 6550, 5U4G, GZ34, 6L6G, etc	Chassis Silver	5.65
8-pin UX8 for EL34, 6550, 5U4G, GZ34, 6L6G, etc	Chassis Gold	8.65
9-pin B9 for ECC83, ECC88, 5687, 6350, etc PCB Silver		3.85
9-pin B9 for ECC83, ECC88, 5687, 6350, etc PCB Gold		5.75
9-pin B9A for ECC83, ECC88, 5687, 6350, etc, etc	Chassis from above Silver	4.45
9-pin B9A for ECC83, ECC88, 5687, 6350, etc, etc	Chassis from above Gold	6.75
9-pin B9A for ECC83, ECC88, 5687, 6350, etc, etc	Chassis from below Silver	4.95
9-pin B9A for ECC83, ECC88, 5687, 6350, etc	Chassis from below Gold	7.15
9-pin B9A for ECC83, ECC88, 5687, 6350, etc	Chassis from below Nickel	9.75

You may want to start your project with less overall cost, and for this purpose we can offer the following industrial grade ceramic valve bases.

Type	Mounting	Price Ex. UK Vat.
8-pin for EL34, 6550, KT66, 6L6G Chassis with bracket		1.45
9-pin for ECC83, ECC88, 5687, 6350		1.85
9-pin for ECC83, ECC88, 5687, 6350	Chassis with shroud	1.85

AUDIO NOTE SELECTED AUDIO VALVES.

Our valves are selected from the best available sources and are tested to the same stringent standards that we apply in the production of our own amplifiers, they fall into two categories, standard production items and rare, mostly NOS (New Old Stock) valves which are no longer in production. We have compiled a special list of the NOS items, which is available on request, beware the valves on this list are NOT cheap.

Standard Stock Items.

Type No.	Type	Price Ex. UK Vat
ECC835/12AX7WA/7025	double triode	2.95
E88CC/6922/6DJ8WA/7308	double triode	3.95
EF86/6267/2729	pentode	2.45
ECC82/12AU7/6189W	double triode mil spec	5.75
65N7	double triode, UX8 base	1.75
65L7GT	double triode, UX8 base	2.85
65J7	pentode	1.75
5687WA	double triode very powerful	4.55
6350WA	double triode	4.75
EL84/6B05	small power pentode	1.55
EL84M/6B05WA	small power pentode, mil spec version	4.75
6V6GT	small power pentode	2.45
6L6G	medium power pentode	2.75
5881/KT66/6L6WGC	medium power tetrode	4.95
6550/KT88	large power tetrode	12.45
6C33	powerful regulator, indirectly heated	

6A57/6080	triode	24.65
	strong regulator, indirectly heated	
	triode	6.45
2A3 4pin	directly heated small power triode	17.95
300B	directly heated power triode	57.95
5U4G	HT-rectifier	3.25
5Y3GT	HT-rectifier	2.25
5V4GT	HT-rectifier	2.25
GZ34/SAR4 6X4	HT-rectifier, very good for pre-amplifiers	2.65

RESISTORS

Beyschlag

We offer three quality levels of resistor quality, all are 1%, starting with the Beyschlag metalfilm, which are slightly magnetic (as are the vast majority of other makes of metal film resistors), but nonetheless very good sounding, as used in all our UK-made amplifiers, up to quality level 3 (the MEISHU/P3) no-feedback triode amplifiers.

Beyschlag 1 watt, 1% resistors up to 500KOhm, E 0.11, above 500KOhm £0.13 each.

HOLCO

Better sound quality can be achieved with the H2, 1 watt, 1% non-magnetic resistors, which we regard as the best "industrial grade" metalfilm resistors available. They have one small drawback, as they are quite fragile, and require careful handling, do not bend the legs too close to the body, they may become noisy.

HOLCO resistors type H2 50PPM cost £0.36 each from 1000ohm to 500KOhm, higher and lower values are all £0.63 each.

SHINKOH Tantalum Film Resistors.

This is definitely the best sounding resistors available, forget the VISHAY, which may be ok in high feedback transistor amplifiers, but in our opinion quite uncomplimentary to the qualities of real Audio Amplification (i.e. directly heated triode amplifiers running feedback free in single-ended Class A), this is where you will need the tantalum film resistor for the best results.

Unfortunately, the manufacturers have decided to withdraw the 1 & 2 watt values off the market for the time being, leaving only the 1/2 watt version available, which does rather complicate matters. However, as with most handmade specialist items, which covers most on this list, if demand is sufficient, supply will rectify itself.

Anyway, the 1/2 watt, 1% tantalum resistors are non-magnetic and cost £2.06 each for all available values. There is long delivery on all values, so be prepared to wait if a value is not stock.

POTENTIOMETERS.

Best available from sound quality - price viewpoint, made by Noble in Japan, high quality carbonfilm.

Volume Controls.

Impedance	Construction	Price Ex. UK Vat
100KOhm	Frame type, PCB mounted	3.45
1 00KOhm	Encapsulated type, PCB mounted	12.65

Balance Controls.

1 00KOhm	Frame type, PCB mounted	3.95
100KOhm	Encapsulated type, PCB mounted	14.15

STANDARD TYPE SWITCHES.

This switch is adjustable 2 - 6 - way, it has gold plated contacts and a stainless steel ball for best possible corrosion protection and contact, price ex. UK Vat £3.30.

STANDARD ELECTROLYTIC CAPACITORS. Good quality standard industrial types.

Value	Voltage	Size	Price Ex. UK Vat.
100mF	10volt	18x6mm axial, 11x7mm radial	0.23
100mF	16volt	15x6 mm axial	0.29
220mF	16volt	11x8 mm radial	0.31
220mF	40volt	13x10 mm radial	0.42
100mF	63volt	13x10 mm radial	0.47
4700mF	16volt	38x18 mm radial	0.82
2200mF	50volt	35x18 mm radial, 41x10 mm axial	0.87
10mF	160volt	15x10 mm radial	0.56

22mF	350volt	25x12 mm radial	1.25
22mF	450volt	41x16 mm axial	1.89
47mF	385volt	25x21 mm radial	2.16
56mF	400volt	30x21 mm radial	2.37
68mF	400volt	30x22 mm radial	2.68
100mF	400volt	30x25 mm radial	3.26
220mF	305volt	52x30 mm radial can	4.45
220mF	450volt	40x30 mm radial can	5.85
220mF	550volt	112x35 mm radial screw terminals	27.65

RCA, BNC, BANANA, PLUGS, RCA SOCKETS, SPEAKER & GROUND TERMINALS & LOUDSPEAKER SPADES.

RCA	Plugs Standard Gold plug	1.55
AN-C	Gold plug	3.65
AN-GP	AU010 NOTE gold plug	8.51
AN-P	AU010 NOTE Silver plug, teflon insulated, non-magnetic	25.53
RCA Sockets.		
Type	Mounting	Price Ex. UK Vat.

RCA socket nickel plated	Chassis mounted	0.41
RCA socket gold plated	Chassis mounted	0.65
AN-CS AU010 NOTE non-magnetic, teflon insulated	Chassis mounted	3.65

socket, gold plated

BNC Plugs & Sockets.

Type	Price ex. UK Vat.
Standard BNC plug	3.45
BNC Silver plated socket	
chassis mounted	2.05

Banana Plugs, Loudspeaker Cable Spades, Chassis Loudspeaker Terminals.

Type	Price Ex. UK Vat.
Banana plug, gold plated, spring loaded tension	2.45
AU010 NOTE Loudspeaker Cable spade, silver plated, non-magnetic	4.65
AU010 NOTE AN-ST Speaker Terminal, chassis mounts, nickel plated, red or black	1.85
AU010 NOTE AN-ST/G Speaker Terminal, chassis mounts, gold plated, red or black	2.75
AU010 NOTE AN-STR Speaker Terminal, chassis mounts, fully gold plated, non-magnetic, red or black	4.75
Ground Terminal, chassis mounted and nickel plated	1.45

Our range of components is constantly expanding, as we find new or better suppliers, so stay in touch by reading our adverts in hi-fi World and hi-fi News.

BLACK GATE ELECTRON TRANSFER, High Performance, Graphite Electrolytic capacitors.

There are very few audio parts that promise a guaranteed improvement when replacing practically any other part, but this is what the BLACK GATE capacitors actually do. Exchanging any electrolytic capacitor anywhere in the circuit of an amplifier or in the crossover of a speaker will greatly improve sound quality. We are working on some guidelines as to where, how and which types of Black Gates to use in different circuits, the first such technical guideline is available now and is called "Improving your CO-Player" and can be obtained by sending a stamped addressed envelope to us requesting this leaflet. It is very important to note that all BLACK GATE capacitors take time to charge-up or stabilize, when first put in circuit, depending on type and application this "maturing" time can be between 100 and 300 hours.

