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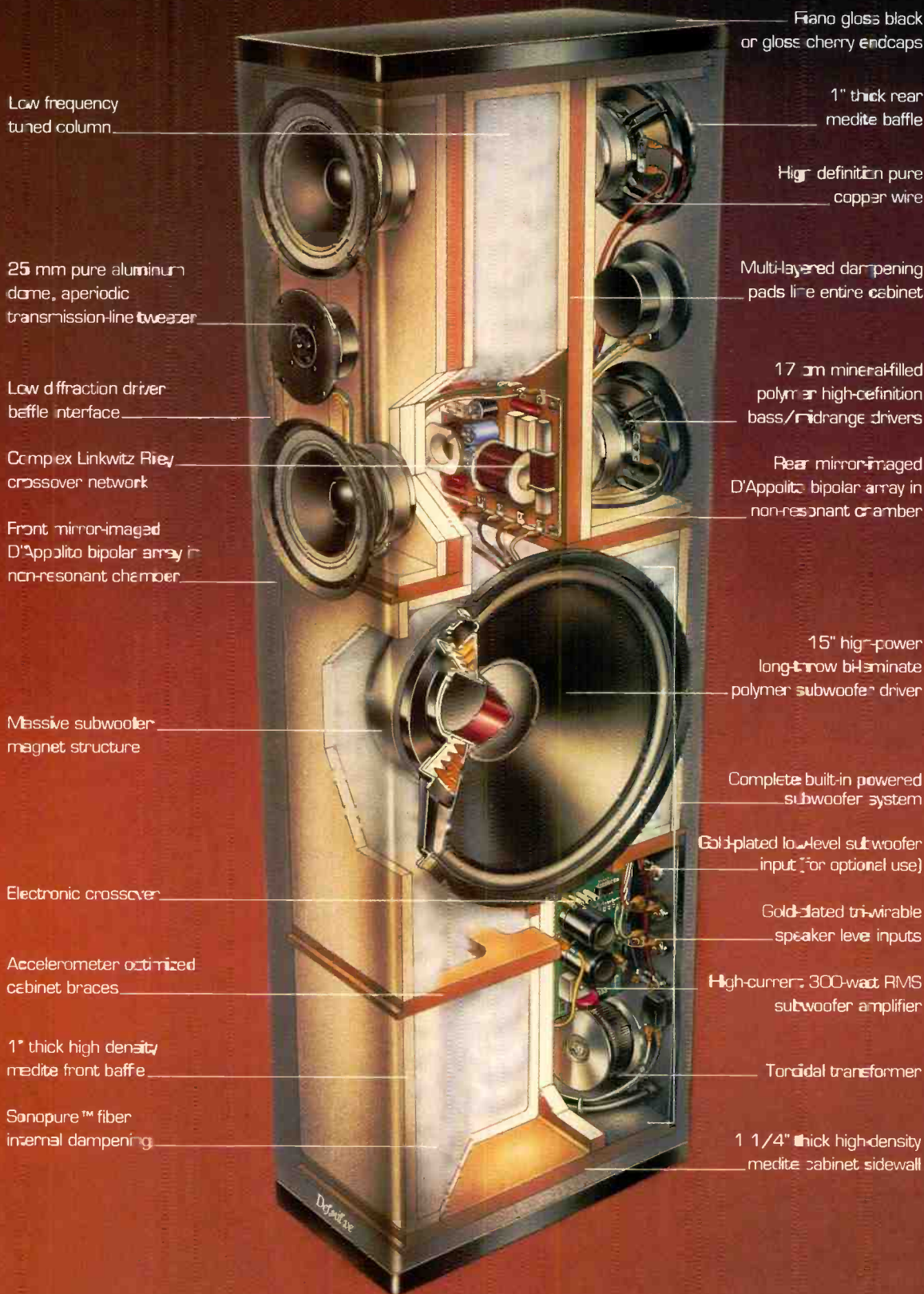
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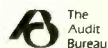
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CIRCLE NO. 23 ON READER SERVICE CARD

As recently as 13 years ago, launching a new audio or video format was relatively straightforward, if not necessarily easy. The record industry's initial support of the Sony/Philips Compact Disc was reluctant and often inept, but it wasn't actively obstructive. Things have gone pretty consistently downhill ever since.

The trouble started with DAT (Digital Audio Tape). Partly out of fear and, I think, partly out of opportunism, the recording industry pounced on DAT as an instrument of piracy. The labels protested that DAT's ability to produce digital clones of CDs was essentially a license to steal, leading directly to serious fiscal injury both to artists and to the record companies that distributed their wares.

The fear is real enough. The record industry has never much liked home recording equipment, regarding it primarily as a means for people to get copies of commercially distributed music without paying for it. DAT was therefore regarded as a particularly severe threat, because of the quality of the copies it could make; but it was at the same time the first good opportunity for the labels to try to plug the perceived hole in the dike. The ensuing political fracas so crippled the format's launch that DAT never had a chance to become a significant consumer product. Bloodied by the experience, the audio industry subsequently chose to cut a deal with the record industry that paved a clear road to the launch of DCC and MiniDisc, compensating artists and labels for presumed losses and making the recorders somewhat more inconvenient to use than they might otherwise have been.

It appears that every future format that can record digitally or that lends itself to being copied digitally will be subject to some such painful, protracted negotiation. We see it now in the case of DVD (see "Spectrum" in this issue). Movie studios are at least as uptight about home recording as the record labels. (The Motion Picture Association of America brought suit years ago over the recording capability of Betamax VCRs—without success, thankfully, but at great expense to Sony.)

And since the cooperation of the studios is essential to DVD's success, the electronics industry will once again bow to pressure and build in copy-protection features.

Just as with the Serial Copy Management System (SCMS) built into digital audio recorders, the DVD copy-protection system will not be particularly onerous to many people. Most, in fact, probably will never realize it exists, which just shows how pointless the whole exercise really is. I think these schemes actually harm the software providers, in fact, because the rationale behind them is so flawed.

Consider this comment by Phil Pictaggi, senior vice president of operations and business development for MCA/Universal Home Video, regarding DVD: "It would make good sense to not allow consumers to make a copy of the product. That would cut our software business in half if we let each consumer make one copy." What a bizarre, preposterous idea, yet I have little doubt that Mr. Pictaggi believes it with all his heart. How many people really will buy multiple copies of a movie if they can't make convenience dubs? Almost none, I think—no more than would buy one copy of a CD for home and another for a car or portable player if deprived of the ability to make a cassette dupe. Nor will there ever be enough people running off copies of DVDs for friends to make any noticeable dent in studio revenues.

I have no way of proving it (unfortunately), but I suspect the truth is exactly the opposite—that making DVDs hard or impossible to copy will actually reduce studio income, because it will reduce the value of the discs to consumers. Just as a CD is worth more to me if I can make a copy for my car, so a DVD may be worth more if I can make a copy for my three-year-old. Lower perceived value almost always translates to lower sales. Everybody would be happier if Hollywood and the record industry understood that better.



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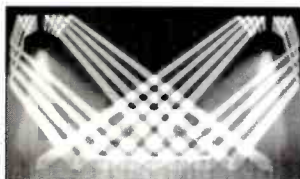
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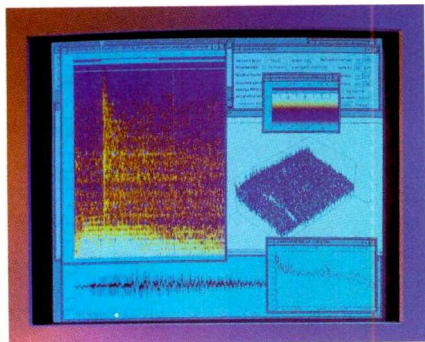
HDCD: Lip-Smackin' Good?

Dear Editor:

I have been a professional audio engineer for over 25 years. During my career I have recorded many different artists, including Leonard Bernstein, Neil Young, Linda Ronstadt, Cat Stevens, Kansas, Dobie Gray, James Taylor, Joni Mitchell, and Crosby, Stills, Nash & Young. I have also worked as mastering engineer for recordings by Mark Knopfler, Garth Brooks, Wynonna Judd, Faith Hill, and Nanci Griffith, among others. In all, my ability to hear has earned more than 400 gold and platinum albums and more than a few Grammys.

Given that background, I am appalled by your editorial comments on HDCD in April's issue. For you to say there is nothing wrong with digital audio as we know it today indicates to me that you have never heard an original analog music source compared to the source fed through today's best A/D and D/A converters and then compared that same source fed through an HDCD encoder/decoder. For you to further say that HDCD recordings sound no better than other recordings made without the process has no basis in fact.

Case in point: Mark Knopfler's new album, *Golden Heart*. Knopfler and Dire Straits have sold more than 89 million albums. Knopfler is extremely particular about his albums' sonic integrity. *Golden Heart* was recorded and mixed to analog during a two-year period. When it was completed, several different masterings were done to ensure the best possible transfer to digital. I mastered the album from half-inch analog masters, using an HDCD encoder to convert first to 20-bit and then to 16-bit. Another very well-known mastering engineer took the same tapes, converted them to 20-bit using his best A/D converter, and then converted down to 16-bit using a well-known dither processor.