Value	Voltage	BG-Type	Suggested Use	Price Ex. UK Vat
0.47mF	50volt	PK	Anywhere	1.05
1 mF	50volt	PK	Anywhere	1.25
2.2mF	50volt	PK	Anywhere	1.55
4.7mF	50volt	PK	Anywhere	2.15
22mF	50volt	PK	Anywhere	3.35
100mF	100volt	Standard	Anywhere	7.75
1 000mF	50volt	Standard	Anywhere	24.55
220mF	1.6volt	Standard	Anywhere	4.35
470mF	1.6volt	Standard	Anywhere	6.35
10,000mF	90volt	Standard	PSU smoothing	234.65
4700mF	1.6volt	Standard	Anywhere	14.25
47mF + 47mF	500volt - 550v surge	SK-Type	PSU filter capacitor	85.95
100mF + 100mF	500volt - 550v surge	SK-Type	PSU filter capacitor	101.95
100mF	500volt - 550v surge	SK-Type	PSU filter capacitor	72.75
220mF + 220mF	350volt - 400v surge	SK-Type	PSU filter capacitor	92.65
100mF + 100mF	350volt - 400v surge	SK-Type	PSU filter capacitor	75.35
22mF	350volt	VK-Type	Decoupling or filter capacitor	18.95
220mF	1.6volt	F-Type	Low ESR version	6.75
220mF	1.6volt	FK-Type	Ultra low ESR version, comparable to film caps	9.95
1000mF	50volt	FK-Type	As above use anywhere	43.95
2200mF	50volt	FK-Type	As above use anywhere	98.85
4.7mF	50volt	C-Type	For circuits with OC potential difference	3.35
1 mF	50volt	N-Series	Bipolar for use in negative feedback circuits etc.	4.95
4.7mF	50volt	N-Series	as above	5.75
10mF	50volt	N-Series	as above	6.95
47mF	50volt	N-Series	as above	13.75
100mF	50volt	N-Series	as above	18.95
6.8mF	50volt	Bipolar	For loudspeaker crossover networks	10.85
1 0mF	50volt	Bipolar	as above	17.45
22mF	50volt	Bipolar	as above	27.95
47mF	50 volt	Bipolar	as above	27.95
100mF	16volt	BG-N Type	For super low noise PSU's	24.65
470mF	16volt	BG-N Type	as above	28.95
1000mF	50volt	BG-N Type	as above	99.95
220mF	100volt	BG-N Type	as above	423.35

On the next page is a list of all BLACK GATE capacitors available, together their sizes, best usage etc. Lastly, we can supply a range of more modestly priced components, still good quality, but more Industrial grade, if you like.

AUDIO QUALITY OUTPUT TRANSFORMERS.

Single-ended Circuits. Suggested Valve VAT	Max Cl. A Power	Prim-Sec. Impedance	Size/Weight Max.	Current	Price ex. UK	
EL84/ECL86/6V6	20 watts	2K6 - 4/8 Ohms	117x98x90 mm	110mA PSF	87.00	
300B/2A3/6B4G	25 watts	2K5 - 4/8 Ohms	117x98x90mm	90mA SE	91.00	
EL34/6550/KT88	30 watts	1K5 - 4/8 Ohms	115x98x95mm	180mA PSE	113.00	
2A3/6B4G	30 watts	1K25 - 4/8 Ohms	98x82x95mm	130mA PSE	97.00	
5881/KT66	30 watts	2K1 - 4/8 Ohms	115x98x95mm	140mA PSE	106.00	
211/VT4C	30watts	10K - 4/8Ohms	117x98x100mm	150mA SE	114.00	
211/VT4C/845	50 watts	10K - 4/8 Ohms	112x134x150mm	150mA SE	124.00	
300B	50 watts	1K25 - 4/8 Ohms	135x115x125mm	180mA PSE	151.00	
845	50watts	2K5 -4/8 Ohms	137x114x130mm	180mA PSE	172.00	
211/VT4C	75 watts	5K-4/8 Ohms	137x115x145 mm	240mA PSE	237.00	
New SE Product						
EL34/6550/KT88	20 watts	3K - 4/8 Ohms	117x98x92 mm	130mA SE	104.00	
6L6G	30 watts	3K - 4/8 Ohms	115x98x95 mm	140mA PSE	107.00	
Push-Pull Circuits						
EL84/ECL86/6V6	15 watts	8K - 4/8 Ohms	80x67x68 mm	PP	42.00	
EL34/6L6G/5881	25 watts	6K - 4/8 Ohms	88x73x80 mm	PP	59.00	
2A3/6B4G/300B	30 watts	5K - 4/8 Ohms	88x75x80 mm	PP	63.00	
KT88/6550	50 watts	6K6 - 4/8 Ohms	108x91x90 mm	PP	73.00	
EL34/KT66/5881	50 watts	3K - 4/8 Ohms	98x82x83 mm	PPP	74.00	
845	50 watts	6K8 - 4/8 Ohms	108x91x90 mm	PP	114.00	
Pure Silver Wired Outputs.						
300B/2A3/ 6B4G	25 watts	2K5 - 4/8 Ohms	7x98x90 mm	90mA	SE	1,645.00
211/VT4-C/845	50watts	10K - 4/8Ohms	112x134x150mm	150mA	SE	1,975.00

The AU010 NOTE silver wired outputs listed here are designed and made in the UK, we can supply the AU010 NOTE Japan manufactured outputs for the ONGAKU or the KEGON, but they are exceptionally expensive, as you would expect from items that take upwards from 100 hours each to make, for example an output transformer for an ONGAKU costs £16,500.00.

AU010 NOTE CERAMIC STAND-OFFS.

In most hardwired valve power amplifiers it is frequently difficult to get the HT and heater rails properly suspended and separated, safely and neatly from the chassis, this especially applies when building amplifiers using the really high voltage directly heated triodes like 211, VT-4C, 845, 849, 304TL, OA100 etc. When planning design like this, it is important to incorporate suitable layout from the start, and the AU010 NOTE stand-offs should be more or less mandatory in that context. They are screw-in type with steatite insulator and either a wrap-round turned "head" on the single way version or separated solder slots on the multi-way versions.

Type No.	Number of Tags	Height/Length	Solder Connection	Chassis Fixing	Price Ex. UK Vat.
AN-421	1	25.5 mm	Wrap-round	Screw-in bolt	1.41
AN-422	1	17.4 mm	Wrap-round	Screw-in bolt	1.41
AN-423	1	22.6 mm	Solder slot	Screw-in	1.41
AN-452	2	Adjustable, 17mm	Solder slots	Qual bolt screw-in	2.42
AN-453	3	Adjustable, 24mm	Solder slots	Dual bolt screw-in	3.05
AN-455	5	Adjustable, 32mm	Solder slots	Dual bolt screw-in	4.04
AN-458	8	Adjustable, 58mm	Solder slots	Dual bolt screw-in	5.79
AN-460	10	Adjustable, 72mm	Solder slots	Qual bolt screw-in	7.31
AN-476	6	25mm/45mm	Solder slots	Screw-in bolts	5.35
AN-479	9	25mm/66mm	Solder slots	Screw-in bolts	7.53

AU010 NOTE Coax Interconnect Cables.

Type/Colour code	Construction	Price per Stereo Meter Ex. UK Vat.
AN-A yellow	symmetrical 6N copper litz coax	15.32
AN-C red	symmetrical OFHC copper litz coax	29.79
AN-S dark grey with yellow stripe	symmetrical 99.99% silver litz coax	84.25
AN-V silver grey with yellow stripe	symmetrical 99.99% silver litz coax	152.35
AN-Vx silver grey	symmetrical 99.99% silver litz coax	382.98

It is recommended to use the internal twin silver wires in the AU010 NOTE coax cables as internal wiring cable, this is what we do in amplifiers like the ONGAKU, M7Tube etc.

AUDIO NOTE COMPLETE KITS.

We are developing a range of complete kits, to give those of you who have the ability, but do not have the time to develop a project from the ground, so to speak. In order to be able to offer the best possible quality - price relationship the kits we offer will be good basic circuits, with no-frills power supplies and components.

Kit One.

Based around the justly famous 300B directly heated triode, we see this kit as the introduction to real Audio Amplification, as it covers all the important aspects of design necessary, Single-Ended, No-Feedback, Class A, Directly Heated Triode, to become a member of this exclusive club of amplifiers.

Kit One has one 300B per channel running at 420 volts with 75mA current giving 9/10 watts of the cleanest power you will ever hear, the input stage consists of a 6SN7GT with a 5687 double triode driver stage running in SRPP.

The powersupply is a capacitor-choke-capacitor with a 5U4G HT rectifier, the heaters are AC heated.

Component quality is similar to our Level 2 finished products, AU010 NOTE paper in oil signal capacitors, Beyschlag Iwatt 1% metallim resistors, good quality electrolytics (sorry NO Black Gates!) and a simple, attractive stereo chassis in grey paintwork. Protecting cover is extra.

Price £750.00 incl. Vat, which includes all valves (yes, also the 2 x 300B needed) but not postage/packing which to UK customers is £12.00, topcover is £99.00 extra. The Kit One is available now.

Kit Two.

Kit Two features 2 x 5881 pentodes running in parallel Single-Ended mode, yielding some 20 watts of pure Class A, valve rectified HT for the output stage, stereo chassis, and 6SL7GT input and 6SH7GT SRPP driver stage, componentry and chassis as Kit One.

Price £600.00 incl. Vat, includes valves, but not postage/packing, cover is extra at £99.00. Available in December 93. Write to, AU010 NOTE (UK) Ltd. Unit 1, Block C, Hove Business Centre, Fonthill Road, Hove, East Sussex, BN3 6HA, England. Telephone +44 0273 220511, fax +44 0273 731498. Direct Line to sales +44 0273 885511.

MAINS TRANSFORMERS

This range relates to our finished products, mains transformers are notoriously difficult items to offer as the number of permutations of HT and Heater voltages are almost endless. We shall be offering a more comprehensive range as opportunities arise.

Primary Voltages	Secondary HT Windings	Secondary Heater Windings	Price Ex. UK Vat
0v/100v/110v/120v	0v-230v at 350mA	0v-12.6v at 1 Amp	34.00
0v/220v/230v/240v	3.15v-0v-3.15v at 4 Amp		
120v/1 10v/100v/0v	0v - 230v at 0.4 Amp	0v-12.6v at 1 A	41.00
0v/1 00v/11 0v/1 20v	3.15v - 3.15v at 4 Amp		
0v/1 00v/11 0v/1 20v	0v - 290v at 40mA	1 2.6v-0v at 1.5A	26.00
0v/100v/110v/120v	0v- 6.3v at 300mA		
0v/100v/1 10v/120v	310v-244v-0v-244v-310v at 320mA	3.15v -0v-3.15v at 4.5 Amp	72.50
0v/100v/110v/120v	0v-920v at 160mA	12.6v at 1.5 Amp	
0v/100v/110v/120v	150v-150v at 50 mA 1.5A,	0v - 5v at 2.5A	
120v/1 10v/1 10v/0v	390v-0v-390v at 200 mA	3.15v-0v-3.15v at 1.2Amp, 7v	86.70
0v/1 00v/11 0v/1	20v/1 70v at 50mAat 3A,	7v at 3A, 5v at 2A	

AU010 NOTE Speaker & Wiring Cables.

Type/Colour code	Construction	Price per Mono Meter Ex. UK Vat.
AN-D green	single core 6N copper speaker wiring	6.85
AN-B blue white writing	double strand, screened 6N speaker	12.34
AN-L blue black writing	wire double strand, screened 6N litz copper	25.11
AN-SP silver	speaker wire single core 15 strand 99.99% litz	106.38
AN-SPx silver	silver speaker wire single core 20 strand 99.99% litz	382.98
silver speaker wire		
PTFE Insulated Silver Plated Copper Wires.		

We can also provide less expensive wiring wires for hard wiring circuits, these PTFE insulated silver plated copper wires are 19 strand of 0.15 mm wire and come in brown, black, blue, pink, red, green, orange, violet, white and red/white, they cost £1.60 per meter in any colour

Tel. +44 0273 220511
 Fax. +44 0273 731498
 Sales +44 0273 885511

AUDIO NOTE

World favourites

COMPACT DISC PLAYERS

SONY CDP-497	£160	Superb starter CD Player, packed with facilities.	Aug'92
DENON DCD 890	£270	Exciting and forceful sounding player, but slightly characterful	Nov'92
CREEK CD60	£500	16-bit player. Excellent rhythmic properties and a superb bass performance.	Apr'92
QUAD 67	£790	A new breed of Quad. Remarkable solidity and lacking nothing in verve or excitement.	May'93
SUGDEN SDT 1	£850	Airy and spacious with a rare quality of ambience.	Mar'93
NAIM CDI	£1598	Single box, 16 bit player. Close to the two box CDS, has vital 'tingle factor'.	Apr'92

COMPACT DISC TRANSPORTS

DPA DIGITAL T-1	£795	Superbly clean and detailed sounding transport when sync-locked to DPA's converters.	Jan'93
M'MEGA DUO CD2	£1850	Seriously priced, serious CD using Philips' CDM-9 PRO mechanism. Exemplary.	Apr'93

DIGITAL TO ANALOGUE CONVERTERS

QED DIGIT/OPTO	£39/169	Philips Bitstream. Excellent value, with no rough edges. Now with optical input (Opto).	May'92
DPA LITTLE BIT II	£450	Building on the qualities of the original Little Bit, the 'II' is clear and open.	Sep'93
DPA DACS	£450-2K	The current masters of DAC-7, their DACs offer superb performance at a range of prices.	
SUGDEN SDA-1	£650	16-bit Philips based. A wide, open window for the transport to flow through. V. neutral.	Jun'92
P. T. ORDINAL	£695	Pure sound, smooth and free from harshness. One of the best at any price.	Jul'93
M'MEGA DUO PRO	£1050	Spacious and dynamic presentation, with a detailed and informative manner.	Apr'93
DPA PDM ONE III	£1280	Less ruthless than, but staggeringly close to, the PDM 2. Two box, DAC-7 affair.	Mar'92
P. T. DA CAPO	£1350	Pink Triangle's own one bit DAC reaches new standards in digital. One of the very best.	Jan'93

TURNTABLES

PROJEKT 2	£245	Czech built turntable with much to offer. Very coherent.	May'92
THORENS TD166	£270	Fitted with Rega RB 250 arm. Good basic deck, with tweakability.	Jun'92
MICHELL MYCRO	£397	Inbetween the Synchro and Gyrodeck, the Mycro has superb midband clarity and poise.	Apr'92
ROKSAN XERXES	£785	Highly analytical and exciting turntable. Can be almost CD like in its presentation.	May'92
P. T. ANNIVERSARY	£1200	Very neutral turntable. Excellent imagery and detail. A natural partner for the SME V.	May'92
SME MODEL 20	£2495	The last great turntable, bettered only by the £11,000 Model 30.	Oct'92

TONEARMS

REGA RB 300	£139	For Pink Triangles, Michells, Roksans, and Systemdeks. Simple and superb; dynamic with solid bass.	
MORCH DP-6	£665	'Unipivot plus' tonearm. Silken and rich quality. Perfect match for the Da Capo cartridge.	Jul'92
SME 309	£568	Based on IV and V: Aluminium armtube and detachable headshell. High end value for money.	Jan'93
SME SERIES V	£1232	A masterpiece of precision engineering, with a cohesive sound.	May'92

CARTRIDGES

GOLDRING 1012 GX	£60	Rounded bass, slightly forward midband, clean transients. A bargain.	Jul'93
GOLDRING 1022GX	£80	Extra degree of dynamic range and speed over the 1012GX	Jul'93
SUMIKO BLUE POINT	£100	The blue point casts a romantic charm over all types of music. Robust too.	Oct'92
ORTOFON MC15	£100	Moving coil cartridge at a moving magnet price. Has a tight grip on rhythm.	Jun'92
GOLDRING 1042	£100	A reference to all other MMs regardless of price	May'92
SHURE VST-V	£150	One of the finest moving magnets currently available. Excellent tracker.	Jul'92
GOLDRING ELITE	£200	British made moving coil. Good value, smooth and detailed, but can sound brittle at times.	Apr'92
MORCH DA CAPO	£500	Scan-Tech designed moving coil cartridge. Musical and accurate, without any flaw.	May'92

CASSETTE RECORDERS

NAKAMICHI DR2	£500	Worth every penny, pushes recordings to the limit and remains unflustered.	Mar'93
PIONEER D-500	£600	Very smooth sounding DAT deck, but still slightly coarser than the original source.	Apr'92
TEAC V8000S	£699	Dolby 'S' deck. Easy to use, very stable sound, with instrumental textures close to perfect.	Jun'92
NAKAMICHI DR1	£780	'Domestic' deck with Nakamichi sound quality, and manual head azimuth adjustment.	Jun'93
NAKAMICHI CR-7	£1500	No Dolby 'S', but auto tape tuning and motorised head. Astonishing complexity; The Best!	Aug'92

World favourites

TUNERS

AURA TU-50	£230
YAMAHA TX-950	£260
H/K TU9400	£300
QUAD 66FM	£490
NAIM NAT 03	£500
NAIM NAT 01	£1377

Superb FM-only tuner. Produces a delightful, three-dimensional sound. A cracker.
 Fine all-rounder, with good AM section.
 Fairly basic facilities, but sound which beats anything at the price.
 Among the very best in terms of tonal colour and imagery. Remote controllable.
 Warm and easy sound with a good sense of atmosphere, Excellent value.
 The best solid state tuner currently available. If you want better radio, live in the studio!