Both Knopfler and Chuck Ainlay (co-producer and engineer for the project) picked the HDCD version as sounding more like the analog source. They made these selections when using their own systems, with no HDCD decoding! HDCD sounds more accurate than a conventional recording of the same source, even when played back undecoded. *Period*. Even when listening to standard and HDCD-encoded reference CDs of the same material on a \$50 (headphones included!) CD player, you can hear that the HDCD process is more accurate. What are you listening to?

As someone who has spent his career in search of sonic neutrality, it is simply beyond me how you came to your conclusions. I'm willing to invite you to my facility for blind A/B comparison tests to prove what I have said. Although I work at the mouth of audio and am able to see what's on the plate and taste its delicate nuances on my palate, your dilemma is that you work at the other end and can only guess at what the mouth has eaten.

Denny Purcell

President, Georgetown Masters
Nashville, Tenn.

Author's Reply: The essence of Mr. Purcell's brief seems to be that he is an expert and has made lots of records that were very popular. To the best of my knowledge, record popularity is not correlated with sonic fidelity.

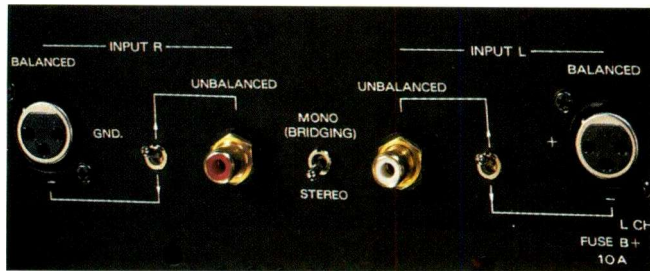
What Mr. Purcell is up to here is the venerable endorsement game. This may not work on people old enough to remember when movie stars endorsed cigarettes, but the basic idea is that because someone famous praises some product it must be good. Fine. But the only thing really known is that the person promoting the product says that a celebrity likes it—nothing more, and hardly rigorous proof. My article in the

April issue provided quantitative evidence that HDCD encoding introduces substantial signal alterations; Mr. Purcell tells us that some rockers think the result sounds more like the original than conventional digital copies, which my results indicate should be more accurate. Perhaps they simply like the HDCD sound.

In my experience with HDCD, it is less likely to alter pop material detectably or do audibly offensive things such as modulate noise floors. I suspect that "dry" studio environments are easier for HDCD to process than live ones and that the absence of complex reverberation, coherent phase information, and real instruments may enable it to perform as well as (but not discriminably better than) standard procedures. Since there is no "reality" in these studio recordings, there is less to distort. To me, this is the difference between a walk in the park and a trek across Africa: Park competence does not extrapolate.

Of course, the ace in the hole is the *TestMasters* comparison CD (offered in the May issue), on which HDCD's alterations of piano timbre and room ambience should be clear to just about anyone. In preparing the *TestMasters* CD, two engineers involved heard the master tracks, each on his own system. One said the HDCD-encoded version sounded "smarmy"; the other noted that HDCD altered the Steinway grand's timbre and dynamics. To say the least, not all engineers who have heard HDCD regard it favorably. *TestMasters* is the only recording available that allows *direct* comparison of standard digital and analog recording media with HDCD, as well as various analog and digital methods to each other. And no one has to go to Nashville to hear it.—D. W. Fostle

Editor's Reply: Regarding my comments in "Fast Fore-Word," I didn't say there is *nothing* wrong with digital audio as we know it today. But with properly designed and operated equipment, we're down to very subtle stuff, at worst. Yet there is prejudice abroad that current standards enforce significant audible degradation and that much longer data words and much higher sampling rates will be required to completely alleviate the presumed ills. (Ironically, the greatest champions of this view hold up the LP as a standard of comparison—a medium that struggles to approach and never



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— STEVEN STONE, *STEREOPHILE*, VOL. 17 NO. 3, MARCH 1994

But what did surprise us, as well as flatter us, was being thrown into the ring with \$12,000 monoblock behemoths. The result of this apparently absurd comparison? Not carnage, but rather: *"...the Parasound HCA-2200" gives them all a run for the money, and even beats 'em in flexibility and price."* He continues, *"...a pair of HCA-2200"s performed with Apogee full-ranges on a par with a pair of Boulder 250 AEs and four VTL Deluxe 300 amps. Dynamic impact and attack were excellent...Compared to the VTL300, the HCA-2200" had a greater sense of extension..."*

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achieves the degree of neutrality and transparency routinely delivered by CD, with its meager 16-bit words and 44.1-kHz sampling frequency.) I agree that moving to an 18- or 20-bit standard would be desirable to accommodate recordings (few in number today) that can actually make use of the wider dynamic range, but going beyond that seems unnecessary and impractical. A/D converters with true 24-bit resolution, for example, probably are not even possible, and though sampling rates could easily be doubled to 88.2 or 96 kHz, I see no convincing evidence that this would do anything but chew up disc space. So it has always appeared to me that what HDCD promises is to get us partway to a goal of dubious worth. Obsessing about phantom problems simply distracts people from the real, if more difficult, ones that remain in improving audio reproduction.

As it happens, I recently attended a demonstration of Sony's new Direct Stream Digital (DSD) recording process at the Sony Music studios in Manhattan. (DSD is a high-data-rate delta-sigma, or bitstream, system.) We were able to switch between a live feed from musicians playing in the studio and that feed passed through a complete A/D and D/A cycle via either the DSD process or conventional 20-bit, 48-kHz conversion. Auditioning was over a pair of

Wilson WATT/Puppy speakers set up in the control room. With careful, level-matched switching, I could hear absolutely no difference among the three. One of the other two listeners, who does extensive live recording of his own, con-



currred, and the other said that he sometimes thought he might possibly be hearing some tiny differences. It is possible others might hear something I missed, and that is something we hope to investigate more thoroughly in the future. But these results are consistent with my previous experience in such comparisons and with another conducted at the same session using an analog master tape as the source. Which leads me to wonder about the conclusion Mr. Purcell attributes to Mark Knopfler: If an HDCD-encoded transfer actually did sound closest

to the original, however implausible that might be, it would seem to suggest that a decoded playback would sound *less* like it. At least it does to me, since I have no trouble hearing the difference between decoded and undecoded playback of HDCD recordings.

We have requested an HDCD encoder from Pacific Microsonics to perform the comparison Mr. Purcell suggests.—M.R.

Reissues an Issue

Dear Editor:

In D. W. Fostle's "19 Bits in a 16-Bit Sack" (March), particularly the section "The Real World of Reissues," the author describes the Sony Mastersound Compact Disc reissues as "the most amazing manifestation of noise tolerance." He goes on to put down the sound of three CDs in the series: Miles Davis' *Kind of Blue*, Dave Brubeck's *Time Out*, and Bob Dylan's *Blonde on Blonde*. He compares the better sound to colorizing movies. This implies that old recordings could not have sounded good when they were originally made. He says they are remixed.

The real reason for the new sound is that the master tape is used in making discs for this series. (Hence the name "Mastersound.") And in the case of the Davis and Brubeck albums, there is only so much you can remix on a three-track tape. Even

though it says "Digitally remastered from the original analog tapes" on the original CD versions of the jazz albums, it doesn't mean that they were made from the master tapes. And even if they were made using the masters, those recordings are the ones that have processing, not the Mastersound editions.

In a brief interview in your magazine ("Classic Jazz Remasters," July 1994), Sony recording engineer Mark Wilder said, "Around 1984 to 1987, many CDs were remastered with a high-frequency roll-off (treble cut). . . a destructive process." Wilder said that Brubeck complained about the sound of his early remastered CDs. Well, if Brubeck says that the old version didn't sound right, what gives Fostle the right to say that the old version is correct? So the

noise was originally there, not added from equalization attempting to mimic the tonal balance of new recordings.

I can't imagine that the Miles Davis disc is any different. The higher level is probably because the original disc was not fully modulated. And there is more range because of lack of processing on the Mastersound edition than was on the original. Fostle should learn what music really sounds like.

Martin Meluccii
Lodi, N.J.

Author's Reply: I neither claimed that the older versions of the CDs were necessarily correct (though they sound to me more like the original vinyl issues) nor said that the old recordings could not have sounded good when they were originally made. The point of the colorization comment was that the new CDs sound different from the old ones primarily, and perhaps exclusively, because of different equalization, not the use of 20-bit digital masters or noise shaping in the 16-bit CD transfers for the new releases.

Regarding the application of a treble cut in the mastering of the original CDs, the spectra of the ones examined show no evidence of that below 21 kHz (where the anti-aliasing filters on the A/D converters used for them kick in). But evidence for a treble boost in the Mastersound releases can be found in Fig. 8 on page 36 of the March issue. The gentle downward slope of the old Miles Davis CD's noise spectrum is characteristic of tube-type microphones, electronics, and recorders and is also found on other recordings made with such equipment. Solid-state gear typically exhibits a flat noise spectrum. The rising noise spectrum of the Mastersound *Kind of Blue* indicates a treble lift, particularly with respect to what one would expect from a recording of that era, when all the equipment used tubes.