May'92
 Jul'92
 Jul'93
 Nov'92
 Sep'93
 Mar'92

INTEGRATED AMPLIFIERS

H/K HK6150	£159
NAD 302	£160
PIONEER A-300X	£200
DENON PMA-350II	£220
H/K HK6550	£349
AUDIOLAB 8000A	£430
SUGDEN A48B	£460
AUDIONOTE OTO	£1250
EAR 834	£1295

Good sounding starter amplifier. Great dynamic range, excellent bass.
 Lots of insight and detail, but could sound a little rough in the wrong system.
 Exceptionally sweet mid and treble, plus the superb dynamic range of the A400.
 Powerful and with deep rhythmic bass drive.
 Thoroughly refreshing, tonally neutral amplifier with a realistic price tag
 Very neutral and superbly built. Good bass, great imagery, but can be sterile.
 Gentle performer, but never masks the music with warmth. Tonally very even.
 12w Valve amplifier. More in tune with music than hi-fi. Superb dynamic range.
 Valve integrated amplifier with a sweet, open and detailed sound.

Jun 92
 Jan 93
 Dec'92
 Sep'93
 Nov'92
 Apr'92
 Apr'92
 Jun'92
 Feb'93

PRE-AMPLIFIERS

A. I.SERIES 200	£350
A. SYNTH. PASSION DPA DSP 200S	£495
MICHELL ISO HR	£850

Valve preamplifier. Rather coloured but very dynamic. Best with Innovations equipment.
 £475Or £275 for the kit version. Unrivalled transparency from a passive pre-amp. Not quite the 50S, but there's still nothing to match it at the price, use with 200S power.
 Impossible not to recommend. What more does your vinyl want?

May'92
 Aug 93
 Jun'93
 May'93

POWER AMPLIFIERS

SUGDEN AU41P	£530
QUAD 606	£675
DPA DPA 200S	£750
MICHELL ALECTO (S)	£1300
A. I. SER. 1000	£1500
MICHELL ALECTOS	£1800
CHORD SPM 1200	£2995
E.A.R. YOSHINO	£25,000

100 Watts of smooth, detailed, full bodied sound. And at a bargain price.
 140W powerhouse. Smooth and civilized, with the legendary Quad back-up.
 Not as cold as the 50S. Better than anything else at the price.
 Valve like transparency, big warm easy going sound.
 50W valve monoblocks. Powerful sound.
 The Alectos have a lucidity and three dimensional realism that is rarely attained.
 Massively powerful, dynamic and detailed sound. Among the best of solid state.
 Single-ended valve design. Noel is still suffering withdrawal from this product.

Apr'93
 Aug'93
 July'93
 Sep'93.
 May'92
 Dec'92
 Mar'93
 Jul'93

LOUDSPEAKERS

CELESTION I	£99
R' ALLAN MINETTEII	£120
GLL MAXIM	£120
MISSION 760i	£120
TANNOY 603	£125
ROGERS LS2a2	£209
TRIANGLE COMETE	£375
HARBETH HL-P3	£400
H'BROOK QUARTETS	£555
JPW RUBY I	£500
A. E. AEGIS	£620
REL STADIUM SUB.	£695
PROAC RES I S	£918
APOGEE CENTAUR	£1200
TANNOY D700s	£1970
TANNOY GRFM	£3500

Low price, compact size, big sound. An exciting all round performer.
 Fast and lively sounding, competent bass.
 Replacing the Maxim 3; not as tight in the bass but still one of the best at the price.
 Detailed, fast, and have bags of rhythm. Ear bashing pleasure.
 A rich and smooth blend that offer their best when bi-wired.
 So far the most correct speaker we have discovered at the price. Sweet and even natured.
 Highly efficient small-box loudspeaker with a superb mid band. Great for valve amps.
 There probably isn't a more neutral sounding design anywhere near the price.
 Sensitive enough to work with low power valve amps. Fast and detailed sound.
 Metal driver 'speaker with an exciting and lively presentation.
 Depth and transparency. Fast and lively metal driver loudspeaker
 Mono, self-powered subwoofer that works! Very flat frequency response.
 Small box design. Can convey the spirit, drive, and passion of music in a small room.
 Hybrid ribbon design. Great imaging and detail. Good value for panel fans.
 Dynamic and powerful. Needs a good clean power amplifier for best results.
 Giant loudspeakers. Capable of awesome sound. Need good valve amplification.

Oct'92.
 Sep'93
 Aug'93
 Nov'93
 Sep'92
 May'92
 Apr'92
 Feb'93
 Jul'93
 Aug'93
 Apr'93
 Jun'92
 Jul'92
 Jul'92
 Sep'93
 Jul'92

MISCELLANEOUS

BEYER DT41 I	£54
CELESTION DLP 600	£349

Excellent 'studio quality' headphones. Deep bass, powerful sound, if a bit splashy at times.
 Digital signal processor for the Celestion 600 loudspeakers. Sounds like a £400 upgrade.

Jun'92
 Jun'92



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Eric Baithwaite, Hi-Fi World, Sept. 1992

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Jimmy Hughes, Audiophile, Jan. 1993

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For further information on LFD Amplifiers, please fill in your details and return to LFD Audio.

Name _____
Address _____

SL SonicLink

'20 Derwent Business Centre,
Clarke Street, Derby DE1 2BU
Telephone: 0332 674929
Fax : 0332 298836

Read below the verdict from a recent interconnects supertest in What Hi-Fi? Then visit your local Sonic Link dealer.

Sonic Link Violet £80

Violet cable works well in high quality systems- where information retrieval is a priority. Despite having warmer, fatter bass than Pink or Red, it remains exceptionally clear and detailed,

Verdict ★★★★★

especially in the mid range and treble. Music's upper registers are very delicately portrayed but instruments nonetheless have a reassuringly solid feel. Not suitable for ragged-sounding systems

Sonic Link Pink £25

Verdict ★★★★★☆

This ultra-slender cable looks unconventional and home-brewed, but it does offer a respectably detailed and cogent sound. Pink's tonal balance is rather light, due to its lean, dry bass, but it doesn't sound too forward in a well balanced system thanks to very refined treble and good overall clarity. In fact this cable's fast, rhythmically urgent sound is very appealing.

Sonic Link Red £45

Verdict ★★★★★☆

Just like Pink, Red is also skinny, but packs loads of musical information into its slim and modest diameter, recommended as a CD to preamp link, red is vividly detailed with a vibrant and lively tonal balance, which is aided and abetted by good dynamic contrast and slick timing. Provides bass with far more substance and weight than the less pricier Pink leads

Sonic Link Blue £120

Verdict ★★★★★☆

Blue uses Sonic Link's rhodium plated plugs, which are claimed-and certainly seem able-to out perform the more common gold plated variety. Blue has a very clean and spacious sound that captures low level detail very well. Like the Violet cables though, it can be too revealing for a system.

Sonic Link Black £150

Verdict

★★★★★

A heavyweight, even by Sonic Link standards, this cable uses silver plated cable and rhodium plugs. Its sound is weighty too, but bass sounds over bloated, slowing lively music right down. We still prefer the cheaper Blue cable, which gives bass lines more intonation and flow, resulting in the music seeming faster and better articulated overall.

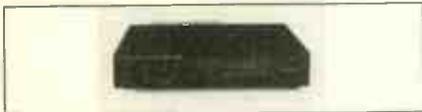
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Hart Audio Kits and factory assembled units use the very best audiophile components in circuit designs by the renowned John Linsley Hood to give you unbeatable performance and unbelievable value for money. We have always led the field for easy home construction to professional standards, even in the early days we were using easily assembled printed circuits when Heathkit in America were still using tagboards! Many years of experience and innovation, going back to the early Dinsdale and Bailey classics gives us incomparable design expertise in the needs of the home constructor. The current range of Hart kits is designed to give you the important care components of a system as a matching ensemble of audio excellence

1100 Series. LH80W "Audio Design" Mosfet Power Amplifier.



Another masterpiece from the drawing board of John Linsley Hood and another opportunity to give a system mega sound performance for only a few hundred pounds cost. A host of advanced features, in the hands of the skilled designer, give this amplifier a performance that really is only equalled, not exceeded, by the 4 or 5 figure price lagged exotica.

As always with a HART kit you have the pleasure of building selected, state of the art equipment, allied to the knowledge that your money has all been spent on quality components, you save all the costs of building and testing, plus the dealers margin on top of these by doing it yourself.

To give an idea of the measures taken to achieve ultimate quality and linearity in this amplifier each of the four output devices is only called upon to work at one NINETY-SIXTH part of its ultimate power rating.

We are proud to offer this latest John Linsley Hood masterpiece, the flagship of our range, which we believe is truly the ultimate design for the perfectionist, combining as it does the best circuit design, the best engineering and the best components, surely the only recipe for REAL sound fidelity. The HART KIT concept also makes it possible to build an amplifier with the facilities YOU want and we offer no less than three variations with options on the basic theme to suit your needs. One of these versions will, we feel sure, cater for your requirements. Should your requirements change at a later date then upgrades or alteration to a different version are no problem, try doing that to your High St store amplifier!

The Standard version has a passive input selector circuit with Alps Precision Low-noise volume and balance controls, switchable CD, Tuner and Pre-amp inputs and an optional stereo bargraph output level display. The 'Slave' version has stereo power amplifiers and standard power supply. The 'Monobloc' version again has the standard power supply but since it is only driving one power amplifier higher than normal output power is achieved with total channel separation. The slave and monobloc versions enable very sophisticated bi-amping and active crossover systems to be constructed.

K1100 Complete STANDARD Amplifier Kit, two power amplifier channels and one power supply module, direct input passive signal selector stage, Construction Manual and RLH11 Reprint.
SPECIAL DISCOUNT PRICE FOR COMPLETE KIT IS ONLY £395.21
A1100 Factory Assembled **£499.21**

K1100S Complete SLAVE Amplifier Kit, as above but without passive input stage.
SPECIAL DISCOUNT PRICE FOR COMPLETE KIT IS ONLY £333.62
A1100SC Factory Assembled **£422.62**

K1100M Complete MONOBLOC Amplifier Kit, consists of all parts for one power amplifier channel and one power supply module and all chassis parts.
SPECIAL DISCOUNT PRICE FOR COMPLETE KIT IS ONLY £261.20
A1100M Factory Assembled **£329.20**

All HART kits are designed for easy home construction to the very highest standards, and can be built by anyone of average manual ability. If you are still not convinced how easy it is to build it yourself with a HART kit you can order the Instruction Manual to read for yourself and we will refund the cost when you buy your kit!

PROBABLY THE LAST VINYL PREAMP YOU EVER BUY.

For those who love the vinyl medium the listening pleasure can only be enhanced by using the very best phono preamplifier available. The Hart range of phono preamps feature a special shunt feedback circuit topology and are designed by John Linsley Hood. This circuit format gives audibly superior sound to the standard series feedback system normally used and gives a performance that will exceed or equal that given by the best of the mega priced offerings. Our range includes units to suit everyone from the occasional user to

the serious audiophile. All can be changed to suit moving coil or moving magnet cartridges at the flick of a switch.



K1500 Series. This is an integrated circuit version of the shunt feedback concept, using so little power that it may be run from batteries. An ideal "first kit" project as it is very simple to put together and no mains voltages are involved.

K1500 Complete Kit With Full Instructions (Battery Powered) **£73.76**
A1500 Factory Assembled **£118.76**

K1450 Features a totally discrete component implementation of the Shunt Feedback concept. Audiophile grade components fitting to an advanced double sided printed circuit board make this a product at the leading edge of technology that you will be proud to own. Nevertheless with our step by step instructions it is very easy and satisfying to assemble. Due to the higher current consumption this unit is powered by our mains driven K1565 Audio Power Supply, itself an advanced piece of technology in a matching case. This supplies the superbly smoothed and stabilised supply lines needed by the preamplifier and features a fully potted Hi-grade toroidal transformer along with a special limited shift earth for hum free operation. Suitable for all moving coil and moving magnet transducers this unit is especially recommended for, and will extract the very best from the modern generation of low output high quality transducers.

K1450/1565X. Complete RIAA Phono preamplifier, Power Supply and power connect cable **Kit form £196.29.**

1450/1565X Factory assembled & tested. **£205.29.**

ALPS PRECISION LOW-NOISE STEREO POTS

Now you can throw out those noisy ill-matched carbon pots and replace with the real hi-fi components only used selectively in the very top flight of World class amplifiers. The improvement in track accuracy and matching really is incredible giving better tonal balance between channels and rock solid image stability.

On the motorised versions the 5v DC drive motor is coupled to the normal control shaft with a friction clutch so that the control can be operated manually or electrically.

Our prices represent such super value for pots of this quality due to large purchases for our own kits.



MANUAL POTENTIOMETERS

2-Gang 100K Lin **£15.67**
2-Gang 10K, 50K or 100K Log **£16.40**
2-Gang 10K Special Balance, zero crosstalk and zero centre loss **£17.48**

MOTORISED POTENTIOMETERS

2-Gang 20K Log Volume Control **£26.20**
2-Gang 10K RD Special Balance, zero crosstalk and less than 10% loss in centre position **£26.98**

HC80 Replacement Cassette Head.



The excellent performance of modern cassette recorders depends totally on the quality of the R/P head. Even the slightest amount of wear can impair the frequency response and distortion levels. Our HC80 is a top quality head from one of the foremost manufacturers in Japan. It is easily fitted to most standard stereo recorders (except Sanyo) and will transform the performance over a worn head. Only the fact that we buy these in vast quantities enables us to offer them at the amazing price of **only £11.70** each or **2 for £17.60.**

SPECIAL OFFER

PRECISION Triple Purpose TEST CASSETTE TC1DD.

Are you sure your tape recorder is set up to give its best? Our latest triple purpose test cassette checks the three most important tape parameters without test equipment. Ideal when fitting new heads

A professional quality, digitally mastered test tape at a price anyone can afford.
Test Cassette TC1DD **Our price only £10.99.**

DISK-COUNT Classical CD's.

Top quality, Full Digital (DDD) Compact Disks of the great classical favourites. Like everyone else we didn't like the idea of paying silly prices for CD's. After a long search we have now located a source of top quality classical recordings at prices that make you suspect the quality - until you try them! Send for our list of titles.

TECHNICAL BOOKSHELF

Modern Books. Selected to represent the state of the art today.

"THE ART OF LINEAR ELECTRONICS."

J.L.Linsley Hood.
Just Out! Hot Off the Press, the definitive electronics and audio book by the renowned John Linsley Hood. This 300+ page book will give you an unparalleled insight into the workings of all types of valve and solid state audio circuits. Learn how to read circuit diagrams and understand amplifiers and how they are designed to give the best sound. The virtues and vices of passive and active components are examined and there are separate sections covering power supplies and the sources of noise and hum. As one would expect from this writer the history and derivation of audio amplifier circuitry have an entire chapter, as does test and measurement equipment. Copiously illustrated this book is incredible value for the amount of information it contains on the much neglected field of linear, as opposed to digital, electronics. Indeed it must be destined to become the standard reference for all who work, or are interested in, this field.

SPECIAL OFFER. With each book purchased you may request a **FREE** extended index, written by the Author, exclusively from HART.
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Don't forget most of our kits have reprints of articles by John Linsley Hood that you can purchase separately.

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All the information you need to build the loudspeaker system you have always wanted but could not afford. Easy ways to pick the exact box size, the ideal drivers, and the correct way to feed the music to your new super loudspeaker system. Over 140 pages packed with important design data.