What's odd about the level difference between the two *Kind of Blue* CDs is not so much that there is one, but that it is not consistent. Over the period shown in Fig. 9, the difference varies from nearly none to almost 3 dB. That is not simply a change in overall modulation level.—D.W.F.

A Good Bit

Dear Editor:

Kudos to *Audio* for D. W. Fostle's fine article on noise shaping ("19 Bits in a 16-Bit

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Sack," March). It's a comprehensive yet clear explanation of a very interesting approach to noise control in mastering.

As a consultant to the music industry, I'm sure I'll find this article a useful reference for some of my client artists.

*Chris Stimson
Miraloma Music
San Francisco, Cal.*

NuReality Sets In

Dear Editor:

I'd like to comment on two points John Sunier made in his "Auricle" review of NuReality's Vivid 3D Theater SRS processor (April).

First, you can't encode SRS through the loop jacks on the rear of the processor, as was suggested. You can encode if you're taping from another input on the receiver or preamp and SRS is engaged in the tape-monitor loop.

Second, Sunier experienced exaggerated bass with the Vivid 3D Theater's "Mono" setting, as well as timbral changes on recordings he listened to on a high-quality system in the processor's "Stereo" mode. SRS Labs has addressed these issues, and NuReality is changing production to implement the circuit improvements from SRS Labs.

*Jim Mercer
NuReality
Santa Ana, Cal.*

Vivid Reminders

Dear Editor:

As president of KAB Electro-Acoustics, an East Coast representative for NuReality's Vivid 3D products, I'd like to comment on John Sunier's "Auricle" review of the Vivid 3D Theater SRS processor. First, a correction: The "bare-bones computer multimedia model" Sunier referred to is not the Vivid 3D Plus but the Vivid 3D (\$59.95). The Vivid 3D Plus (\$79.95) is perfect for home stereo applications, as it has all the necessary controls ("Level," "Center," and "Space") and RCA connections. There are other models between these and the \$249.95 Vivid 3D Theater that have unusual features. The Vivid 3D Studio, for instance, has an ambience display and a built-in 20-watt amp. With the Studio model and a couple of monitor speakers, you could create a stand-alone home theater system

for less than \$300. Line outputs let you add a powered subwoofer if you like. No surround or center speakers or wires, wires, wires!

Our experience shows that the Vivid 3D must be the first device in a chain. Tone controls should be left flat. Other processors, such as the BBE Sonic Maximizer or the Aphex Aural Exciter, must follow the Vivid 3D. Because the process works only on the L - R signals, it is important not to disturb the phase relationships of the main L and R. Also, large amounts of phase shift between bass and mid-bass drivers may result in some coloration in the crossover region. This, however, is an artifact of the loudspeaker. When attention is paid to these details, switching the Vivid 3D in and out of the loop shows hardly any timbral alteration.

I disagree with the reviewer that high-end systems won't benefit from the Vivid 3D. Any device that gets the ambience out from between the speakers and into the listening room is a plus for any hi-fi system. The Vivid 3D adds the perception of space to the already important soundstage elements of image and depth. Now one can hear the room the recording was made in. If that's not an elusive audiophile goal, then I guess I don't know what is.

*Kevin A. Barrett
President, KAB Electro-Acoustics
Plainfield, N.J.*

Author's Reply: We weren't furnished any information about the NuReality Vivid 3D Studio model, which is why it wasn't mentioned. If you really mean that the Vivid 3D unit must be the very first device in the chain, I think you will find you have no sound whatsoever! If you mean the first after the tape-out feed, that is, in fact, how I connected it.

We're on the same wavelength as far as feeling that it is a good step to extract the natural ambience from a stereo signal and put it out into the room, increasing the sense of space. Where we disagree is on whether or not the SRS process shows "hardly any timbral alteration." My ears tell me that statement could be made about the Spatializer process (see "Auricle" review in this issue) but not about the SRS approach, at least not in the several components using it that I have heard.—J.S.



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WHAT'S NEW



Sonic Frontiers Mono Amp

Using eight 6550B tubes in its output stage, the Sonic Frontiers Power 3 delivers 220 watts at 1% THD. The circuit is fully balanced, from input to output, with a cross-coupled input/driver stage directly coupled to the output tubes. Balanced, unbalanced inverting, and unbalanced noninverting

inputs are provided, and the output tap can be configured for 8-, 4-, or 2-ohm loads. Rated damping factor is greater than 50; power bandwidth is 15 Hz to 60 kHz (+0, -0.5 dB), with -3 dB points at 5 Hz and 120 kHz. Price: \$8,995 per pair. For literature, circle No. 100



ATI Six-Channel Amp

On the front of Amplifier Technologies' AT1506, six pairs of LEDs show the status of each of its six channels. Each channel is a separate module, removable for easy servicing or replacement. Power is rated at 150 watts per channel into 8 ohms or 225 watts per channel into 4 ohms. Channel bridging enables the AT1506 to be used as a six-, five-, four-, or three-channel amplifier; bridged operation delivers 450 watts per channel pair into 8 ohms. Other specifications include power bandwidth of 3 Hz to 50 kHz, response from 20 Hz to 20 kHz (+0, -0.25 dB), and distortion of 0.03% or less at rated output. Four- and two-channel versions are also available.

Price: \$1,995.

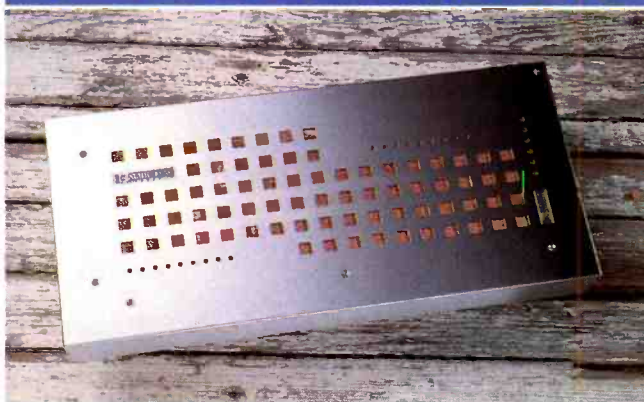
For literature, circle No. 103

AMC INTEGRATED AMP



Delivering 30 watts per channel in Class A, AMC's CVT 3030a integrated amp uses a tube output stage, with FETs elsewhere in the circuit. The design is modular, allowing the phono input stage to be replaced by an optional D/A converter module. Prices: With phono stage, \$999.95; with DAC module, \$1,099.90. For literature, circle No. 101

Xtant Car Subwoofer Amp



Designed to power car subwoofers, the Xtant 1001d amplifier delivers 1,000 watts from Class-D circuitry whose high efficiency is kind to car electrical systems. The trade-off for Class-D operation is rated frequency response of only 5 to 500 Hz, ± 3 dB, still plenty wide

enough for subwoofers. Plug-in modules set the frequency and slope (12 or 24 dB/octave) of the built-in crossover, and optional modules can provide balanced-line input and one-band parametric EQ. Price: \$1,099. For literature, circle No. 102

FISHER A/V AMP & SPEAKERS

The Fisher ASR-M47 amplifier incorporates Dolby Pro Logic decoding and comes with one center-channel and two surround speakers, as well as a remote control. Its amplifier delivers 15 watts continuous to the center channel and

the same to the surround channel; the ASR-M47's speakers have 4-inch drivers. The decoder section has Pro Logic, phantom, and three-channel modes plus two surround simulations. Price: \$199.95. For literature, circle No. 104



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The PSB 1000 has two 6½-inch woofers, one operating up to its 2.2-kHz crossover while the other reinforces the lower bass and then rolls off. This arrangement is said to combine the open sound of good two-way systems with the dynamics and deep bass of three-way designs. The tweeter dome is between the two woofers, for good vertical dispersion and imaging. The tweeter's low-frequency response is enhanced by a cavity beneath its surround. Frequency response is 45 Hz to 20 kHz (± 1.5 dB), sensitivity is 91 dB, and dimensions are 37 inches high, 9 inches wide, and 13 inches deep. The cabinet is available in black oak, dark cherry, or high-gloss black. Price: \$1,000 per pair. For literature, circle No. 105



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subwoofer**

At the heart of the Boston Acoustics CR400 powered subwoofer is an 8-inch, long-throw woofer in a vented cabinet. Response is rated as 35 to 150 Hz, and the built-in amp's THD is less than 0.15% at 60 watts. The amp turns itself on and off automatically. The CR400's upper cutoff can be adjusted from 50 to 150 Hz, with a 24-dB/octave slope. The cabinet is roughly 15 inches per side, and the finish is black-ash vinyl veneer. Price: \$400 each. For literature, circle No. 106

PARAGON SPEAKER

Paragon's Jubilee/JEM is a two-piece modular speaker covering the range from 32 Hz to 20 kHz, ± 3 dB. Upper frequencies are handled by the Jubilee mini-monitor, with a ¾-inch dome tweeter and a 6½-inch mid-bass driver. Bass comes from the JEM (Jubilee Extension Module), which has a single 9-inch woofer. The cabinets use constrained-layer damping to achieve inertness and weigh 160 pounds per side. Prices: \$5,195 per pair; modules,