1991. 152 Pages.
0-9624-191-7-6 **£19.97**

"THE ART OF SOLDERING"

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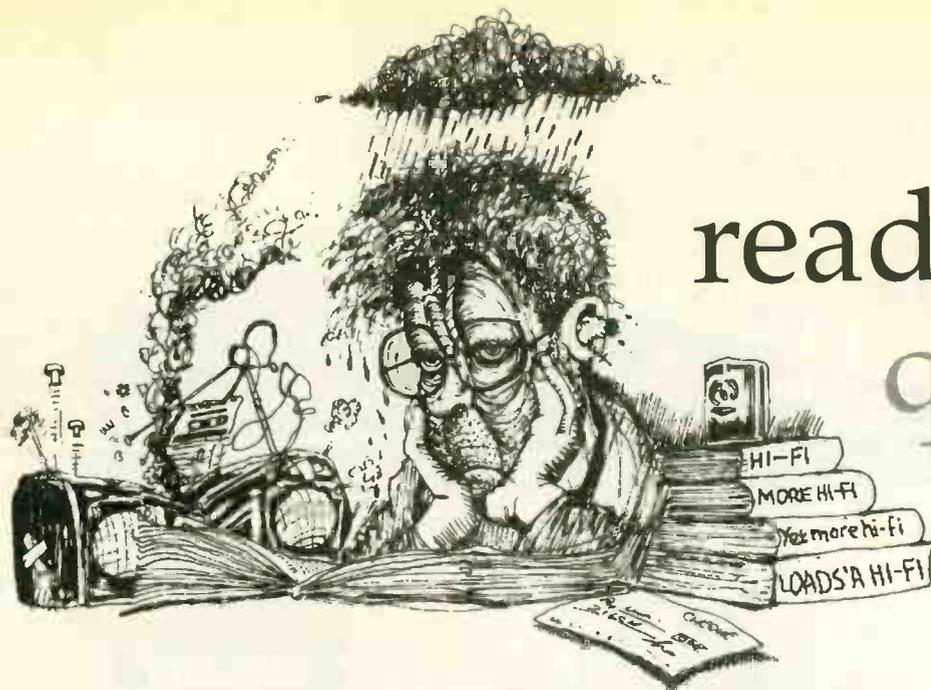


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readers' queries

CABLING OLD QUADS

Can you suggest a suitable cable to join an old pair of electrostatics to a pair of Quad II power amps. Hi-Fi dealers don't appear to think that a system such as mine requires any cables with particular qualities. I also use a REL sub-woofer so I don't require the 'statics to provide anything other than a taut bass with an open, clean midband and treble.

Silver plated OFC wire would seem to me to be suitable, what do you think? I find this area of hi-fi particularly confusing.

Donald J. O'Donnell
Edinburgh.

A common view would be that the Quad IIs are so old and their damping factor so low that they don't need special cables. However, that's simplistic. As you'll well know, your system, providing it isn't played loud, will sound sweeter and more natural than much we could cook up today. You are right in thinking its clarity could well be further enhanced by the use of silver plated OFC wire, or even solid silver wire, depending upon the depth of your pocket. We would recommend you try Campaign Audio Design's SCL500. This is £4/mono m, and although it may look thin,

Write in with your problems to Hi-Fi World, 64 Castellain Road, Maida Vale London W9 1EX.

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is plenty thick enough to handle the power. Also, I'd suggest you consider having the Quad IIs checked over by Quad since those I have owned or tested in the past had deteriorated quite significantly one way or another.

Using a REL subwoofer with the old Quads (dubbed 'Quad 57s' these days) is a sensible choice, but the REL must be very carefully tuned, the procedure being to set all controls at minimum and then notch them up until bass is both tight and at the right level. I mention this because I was harangued about boomy bass from the REL for a good thirty minutes at the Penta show, then the old git walked away, stopped, turned

around, came back and started all over again! The REL's great, providing it is tuned properly - and this takes a lot of trial and error without the sort of spectrum analyser I use for an easy life. **NK**

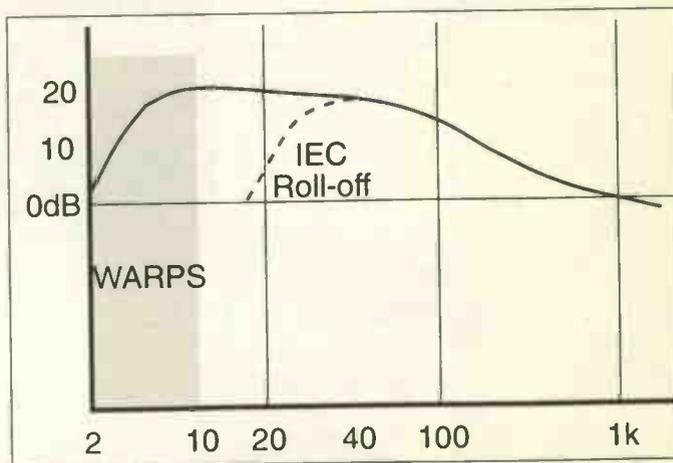
Richard Kelly, yes he is still alive despite the rumours, uses a very similar set-up to yours. He uses a REL Stadium and Quads with vintage Leak amplifiers and the sound is really quite breathtaking. The

weeks, the longest absence by Richard for a good many years. **DB**

IN A FLAP

I am considering replacing my cartridge which is now 18 months old. At present I use a Denon DL304 mounted in an SME 309. The sound is superb, but there is an awful lot of cone 'flap' which I find alarming. Presumably this is due to an arm/cartridge mismatch.

I am considering going



The RIAA phono equalisation curve with the IEC recommended roll-off to prevent cone-flap

clear, open mid and top of the Quads combined with the power and control of the REL creates one of the best truly full range systems I have heard. As testimony to the care needed when setting up the REL, he was noted absent from the local for nearly two

back to my previous cartridge - an Ortofon Quasar, but would appreciate your views. Would the optional SME damper enable me to stay with the Denon and reduce the cone flap or would it just

continued on page 117...

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dampen the sound? Good backing is very important.

My other (relevant) equipment is a Michell Gyrodec, Michell Iso (no Hera yet), BBAP100 valve amp and TDL Studio 1s. Room is 18' x 16'. Musical tastes are very broad so I look for a seamless sound. However, with the speakers I use, as tight a bass as possible is helpful. Budget is up to £400.

Alastair McClean
London.

5180µs time constant not so long ago. You have a variety of solutions available.

Return the Iso to Michell Engineering and they will modify it to increase the amount of warp filtering applied, helping to lessen cone flap. Their address is -

J.A. Michell Engineering Ltd.,
2 Theobald Street,
Borehamwood,
Herts.
Tel: 081-953-0771

The SME damper will also



Denon's DL304 deserves a good arm to give its best

It isn't really a mismatch, so much as an inevitability without warp filtering. The DL304 needs a rigid arm to give its best, but these necessarily have some mass. The 309 is, as rigid arms go, of relatively low effective mass, so you cannot make any significant improvements here. Reflex loudspeakers have no acoustic damping below bass resonance, unlike sealed boxes, allowing them to flap badly when presented with subsonic warp information. The accompanying diagram shows that there's a lot of gain at low frequencies as a result of RIAA equalisation, which amplifies warps unless gain is rolled off below about 40Hz or so, as recommended by the IEC as an additional

reduce warp output, without damping the sound. In my experience it makes the sound slightly cleaner and more controlled.

Contact -
SME Ltd.,
Mill Road,
Steyning,
West Sussex BN4 3GY
Tel: 0903-814321

Since feeding subsonics through a valve amplifier tends to drive the output trannies into magnetic overload, it is important to prevent such signals being amplified by the system. **NK**

MERIDIAN - OR VALVES?

Meridian twin processor 200 - 203 DAC 7, Meridian 201 MK3 pre-amp, a pair of

Musical fidelity P140s, bi-amped to Mission 753s. Cables are Deltec Co-ax 200-203 Audioquest Quartz Interconnects and Type 4 Speaker Cable, 2 runs to each speaker. The electronics are in an adjacent room to the listening room supplied via its own dedicated ring from the mains fuse board.

All equipment is on dedicated supports. Listening room is 12ft x 11ft x 9ft. Wooden suspended floor, carpeted, behind the speakers hang full length curtains across the width of the room. The speaker spikes sit on screws driven into the floor boards, and six inches away from the rear wall.

My problem is the treble tends to sting when the system is wound-up a bit and the mid range becomes a little blurred. I tend to point the finger at the power amps, would you agree?

I have listened to power amps of various costs and the Meridian 605s seem to fit the bill, but before I make my final purchase I have become interested in the idea of valves. Could you advise on potential alternatives to the Meridian 605s?

I could also go the DIY route, being electrically qualified and somewhat adept with a soldering iron.

My budget could go to £2,000 but it has to be my last conquest on trying to achieve my Nirvana.

I look forward to any advice you can give, and thank you for your time.

Simon Morsow
Warwickshire.

You've put some effort into your system and it certainly deserves good amplifiers. The power amps could easily be bettered and our choice in solid-state at these levels is fairly unanimously in favour of DPA or Michell. The DPA200S power amplifier (£750) is unusually detailed and analytical, yet sweet too, properties that usually do not go hand in hand. For such a

high quality stereo amplifier - one of the very best - it is well priced. A power output of 50watts means it will provide high, but not very high volume, cleanly.

The Michell Alecto stereo offers 98watts and is all that anyone could ask for in solid-state amplification, giving a spacious yet superbly clear sound, again sweet and easy to listen to. The stereo comes in at around £1300 though. Try to listen to one or other at least, to get your bearings upon what is possible up amongst the best.

I would suggest you spend the remainder of your budget on a new DAC. The 200 transport is very good, but the 203 has been bettered by Meridian themselves and several other manufacturers. Our current favourite is the Pink Triangle Ordinal, this should give a much smoother treble and a clearer mid range.

Now onto valves. This is altogether a more specialised and fraught area. Good valve amps wipe the floor with solid state - but there are precious few really good ones. To be candid, too many are either adapted application note circuits with sloppily designed output transformers, or they are not really 'hi-fi' designs. By this I mean, many high power fixed-bias and, especially, Class A/B designs where power has been placed above sound quality. This is pointless, since solid-state delivers power better. It is only when optimised for quality that valves are devastating. So don't look at the power rating with valves.

I can declare myself completely partial here (!) - I live with our own K5881 valve power amplifier out of preference at present. It is a pure Class A amplifier, 20watts per channel, a kit priced at £395 and, in my opinion, one of the best amplifiers you'll ever hear.

continued on page 119...

...continued from page 117

But Audio Innovations make a very good kit in the Classic Stereo 25 (£699) which we liked and has good output trannys.

The only real way to make any decision here though is to hear these amplifiers, and others, in direct comparison against

cartridge, played through Wharfedale Kingsdale III speakers.

The speakers are some years old now, inefficient by today's standards, and it is this area which I intend to replace next. I would also like to include a cassette deck in an effort to preserve my considerable record collection by transferring those I play

acoustic to classical and opera. The room I listen in is approx. 18' x 12' x 10' with no neighbours!

**M Robson
Cupar,
Fife.**

We've recently been impressed by the £250 TDL RTL2 floorstanding 'speaker, which is capable of projecting

a huge sweeping stage, and although you may find it unrefined in your system, its big brother, the RTL3 comes in at £400 and might suit your rock-to-classical and opera taste. Although we haven't tested it in Hi-Fi World, I have heard it and would recommend that you audition this speaker.

The Ruark Templar

loudspeaker at £479 is also well worth a listen, being more refined but rather less expensive than the TDLs.

The £260 Denon DRM-710 sounds like the best bet for a cassette deck. That's really about as cheap as worthwhile three-head decks get. You could go for the Nakamichi DR-3 at £300 instead. It's only got two heads, I'm afraid, but it's a real cracker!

As far as the cartridge is concerned, the Goldring 1022GX is most

probably your best bet at £80. Whatever you choose, replace the AT110E; it isn't particularly sweet in the treble. **SC**

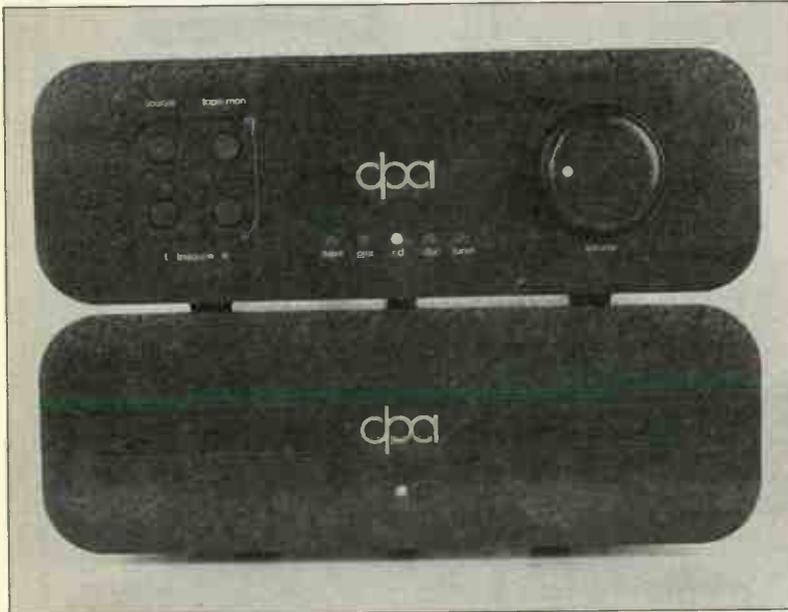
SIGNAL STRENGTH

I read with interest the review on the Technics GT550 tuner, (October issue), and its digital strength meter and hope you will be able to help with a small query.

I have a Sony ST-S370 which also has a digital meter as well as a bar chart. This is hooked up to a five element FM aerial (a bargain at £15 from Tandy), and although there is no background noise and the digital meter reads 64db Radio 4, 50db GLR (other stations fall between these figures), the bar chart will not register full at the highest of these readings.

This is only a small niggle, I know, but more than once I have read about meters on tuners (at this price point), filling up at the merest wisp of a piece of wire, and was wondering if I should try and get more gain from the aerial or leave well alone.

**K Ruffell
Wormley,
Herts.**



The DPA 200S pre/power amplifiers - unusually detailed and musical

each other. We have been talking at length to Luigi at Hi-Fi Confidential, a valves man through and through, with enough patience to deal with Tim de Paravicini - and us!. He's got a good stock of valve amplifiers on demonstration, as well as solid state, and he should have a demo K5881 and KLPI pre-amplifier in the shop by the time you read this. Give him a buzz on 071-233-0774 to ask what he has and can demonstrate - or even supply! Being at Victoria, Central London, Hi-Fi Confidential is easy to get to. **NK**

DEPOSING THE KINGSDALES

I am in the process of upgrading my system and have purchased an Audiolab 8000A amplifier and an Arcam Alpha CD player. These complement my Thorens TD 150 MK II, RB250 arm and AT110E

most to tape.

Given a budget of £600-£700 (not fixed) what recommendations would you make regarding the following:

Speakers: I am not impressed with many of the speaker stands available and would prefer floor standing speakers. I have listened to Castle Chesters but feel they are just out of my budget. The recently released Tannoy 611s sound a reasonable speaker as do the Epos ES11 (which is a stand speaker unfortunately).

Cassette deck: I would prefer a 3-head deck in order to get good quality recordings at a reasonable cost.

Turntable: Would the Thorens/RB250 benefit substantially by the addition of a Moving Coil cartridge or would a better Moving Magnet cartridge suffice (the AT110E was purchased to set up the arm).

My taste in music is varied from rock to country, folk and



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continued on page 121...

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...continued from page 119

PS: Could you suggest an interconnect for this tuner, the rest of system is Musical Fidelity A100 Amp and Tannoy 607 speakers.

Your aerial signal is a little on the low side and you may well get slightly better clarity if it were raised, since on the Sony 50dB represents about 200µV and 64dB 1mV (your tuner uses the IHF 0dB ref of one femtowatt). Ideally, all

Get a fitter to do this, and be sure the chimney is in good condition. Pointing the aerial south toward Crystal Palace will favour GLR at the expense of Radio 4 from Wrotham, south east of you, so equalising signal strengths. Make sure you use a good, low loss downlead. **NK**

While you are in Tandy picking up your low loss downlead, they do some very good stuff at a reasonable price, grab some of their

and what insurance or collector's value it is worth.

Your magazine has most answers to people's enquiries and I hope you can answer my small request.

**P Rogers
Bristol,
Avon.**

The Goldring Lenco GL75 is an old soldier from the early seventies that used idler drive to provide four speeds: 16, 33, 45 and 78rpm, complete with speed adjustment. It had a massy arm that was, I believe, made of brass, fitted with a rigid but heavy plug-in headshell. In its day it was solid and dependable, but hardly advanced. It has little more than nominal value today. **NK**

PALPABLE

I'm interested in the audio quality described as "palpable" (eg. Cello Palette, Ongaku or Audio Innovations, etc). In pursuit of this audio quality, I have purchased a pair of Rogers LS2a loudspeakers (noted for transparency). I am using an Arcam Alpha 3 integrated amplifier and a JVC XL-Z1050 CD player with the LS2as.

Certainly, the LS2as have acclaimed transparency and the Alpha 3 is an established companion, but an increase in palpability is desired. I'm confident of the LS2a's, but uncertain about the Alpha 3's, contribution toward palpability in this context.

I would appreciate your expert recommendations on how to obtain increased palpability from the Roger's LS2as or about any combination of components (£1600 or less) with above average palpability (transparency, imaging or holographic elements, etc)?
**Lawrence S. Williams
New York,
USA.**

stations should be 60dB or greater. Since you are situated north of London in Herts, yet you are trying to pick up GLR which is transmitted from Crystal Palace, south London and, I believe, there is a range of hills in the way, I am not surprised the signal is a bit weak.