\$1,995 per pair for Jubilee and \$3,200 per pair for JEM. For literature, circle No. 108

WAVEFORM SPEAKER



The tweeter and midrange of Waveform's Mach 17 are in an egg-shaped housing, to eliminate diffraction and provide more even dispersion and better imaging. The housing also tilts and turns to accommodate variations in room acoustics and listening positions. Frequency response is 20 Hz to 27 kHz, ± 1 dB; sensitivity in a room environment is 94 dB SPL at 1 meter for a 1-watt input. The

electronic crossover, custom-designed and made by Bryston, is adjustable in order to take room acoustics into account. Available directly from the manufacturer, the Mach 17 has a 30-day money-back guarantee and a warranty of 10 years on the speaker and 20 years on the electronics. Price: \$5,995 per pair. For literature, circle No. 109

Energy's EC-100 center-channel speaker uses two 4½-inch woofers flanking a ¾-inch soft-dome tweeter. Rated frequency response is 60 Hz to 20 kHz, ± 3 dB, with a bass cutoff (-10 dB) at 48 Hz. Sensitivity of the 8-ohm speaker is 89 dB, and recommended amplifier power is 15 to 100 watts. Price: \$200 each. For literature, circle No. 107

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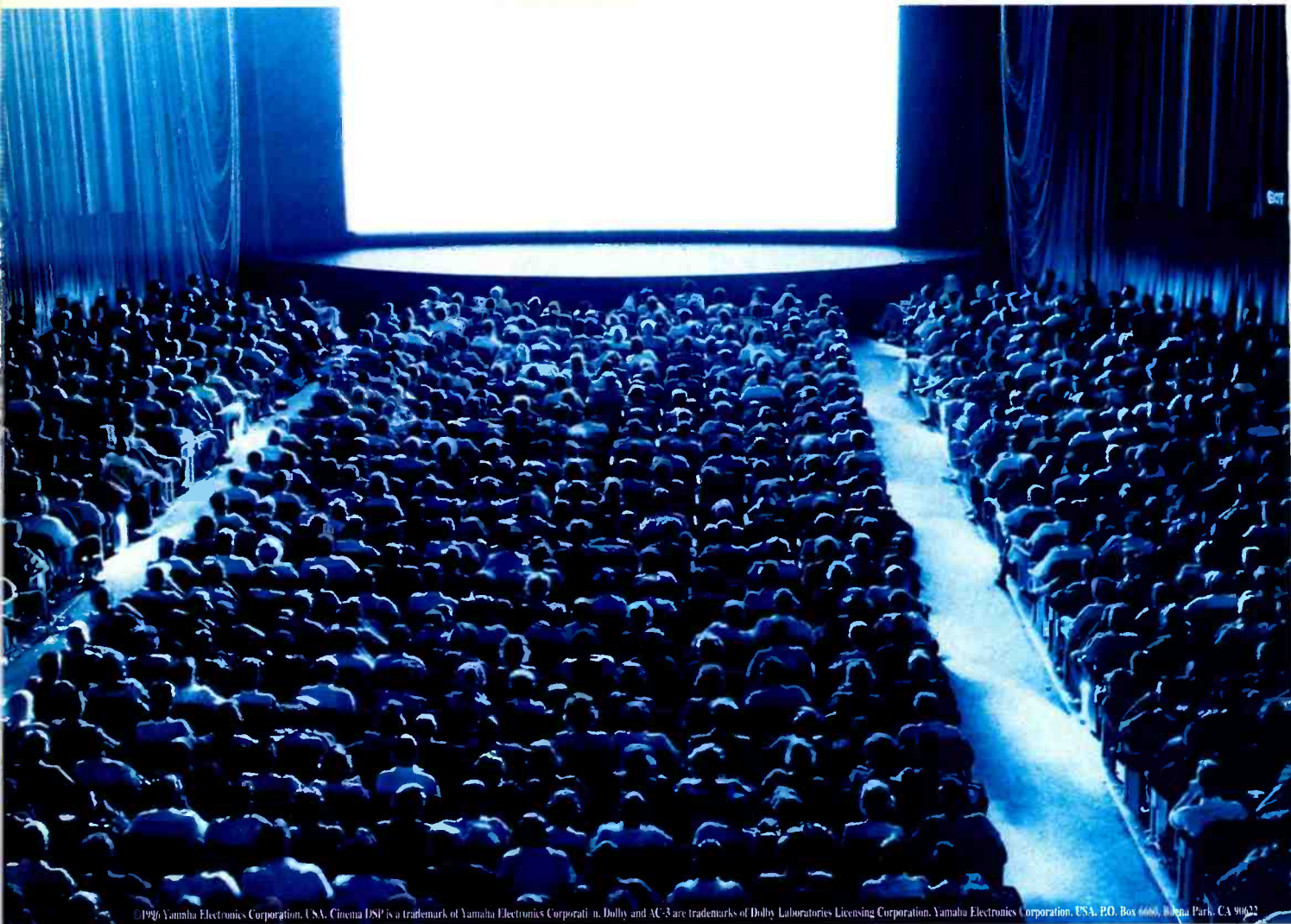
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More on Variable-Speed Tape Playback

In the January issue, you suggested some ways to vary a tape recorder's speed. I've found another solution: a catalog aimed at home recordists and musicians, Musician's Friend (800/776-5173), offers portable multitrack recording decks whose speed can be varied by at least 10%. Some of these decks, manufactured by Marantz and Foster, cost less than \$500.—Derek I. Smith, Bronx, N.Y.

Other catalogs that offer such recorders include *Thoroughbred Music* (800/800-4654) and *Veneman's Music Emporium* (800/648-8460). Variable-speed recorders are also available from music stores that sell to professional musicians.—D.H.

An Old Turntable in a New Country

Q *When I moved from the United Kingdom to the United States, I brought my belt-drive turntable. It was built to run on 240-volt, 50-Hz power; I would like to use it on the 117-volt, 60-Hz power supplied here. I have been advised that a simple step-up transformer will take care of the voltage but that I'll need a new pulley to compensate for the difference in motor speed caused by the change in power-line frequency. Is this information correct? If so, where can I get the proper pulley?—Kamiar Khajavi, Randolph, N.J.*

A If your turntable's motor is fed directly from the AC line, you will almost certainly need both the transformer and the pulley. But if there are electronic circuits between your motor and the AC line cord, you probably won't need the pulley and may not even need the transformer. Such circuits are usually found only on servo-controlled turntables, whose speed does not depend on the AC line frequency. And some servo-controlled turntables have multiple-voltage power transformers, which can be rewired for 117 volts.

But to be sure about this, you should contact your turntable's maker or its U.S. importer; you'll also need to contact one of

them for any parts you need. Check the listings in the back of *Audio's* Annual Equipment Directory (October issue) to see if a U.S. address is listed for your turntable's maker. If it isn't, you'll have to write overseas to its manufacturer.

If all else fails, you could get a transformer and have a good machine shop machine your pulley down until it's 17% smaller or have the shop fabricate a new, smaller pulley for you. (If you have your original pulley machined down, you'll never be able to use it in a 50-Hz country again, of course.)

Editing CD-Rs via DAT

Q *I'm interested in getting a CD recorder. Because editing is not possible on recordable CD, I was thinking of doing some editing on a DAT recorder and then copying from the DAT to the CD recorder. If I tape portions of a CD onto a DAT cassette, can I then record that on the CD-R, or will the Serial Copy Management System (SCMS) prevent this?—Name withheld*

A You actually can edit CD-Rs to a small extent. That is, until you finalize the disc's table of contents (TOC), you can add codes to the disc that will force a CD player to skip any tracks you didn't record properly or don't like.

As for editing via DAT, SCMS will normally keep you from dubbing CDs digitally onto DAT and then dubbing the DAT via the CD recorder's digital input. One simple way around this is to use analog connections between the DAT and CD recorders. You'll lose some quality, but very little. Another method is to use a professional DAT recorder, which does not have SCMS. Or you could get a professional subcode editor, which will let you enable or disable SCMS, among other things.

If you record from an analog source to DAT or record a CD via the DAT recorder's analog inputs, you may still have to feed the DAT to the CD recorder through analog connections. That's not because of SCMS but because many home DAT machines normally use a 48-kHz sampling rate when

recording from an analog source rather than CD's 44.1-kHz sampling.

For elaborate editing, you'll need two DAT machines. But if both have SCMS, you'll need to use analog connections all along the line. The transfer losses are small, so you can make your edits just as you would if you were editing from one analog cassette to another. We audiophiles tend to be so hung up on digital transfers that we really lose sight of just how wonderfully good analog transfers can be with a pair of DAT machines.

A/V Receiver Tone Controls

Q *The manual for my new A/V receiver says that the bass and treble controls should be kept at their "flat" positions. Why? It seems to me that adding some bass would not hurt; when I listen to movies, I add a little bass and it still sounds nice.—Daniel Hileman, Oak Ridge, Tenn.*

A From your reference to movies, I assume that the instruction about keeping the tone controls set "flat" applies specifically to surround listening. This suggests that your receiver's tone controls affect the signals before they reach the surround decoder. If this is the case, using the tone controls will prevent the surround system from accurately decoding the movie soundtrack.

Off-Speed AR Turntable

Q *I own an AR turntable that was new when I bought it in 1984. It still works well except that it now turns too fast, making the music about a half tone sharp. It has a synchronous motor and no speed control. I have tried placing a heavy LP under the disc I wish to play. That has helped a bit, but is there any other solution?—David Adler, Clark, N.J.*

A It's likely that your turntable's belt has stretched over time, reducing drag on the motor and thus increasing its speed. You need a replacement drive belt that has the same thickness and tension as

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The KEF Reference Series: (From left to right) Models One, Three, Four, and Two. Shown in Rosewood finish. Also available in Rosetta Burr or Black Ash.



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the original. Luckily, replacement parts for AR turntables are available from AB Tech Services (800/225-9847).

If the position of the AR's motor is variable, it may have slipped a bit; this would also reduce belt tension. Even if this is not the cause, you might be able to compensate for belt wear or stretching by moving the motor a bit farther from the platter.

Sibilance on Vocal CDs

Q Since I upgraded my system for home theater, I hear distorted sibilants on "s" and "ch" sounds in the vocals on classical CDs. I have not noticed the problem with instrumental music or movie soundtracks on CD or laserdisc, nor did I notice it when I played many of the same CDs on my original system. Because I replaced most of my components in one fell swoop, I have no way to determine the source of the distorted sibilance. I have tried various interconnects but got no improvement.—Lee F. Winer, Lake Oswego, Ore.

A The most common cause of overemphasized sibilance is an irregularity in the loudspeakers' response, but there are other possibilities as well. Your CD player may be at fault. If it has a headphone jack, see if you can hear the sibilants when listening through very good headphones. If you don't hear the problem, the player probably is okay.

If your CD player has an output level control and you have direct access to your amplifier's inputs, connect the player directly to the amplifier and see if you can hear the sibilance. If you can't hear it, the problem is almost certainly in one of the components you've bypassed.

Since this is a home theater system, you may be running your signal through a surround processor. If so, the processor will attempt to decode material that was not encoded in the first place. See if the sibilance disappears when you set the processor for normal stereo; if it doesn't, try bypassing it and see if that helps.

Make sure you have no equalizer or other processors between the CD player and the surround decoder; their actions on the signal (especially if they add treble) can make the decoder operate in unexpected ways.

If these checks don't work and your system's connections permit, just eliminate everything you can from the system. Add

components back, one at a time, until the sibilance returns; then you'll know what's probably causing it.

Channel-Balance Problems

Q When listening to my A/V receiver in its "Test" mode, I noticed that the left speaker was slightly lower in volume than the right. When I adjusted the receiver's balance control, one of the speakers started making a strange, static-like noise.—Daniel Hileman, Oak Ridge, Tenn.

A Assuming you're sitting equidistant from both speakers, the channel imbalance could be caused by your room's acoustics, differences in the speakers, or your receiver's amp section. It's not hard to find out which.

Problems with a room's acoustics are more common than you might think; my own listening room causes a slight imbalance. To see if that's the problem, swap your two speakers' positions but don't change their connections to the amp. If the imbalance stays where it was originally, then the room's at fault.

If the same speaker is still louder, there is indeed something wrong with the equipment. Swap the connections so that the speaker originally fed from the amp's right channel is now fed from the left channel (and vice versa). If the imbalance does not swap sides, the problem lies in the speakers.

The static you mention might mean the receiver's balance control is dirty. Turn the receiver off, spray a volume-control cleaner into the crack between the control's shaft and its body, and then twist the control back and forth a few times. If this doesn't help, the control probably has DC on it, and your receiver needs repair.

Tape-Head Azimuth Solutions

In your August 1995 column, there was a question from a reader whose cassette deck had been realigned. The deck could no longer properly play his earlier recordings that were made with a different alignment. You suggested getting a second deck and realigning it to match the old tapes, and I'd like to offer some advice. He should look for a new deck that has a front-panel azimuth-adjustment control, such as Nakamichi's DR-1. Such a deck could easily be set for proper playback of his new or old tapes. A less expensive alterna-

tive would be to get a deck that has a "Playtrim" circuit, designed to compensate for differently aligned recordings. This circuit is similar to a treble tone control but operates before the Dolby NR circuit, for proper NR tracking. I've seen this feature on Yamaha's KX-W952 and old NAD decks.—Doug Viner, Rockville, Md.

DAT Reliability

Q I recently read an article that said DAT recorders suffered from a lot of downtime because their heads clog frequently, among other problems. I have been considering buying a \$2,500 professional DAT machine, but now I wonder if such a recorder will be reliable enough to justify the hefty price.—John Jager, Wantagh, N.Y.

A Although I have not used a professional DAT recorder, studios are using them for mastering, so they must be reasonably reliable.

I own a consumer model that usually works very well, but I have had two disturbing experiences with it.

The first involved a temporarily clogged head, which unfortunately occurred while I was taping a live concert. During playback, I discovered that there were places on the tape where the new concert was not recorded; the tape's previous contents could be heard dropping in and out. If I'd had a professional model with simultaneous playback during record (or one of the few home DAT machines with this feature), I would have noticed the glitch before it was too late.

Another time, the tape suddenly stopped and none of my recorder's transport controls worked. Luckily, the eject control did work, so I removed the tape. It had developed some slack, which I took up by opening the DAT's protective flap and turning the hubs in the proper directions. I placed the tape back in the machine, but the other controls still didn't operate. I removed the tape again, inserted a cleaning tape, and pressed the play button. When I then reinserted the tape I had been working on, the machine operated correctly. I discovered there was noise on that tape's last selection, which suggested that dropouts might be forthcoming (although none occurred).

Both these incidents suggested to me that I should clean the tape path more often. I'd

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CIRCLE NO. 14 ON READER SERVICE CARD

also recommend that a new tape be fast forwarded and then rewound before recording on it. Also, do not start recording important information on the first few turns of tape, as it may be creased. (If you must record something there, have it be a reference tone or perhaps an audible "slate" announcing the time and date of the recording.)

Editor's Note: I asked Bob Katz of Digital Domain, a CD mastering house in New York City, for further advice. He had two additional tips: "First, if you're really serious, use two DAT decks and make two simultaneous recordings. Second, although DATs should be good for at least five years and may well last 30, don't count on them to last forever."—I.B.

Faulty Wiring

Regarding your discussion of bi-wiring and tri-wiring in the November 1995 issue, I believe you missed an important point. Biamping, properly executed, is a valid scientific principle. It increases overall system efficiency, power handling, and output while decreasing distortion. I have wondered for more than 20 years why all systems are not biamped or triamped. Bi-wiring, on the other hand, is a scam. There is no way that running two wires from an amplifier to a two- or three-way speaker will accomplish anything that simply increasing wire size would not. This is a perfect example of how the consumer audio market rips off the public. In professional audio (and I am an audio technician), there is no such thing as bi-wiring.—Alan Hefner, Hilo, Hawaii

I agree with you, almost. Normally, I hear no improvement whatever from bi-wiring. Yet so many audiophiles feel they hear a worthwhile difference that I cannot be entirely sure there is none. (Proving a negative isn't easy.) On the other hand, any difference that may exist must be subtle, or I would hear it.

At the moment, I have a speaker system that does benefit from bi-wiring, but it's hardly what I'd call a normal system. My setup includes a two-way speaker with a highly capacitive tweeter matched to an experimental subwoofer. I'm bi-wiring this speaker system so that the tweeter has a cable of its own while the original woofer and the add-on subwoofer share a cable. This is to ensure a really solid ground and thereby

keep interaction between the tweeter's capacitance and the series crossover from rolling off the treble.

For those who think that they hear an improvement from bi-wiring, there is a simple way to check how much of the improvement you're getting is due just to lowered resistance. Leave both bi-wiring cables in place, but put back the shorting wires or bus bars that are used when the speaker is not bi-wired. Any difference that you hear between the sound with and without the shorting wires is due to bi-wiring. If you hear no difference in this test but do hear a difference between the shorted (normal) connections with one cable and with two, then the change is due to the reduced cable resistance or to other cable characteristics.

How Digital Works

Q *Reel-to-reel and cassette decks stay on constantly, capturing every detail and nuance. But if a DAT recorder turns on and off many thousands of times a second during recording, how can it capture all of the sound? And how can digital recording capture a signal properly if it uses just two voltage levels to record that signal? Signal voltages have infinite variations! And CD players should not require the use of multithousand-dollar D/A converters to obtain good sound; a cassette player doesn't!—Tim Coop, Marysville, Cal.*

A It's not really accurate to think of a digital recorder turning on and off very rapidly during operation. Analog-to-digital (A/D) conversion involves three basic steps: filtering (to remove any signal components above half the sampling frequency), sampling, and quantization. If you were to look at the output of a digital audio recorder's sampling circuit before quantization, you would see a continuous waveform with the same basic shape as the filtered analog input—but "stairstepped" at regular intervals. The sampling circuit adds these ultrasonic plateaus to facilitate quantization; it removes nothing. If you were to run the sampled signal through an ultrasonic filter, you would get back exactly the signal that went into the sampling circuit. In other words, sampling itself is a lossless process. The key to digital sound reproduction is that playback is a reciprocal process that utilizes the quantized volt-

age levels of the ultrasonic plateaus to precisely reconstruct the sampled signal, which is then filtered to recover the pure audio signal.