The usual solution is to get the aerial up as high as possible, commonly by strapping a fifteen foot alloy pole to the chimney and mounting the aerial on top.

patch leads with gold plated phonos. These don't cost an arm and a leg, but offer a considerable improvement over the standard patch chords supplied. **DB**

GOLDRING GL75

I am writing to you to see if you can tell me the date/year of manufacture of a Goldring Lenco record deck (model Number GL75). This was given to me in A1 condition and I would also appreciate it if you could tell me what amplifier would suit this model

Are you really sure that the Arcam is the weak link here? The CD source is a fine machine, but could easily be improved by the addition of - yes, you've guessed it - an outboard DAC. The Select Systems Dacula and DPA Little Bit II mentioned elsewhere in this month's queries will both improve the palpability of your music, and a greater improvement could be had from two DACs at £695, DPA Bigger Bit or Pink Triangle's Ordinal.

The Alpha 3 will probably be due for an upgrade if you use one of the above DACs. The £430 Audiolab 8000A is the next logical step up, or alternatively the £460 Sugden A48B is slightly more friendly-sounding. Another one to go for is the John Shearne Phase 2 at £495, with its valve-like quality, but transistor speed.

If you go for any of those, you might like to upgrade the Rogers to the £400 Harbeth HL-P3s, which share many of the Rogers' characteristics, only more so. **SC**

I would agree with Simon about the CD player, DACs using the Crystal chipset do seem to have a more palpable sound than most. You could also try the EMF DAC, or if you fancy changing the whole player Quad's CD67 uses the latest CDM-9 transport and Crystal chip all in one neat and stylish box. If you really want good image quality, and an open and spacious sound, there is only one thing for it. Again from Quad, the ESL-63s I suspect are everything you are looking for. At a touch under £2400 they are a little over your budget, but you may be able to find a well looked after second hand or ex-demo pair from a dealer. The Quads are large electrostatic 'speakers with excellent imaging and a completely box free sound; oodles of palpability for you. **DB**



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Ken Kessler, Hi-Fi News/RR March '89
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David Praker, Hi-Fi Answers Sept. '89
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Martin Colloms, Hi-Fi News/RR May '90
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Paul Messenger, Hi-Fi Choice, May '91
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Tom Bryant, The Telegraph, June '92

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Hi-Fi News & RR
November 1992

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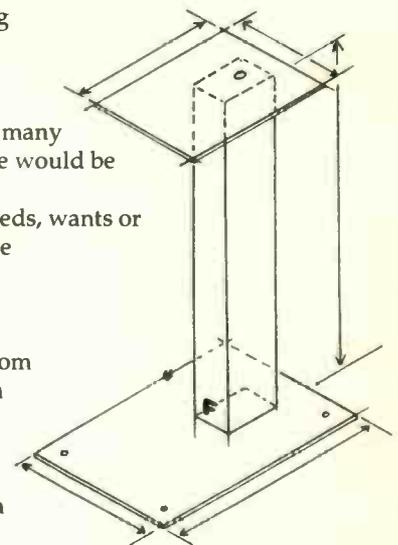
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Tel: 0737 241345 (Surrey).

For sale AUDIO RESEARCH SP8 MK2 £750. Audio Technica cartridge transformer AT630 £40. Vintage Ortofon cartridge transformers pair £40. Audio Technica arm AT1005 MK2 £25. Various valve type mains transformers.
Tel: Alan 0661 852874.

KEF Q80 floorstanding speakers, Boxed, V.G.C. £375 o.n.o. Arcam B.B.3. D.A.C. Boxed V.G.C. £150 o.n.o.
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Tel: 0392 57202

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Tel: 0344 54408.

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Tel: 0602 303438

PINK LINNK power supply for LP12 latest spec. New and boxed £375.
Tel: 0473 271033.

MUSICAL FIDELITY P140 power amplifier, excellent condition £165. Linn Karma cartridge, old but serviceable, £125 (worth £225 against Klyde). Audioquest Ruby interconnect 1m pair £25.
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B & W 802 Monitor speakers and hoods £495. Threshold S-150 stereo power amp. £495. Transcriptors Skeleton turntable (Michell) and Vestibul arm (rare) £165. All items mint condition.
Tel: Northampton 0604 584630

NAKAMICHI 550 High quality, portable cassette recorder with mains p/s £85.00. dbx Model 21 disc/tape decoder (unused) £15.00. Both with instruction manuals.
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Tel: Jon (021) 373 4406.

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Tel: 0506 825546

AUDIO RESEARCH SP8 £600. Single Quad II £150, Leak TLS0 £250, rare integrated valved Pioneer £120, Avantic £100, Armstrong £60. Quad tuner £30, Quad 22 £30, Garrard 301 heavy plinth £200.
Tel: 0709 555 403.

LINN LP12, Lingo, Akito, Trampolinn purchased 1990 all in perfect condition £795. Quad FM4 £180. Moth MM/MC phono stage £75. Pair of upgraded KEF kit 3s, offers.
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Mordaunt Short MS30 (Free Gift Guide 4) 249.99
B&W DM600 (Free Gift Guide 4) 179.99
B&W DM610i (Free Gift Guide 5) 239.99
Mission 761i (Free Gift Guide 1) 179.99
Mission 762i (Free Gift Guide 2) 249.99
Wharfedale 517 189.99
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SUGGESTED £251-£400.00 (EXCLUDING OFFERS)

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Nakamichi Soundspace 7 ex speaker 499.99
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- 2 1m Quartz Interconnect, or Goldring 1042 Cartridge, or Tru-Fi £70.00 redeemable voucher.
- 3 Audio Technica ATHM4A headphones, or 1m Topaz interconnect, or Tru-Fi £30.00 redeemable voucher.
- 4 Beyer Dynamics DT311 headphones, or 0.5m Ruby interconnect, or Tru-Fi £40.00 redeemable voucher.
- 5 Sennheiser HD480 Classic MkII Headphones, or Goldring 1012GX cartridge, or Tru-Fi £60.00 redeemable voucher.
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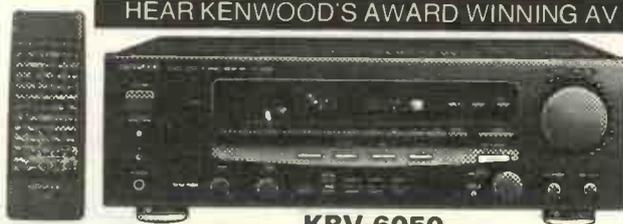


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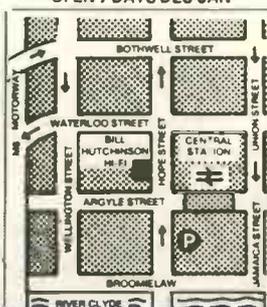
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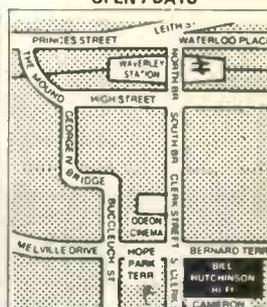
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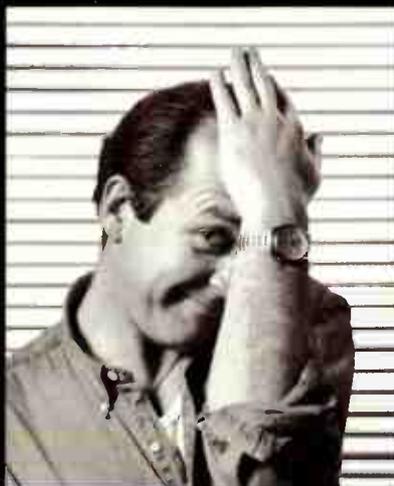
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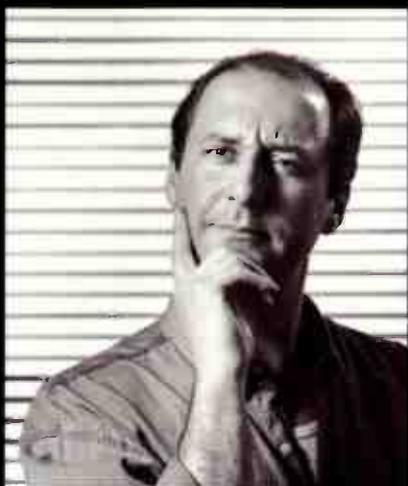
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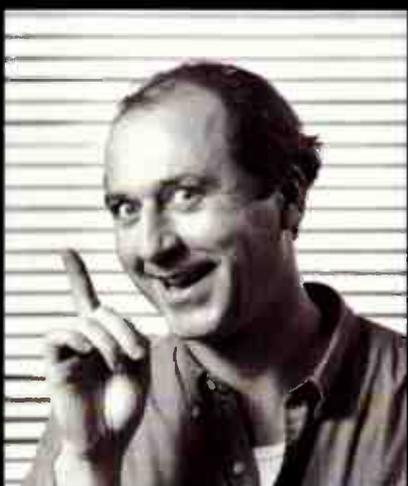
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