As to voltage levels, it's true that signals stored on a CD, DAT, or other digital recording have just two states, representing the binary numbers 0 and 1. But the quantization coding used can represent many more voltage values than that, since each sample's level is represented by more than one binary digit, or bit—16 of them on CD or DAT. Every additional bit in a data "word" doubles the range of values that word can encode: an eight-bit word can encode 256 values, a 16-bit word can encode 65,536, and so on. But since the number of values that can be encoded will always be finite, quantization is, by its nature, *not* lossless. The difference between a sample's actual level and the closest approximation that can be encoded by the quantizer is the quantization error. (You can think of the possible range of error as an uncertainty in the quantized value.) On playback, the quantization errors will cause corresponding errors in the analog output, adding a slight "fuzziness" to the signal. This is where the noise in a digital recording comes from, which is why increasing the word length increases the available dynamic range. With 16-bit words, the dynamic range is quite wide, and if you were to look on an oscilloscope at playback of the same signal recorded on DAT and analog cassette, one of the main differences you would see would be the much greater fuzziness of the output from the cassette, representing its higher noise level.

Some audiophiles feel that a digital system using a higher sampling rate and more bits per sample would sound superior, and it's possible that such systems will someday be available for home use. But increasing the sampling rate will do nothing but extend high-frequency response, which is already up to about 22 kHz, and increasing word length will simply drop the noise floor, which is already very, very low.

Good CD players do not require external D/A converters to achieve good sound. It is probably true that some external converters will help a CD player achieve even better sound, but unless something is seriously wrong with the player's built-in converter, the improvements will be subtle. **A**

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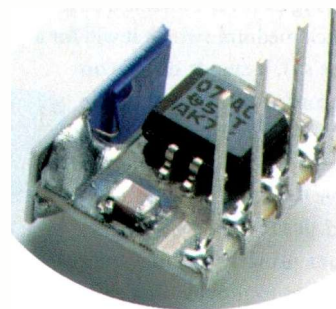
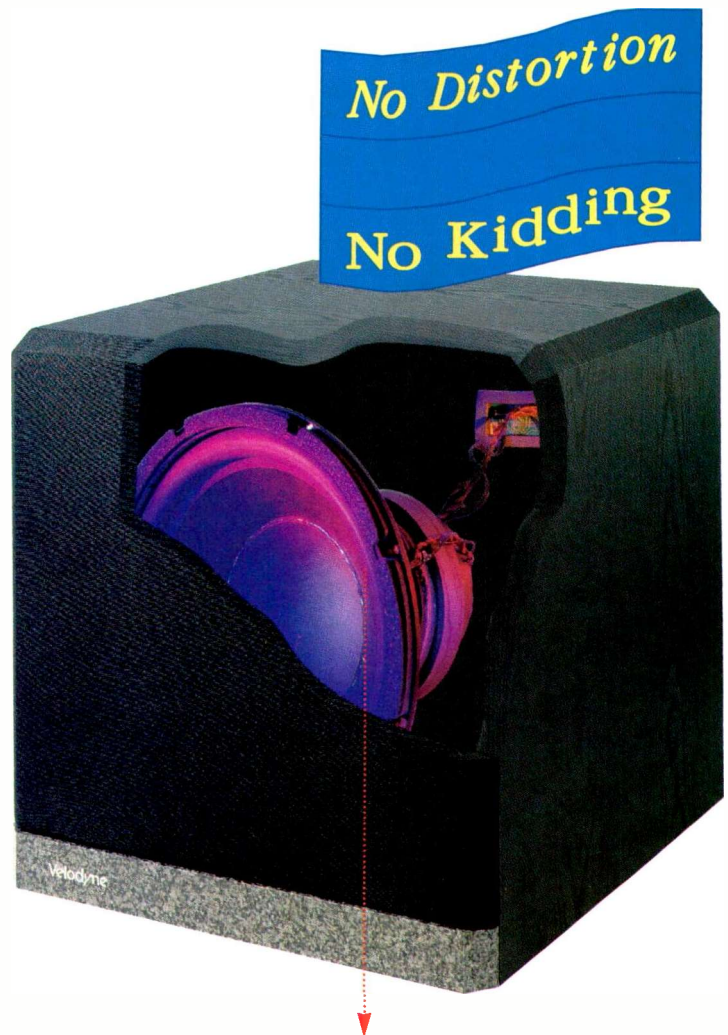
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IVAN BERGER

DVD HITS THE HURDLES



Although the digital video disc (DVD) was originally announced as reaching the market by this summer, and later announced for September, it may well come later than that. The main technical issues have mostly been resolved, but they're not the only issues.

As long as DVD remains a strictly playback medium (which it will for a year or so), it stands or falls on the recorded software available for it. And the movie studios (with the probable exception of Warner Bros. and Sony, both involved in DVD's development) are not exactly falling over themselves to provide that software. The main sticking points are packaging, pricing, protecting release dates, and protection against copying by pirates and by (shudder!) us consumers.

Although DVDs are the same size as CDs, they'll probably come in larger packages than CDs do, sort of

a cross between videocassette boxes and the longboxes that CDs were originally sold in. Developing an industry consensus on the new pack-

aging will take some time; getting appropriate fixtures into stores will take more. Store fixtures for CD jewel cases are readily available, of course. But DVDs, being more expensive than CDs, have even more need for packaging that can't easily be slipped into a shoplifter's pocket.

How much more expensive will DVDs be? That's hotly debated, too. Some studios want to price them low, to encourage viewers to buy and keep them. Others want to price them high, to increase studio profits from DVDs sold to rental stores. Still others suggest introducing each title at a high price, to milk the rental market, and then dropping the price to increase sales. Unlike packaging (which must be uniform for the stores' convenience), pricing can be decided on a studio-by-studio or even film-by-film basis.

The remaining problems depend on cooperation between studios and player manufacturers. The studios want to make sure that films sold on DVD in one country can't be played on machines sold in countries where that film hasn't been released. The variety of video and color standards (e.g., NTSC, PAL, and SECAM) provides some such protection now with

DVD COPYRIGHT PROGRESS

The Motion Picture Association of America (MPAA) wants to protect moviemakers' copyrights in the DVD era. The Consumer Electronics Manufacturers Association (CEMA) wants to protect consumers' rights to record video programs for time-shifting and other noncommercial purposes. Now the two groups have agreed to recommend legislation to attain both goals.



The recommended legislation would let consumers freely record broadcast and cable programs but probably not make digital copies of those recordings. It would also let copyright owners restrict taping from pay-per-view or video-on-demand programming and from commercial video programs.

Manufacturers of playback, reception, and transmission equipment would have to comply with any technical standards needed to make the other provisions work. The legislation would specify those standards but would let the Librarian of

Congress update them as new copy-control technologies emerge. However, those new technologies would have to be backward-compatible and would not be permitted to interfere with the operation of TVs.

Illustrations: Beata Szpura

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CIRCLE NO. 3 ON READER SERVICE CARD

RUSHING TO VIRTUAL REALITY

Surround-encoded CDs have been around for a few years, from such companies as Telarc, the Kore Group, Sheffield, and Delos. With Dolby Digital AC-3 discrete surround now here, and audio-only DVDs with discrete surround perhaps around the corner, record companies are starting to give surround even more attention. Access Music has started issuing all its CDs in Dolby Surround, and surround CDs are also available from Concord Jazz, Pro Arte, and RCA Victor.

Delos International demonstrated its progress in this area this February at Dolby Laboratories in San Francisco. In the past year, Delos has been using a format it calls Virtual Reality Recording (VR²), which will enable the company to produce releases in surround with discrete

full-range channels or with a combination of discrete full-range channels and a limited-bandwidth subwoofer channel (the "5.1-channel" format used in Dolby Digital AC-3 encoding).

Discrete-channel digital surround is gaining impetus for home use and is fast becoming the new standard for movie theaters (more than 4,000 theaters are equipped for Dolby Digital, for example, and 400 films have been made with such soundtracks). An audio-only DVD would have enough storage capacity to hold discrete multichannel music recordings without use of a perceptual-coding system like AC-3. While we wait for that, however, it is possible to put these programs on Dolby Digital-encoded CDs or laserdiscs for playback through the AC-3 decoders now becoming available for home theater systems. And though the AC-3 perceptual-encoding algorithm involves some data reduction, the amount is adjustable to some degree, according to loan Allen, vice president of Dolby Labs. Even the very longest musical pieces, such as uncut ballets and operas, could be recorded in AC-3 on CD-type discs with much less compression than is used for movie soundtracks.

According to John Eargle, Delos' director of recording, the VR² recordings are "our first recordings made with the intent of ultimately offering discrete surround. Meanwhile, they should sound

good in stereo and should sound very good with steered analog decoding, such as Dolby Pro Logic." To make these recordings, Eargle uses eight-track digital masters. Tracks 1 and 2 are Delos' normal stereo mix. This includes a coincident-pair stereo mike in the front center, a pair of spaced omni mikes flanking the coincident pair, two house mikes to pick up reverberation, and accent mikes strategically located within the orchestra. Tracks 3 and 4 are the coincident pair, tracks 5 and 6 are the flanking mikes, and tracks 7 and 8 are the house mikes. For a surround mix, Eargle could subtract the last six tracks from the first two, to isolate the signals from the accent mikes. "These recordings will be a virtual re-creation of the sound field," according to Eargle.

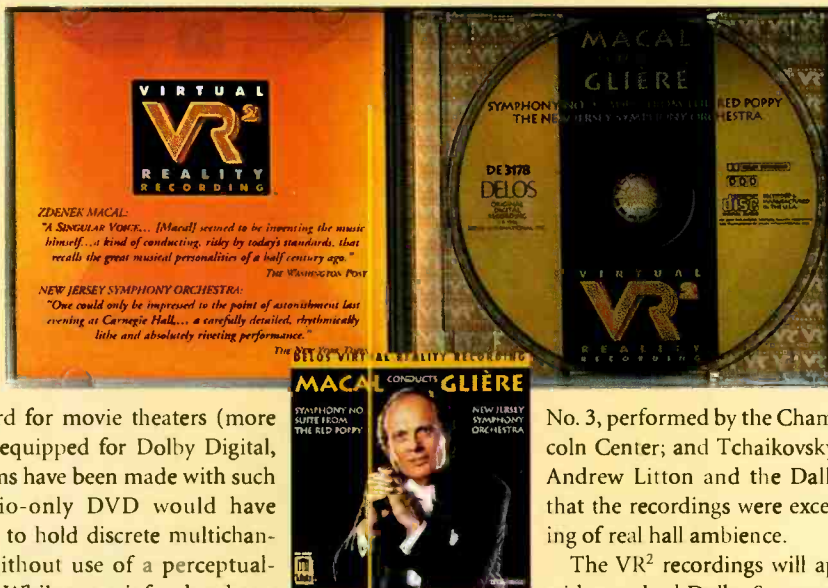
For the Delos demonstration, 5.1-channel AC-3 bitstreams were recorded on a Compact Disc. The demo included new recordings of Glière's "Russian Sailors' Dance" from *The Red Poppy Ballet Suite*, performed by the New Jersey Symphony Orchestra conducted by Zdenek Macal; Bach's Brandenburg Concerto

No. 3, performed by the Chamber Music Society of Lincoln Center; and Tchaikovsky's "1812" Overture, with Andrew Litton and the Dallas Symphony. I thought that the recordings were excellent, with a definite feeling of real hall ambience.

The VR² recordings will appear first on stereo CDs with standard Dolby Surround encoding for Pro Logic playback, although Delos also plans to release the "1812" Overture on laserdisc in the Dolby Digital AC-3 format about the time you read this. When DVD playback equipment is available in the future, Delos will have the master tapes to produce discrete multichannel recordings in that format as well.

Later, at home, I listened to the formally issued Glière CD (Delos DE 3178) in two-channel stereo and through a Dolby Pro Logic surround decoder. The recording had a wonderfully spacious sound that was definitely enhanced in the Dolby Surround format. With my eyes closed, the experience was like being in the concert hall with the orchestra—but isn't that what virtual reality is all about?

Edward M. Long



analog systems, but the studios want more.

Protection against piracy and home copying is proving to be a higher, but not insurmountable, hurdle. It's not too hard to put roadblocks in the way of copying by direct digital connection (such as SCMS and the copy-prohibit flags used in home digital audio recorders). Such a roadblock, the Copy Generation Management System (CGMS), has been devised for DVD.

However, virtually all home VCRs to date are analog, and DVD players won't initially have digital video outputs, so CGMS won't be effective for a while. That leaves film studios worrying. Without some way to put copy protection into the analog link from DVD to VCR, it becomes all too easy to make copies that would be, if not equal to DVD's quality, still better than videotapes made off the air or from laserdisc. The proposed solution is a version of Macrovision

Colorstripe technology, which would make VCR copies from DVD virtually unwatchable. This could prove very unpopular with consumers if it also makes DVD's superior picture unwatchable on some TVs. (A third system, CGMS-A, has been proposed, but no details were available at press time.)

As a further complication, the home computer industry has a stake in these developments. Part of DVD's appeal is its use of one technology for video and for multi-

media, enabling both video and DVD-ROM programs to be shown on a PC screen. The DVD anti-copy system must neither be incompatible with PCs nor easily overridden by PC users.

Whatever anti-copy systems are decided on, their use must be enforced. No customer would opt for copy protection voluntarily, so no manufacturer would voluntarily offer it. Waiting for new copyright laws to be debated and passed would stall DVD for at least another year (see "DVD Copyright Progress"). Some Hollywood studios may indeed wait it out; others seem to feel that, for the time being, it's sufficient that protection be written into the DVD standard.

These issues are still in flux, and until they're settled, the studios won't send many films out for encoding onto DVD. After that, they'll send out plenty. But it may take several months after everything's resolved for the movie industry to encode enough films to support the system's launch.

The Titled Few

For quite a while, CD changers have been able to store disc titles (and sometimes track titles) in databases that linked them to disc ID codes. Once you'd entered a disc's title information, the changer automatically displayed the title when you played the disc.

Useful, but what a pain! In all too many cases, you enter titles by rocking a knob or pressing a pair of buttons to scroll through the alphabet for each letter. After a while, it feels like trying to write a novel on an old-fashioned toy typewriter, the kind with all

a database of all current CDs, with the option of getting updated databases from the manufacturer. Owners of that system would never have to enter titles by hand—except, perhaps, for discs too old to be in the database or for CDs purchased between database updates. Alas, I don't believe there ever were such owners—I've heard nothing of the system since it was unveiled.

A few years back, Kenwood introduced a changer with a serial port that let it exchange data with a PC database program. With that system, you could enter data via your PC keyboard, a major advance, and import it from the PC as needed.

For its first megachanger (a 100-disc model, as I recall), Kenwood adopted a suggestion of mine and further simplified titling: Since most homes have their PCs and stereo systems in different rooms, the new changer had a jack for a PC keyboard instead of the serial port. Want to enter titles? Just carry in your keyboard from the other room.

In 30 years of making unsolicited suggestions to manufacturers, this is the first one I've ever seen adopted. Was it, perhaps, the first that made real sense? In any event, the idea seems to have legs: Sony has adopted it for its compact 200-CD changer, the Model CDP-CX270.

But seeing the Sony a few days after writing about prospective DVD-audio standards ("Spectrum," April) made me wonder: Wouldn't it be nice if audio DVDs carried title information, track by track? There certainly should be space enough.

Sony's CDP-CX270: 200 discs, but easy titling.



its letters on a manually rotated wheel. Once you realize this, your zest for entering disc titles wanes, and few titles get entered thereafter.

Some time ago, a megachanger was announced that would check disc IDs against

(The players could even export that information to a PC, if you wanted to have it in a database.) By the time I thought of this, the process of setting DVD-audio standards had already begun. So there's nothing I can do but wait and see.

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- ID** Ultimate Electronics; Boise • Wise Buy; Idaho Falls.
- IL** Camera Corner; Bloomington • Cars & Stereos; Rockford • Good Vibes; Champaign • Joe's Home Ctr.; Quincy • Sd Forum; Crystal Lake • Select Sd; Naperville; Soudown A/V; Springfield • United Audio Ctrs; Chicago & Suburbs.
- IN** Audio Video • Lifestyles; Fort Wayne • Classic Stereo; Ft. Wayne, Mishawaka • Good Vibes; Lafayette • Ovation Audio; Clarksville, Indianapolis.
- KS** Accent Sound; Overland Park • Advance Audio; Wichita • Audio Junction; Junction City, Manhattan.
- KY** Ovation Audio; Lexington, Louisville.
- LA** Altman Audio; New Orleans; Metairie • Lake Charles Music; Lake Charles • Sound Advice; Baton Rouge • Wright's Sound Gallery; Shreveport.
- MA** Cookin'; Chestnut Hill; Saugus • Goodwins Audio; Boston, Shrewsbury • Nantucket Sound; Hyannis • Pittsfield Radio; Pittsfield.
- MD** Audio Buys; Annapolis; Gaithersburg, Laurel, Waldorf • Gramophone; Baltimore • Elbow City • Soundscape; Baltimore.
- MI** Cookin'; Detroit.
- MI** Pecar's; Detroit • Troy • Classical Jazz Holland • Classic Stereo; Kalamazoo, Grand Rapids • Stereo Center; FRAV; Flint • Court St. Listening Room; Midland; Saginaw.
- MN** Audio Designs; Winona • Audio King; Minneapolis & Suburbs, Rochester, St. Cloud • Audio Perfection; Minneapolis.
- MO** Independence A/V; Independence • Reference Audio; Sedalia • Sound Central; St. Louis.
- MS** McLelland TV; Hattiesburg • Players A/V; Ridgeland.
- MT** Aspen Sound; Missoula • Avile; Bozeman • Car & Home Stereo Ctr.; Billings • Rocky Mt. Hi Fi; Great Falls.
- NC** Audio Video Systems; Charlotte • Audio Visions; Wilmington • Now Audio Video; Durham, Greensboro, Raleigh, Winston Salem • Audio Lax; Wilmington • Tri City Elect.; Conover.
- NE** Custom Electronics; Omaha, Lincoln.
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- VA** Audio Buys; Arlington, Fairfax, Manassas • Audio Connection; Virginia Beach • Audio Ironics; Roanoke • Home Media Store; Richmond • Stereo Type; Charlottesville.
- VA** Audio Video Authority; S. Burlington.
- VT** Aspen Sound; Spokan • Definitive Audio; Bellevue, Seattle • Evergreen Audio; Silverdale • Pacific Sight & Sound; Wenatchee • Tin Ear; Kennewick; W. VA • Sound Post; Princeton.
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- Mexico** Contact Grupo Volumen; Mexico City.

KEN KESSLER

BACK AT YA, BILLY-BOB!



Hate mail rarely provokes a measured response. Normally, I (and other hypersensitive types) would answer letters dripping with venom in an equally nasty tone—not that there’s any excuse for childishness. But the latest in the long line of poison-pen missives I’ve inspired raises a number of points concerning the

themes in this column. And since a single letter might represent a number of like-minded individuals too lazy to write, I must assume that some others are just as confused by this column’s function in these pages. So let’s clear the air.

For starters, even the name of this column was lost on this guy. To the editors, to me, and to all other readers whose IQs register into double digits or better, “Mondo Audio” conveys “The World of Hi-Fi” as succinctly as possible while adding a foreign spin. And within that definition, and in my role as *Audio*’s overseas contributor, it should stand to reason that this column covers matters taking place beyond the Golden Gate Bridge and Cape Cod. Or, since I also cover American matters like CES, “The World of Hi-Fi

at Large.” So the column exists under the assumption that *Audio* readers want to know what’s going on around the globe.

But this obviously isn’t clear enough for someone who makes remarks like “Europe needs the U.S.A.” (and, by implication, so does the rest of the world). This was but one of a host of xenophobic rants

and raves that smack of 1944 and the Hun at the door. No way, pal: Ask any American high-end manufacturer what percentage of its business is home market and how much is export, and I can promise you that all but the smallest would say “God bless Asia!” So who needs whom?




Whether Archie Bunker likes it or not, some of the highest disposable incomes in the world are found in the Pacific Rim, while Europe alone has a population greater than that of the U.S., with wages not that far behind. And as far as a passion for hi-fi is concerned, there ain’t no audiophiles as fervent as the British, the Italians, or the Chinese. Some people just refuse to believe that the world is shrinking, that every country’s economy (with the possible exceptions of Cuba’s, North Korea’s, and Albania’s) is interconnected, that MTV

**THERE AIN’T
NO AUDIOPHILES
AS FERVENT AS
THE BRITISH
OR THE CHINESE.**

and CNN have all but eradicated language differences, and that the English language itself started on the eastern side of the pond, not the western.

Be that as it may, what really rankled was Joe-Bob’s implication that only American hi-fi companies matter and that European manufacturers are fleas. I’d love to be there when the realization penetrates his thick skull that Mitsubishi, Matsushita, Kyocera, and Sony are more like countries than companies when it comes to size. So I won’t even deal with the obvious ones like Philips and Thomson. More to the point are straight hi-fi makers: Many of you already know that B&W (British) is in the U.S.A.’s Top 10 for speaker sales; it’s rumored that a nice, realistic ballpark figure for its global annual sales is something in excess of

Illustration: Courtney Grammer

Attitude is everything. And Plymouth Neon's got attitude in spades—in two fun flavors: Neon Sedan and Neon Coupe.  If you've got a kick-back-and-relax attitude, no sweat. Plymouth Neon Sedan offers comfy seating for you and four more.  If you're the get-up-and-go type, try Plymouth Neon Coupe. Corralled under Neon's aerodynamic hood are 132 kicking horses. 

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One clever idea after another.  **That's Plymouth.**

*Base MSRP's with destination fee. Tax extra. Actual prices vary. Sedan shown: \$12,800. *Achieved with premium unleaded fuel.

\$30 million. Are there even a dozen pure audio manufacturers in the U.S. with that kind of success?

I'd like to alert Bubba to some seemingly minor but significant success stories in Europe that wouldn't even register with him because the names aren't as American as CBS or Zenith or RCA. (Come to think of it, Billy-Bob, one of those is owned by Koreans and another's divisions are under French and German ownership. I will leave it to you to figure this all out.) But this audio empire-building will eventually have some impact in the U.S., if for no other reason than the sheer magnitude of the enterprise. The Verity Group—parent company of Mission, Wharfedale, and Premier Percussion—was already a force to be reckoned with at the beginning of 1995: Mission is one of the most successful and highly visible brands in the U.K. and Europe, despite its current low profile in the States, while Wharfedale is one of the oldest audio names in the business.

Those two brands alone were enough to endow Verity Group with clout on a par with that of Gold Peak, which owns KEF and Celestion. Meanwhile, Premier—along with Fane—gave Verity Group a presence in the professional sector. But no one was prepared for what followed: Verity Group acquired Quad, the last of the four greatest audio names of all time, and the last one that hadn't been absorbed by an outside concern. (The other three in the quartet are Marantz, Acoustic Research, and McIntosh. Philips owns Marantz, AR is now part of Christie Design, and McIntosh is a subsidiary of Clarion, which, my pen pal should understand, is Japanese.) The brands I'm discussing are arguably those with the greatest market value in pure audio terms, despite long fallow periods between their days of greatness and the present. And the reason why they were the most valuable of all the pioneering brands is that—unlike Scott, Leak, Fisher, and others from the Golden Age—their reputations outlasted their actual market presence. I, for one, would not want to be responsible for reviving, say, Phase Linear or Bogen or Rek-O-Kut as a high-end contender.

But Quad? What a coup! This acquisition gives Verity Group a genuine flagship line. And because Mission is a tough, thrusting company and probably has overall respon-

sibility for the group's activities, it's likely that Quad will recover from the years it spent in the wilderness. Despite what has happened to Quad since Peter Walker retired, the name still has unparalleled global worth, it enjoys fanatical loyalty among its client base, and it still warrants its reputation for service and backup that rivals even McIntosh's. Big plans are afoot for Quad in the coming years, ones that I hope will compensate for such gaffes as putting the Quad name on a two-way, box-type speaker when the company's entire reputation was born of an electrostatic. Rest assured that Verity Group knows that it got not just a bargain in Quad but also the custody of a legacy, a company that the British consider one of their cherished national treasures.

So it is starting to look like Verity Group is on its way to becoming a mini-Harman. Harman International boasts audio's largest collection of legendary names under one banner: JBL, Harman Kardon, Infinity, Mark Levinson, Lexicon, and a load of others. Within months of acquiring Quad for a song, Verity Group went on to buy Roksan—another peculiarly British company, in that only the British market could inspire the founding of a turntable manufacturer around the time of CD's birth.

Verity, y'see, is on a roll, having announced sales for the last six months of 1995 of £23 million (approximately \$34.5 million), with profits up nearly 80% from the same period the year before. So it was wealthy enough to buy yet another complementary company and give it a real high-end presence. Streamlining will be minimal; Roksan, like Quad, will maintain its own manufacturing plant, but all of the companies under the Verity umbrella will benefit from the R&D headquarters located in the Mission factory. (I stopped counting after I saw 10 guys in front of their computers doing nothing but pure research.) One can assume that Quad, Mission, and

Roksan will share any mutually beneficial developments in, for example, digital audio, as all three produce CD players. And if Verity has any sense, it will see that all three share distributors, whatever ructions this causes in the short term.

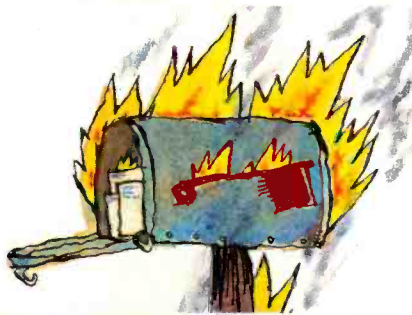
Keeping brands' identities separate won't be as much of a problem as Verity Group had when it was forced to recognize the overlap between Mission's and Wharfedale's lines of low-priced speakers. This was addressed by targeting completely different market sectors, with Mission aimed at entry-level purists and Wharfedale focused on the mass market. In the meantime, Quad will continue to appeal to traditionalists; Roksan, no doubt, will still attract the freaks.

It's not just Verity Group, though, that is "happening" in the U.K. The entire Cambridge/Huntingdon area is turning into a British hi-fi answer to Silicon Valley. Not a million miles from

Mission headquarters are Quad itself, EAR Yoshino (Tim DeParavicini's company), Arcam, Audiolab, Papworth, and a bunch of others. But the most amusing development was the relocation of Meridian from down the road past the Quad factory to directly opposite Mission.

To celebrate the opening of its new 25,000-square-foot factory, Meridian attracted no less than Prime Minister John Major to grace its unveiling in early March. But this didn't have quite the impact or novelty value it might have had: Three years earlier, Mission invited Major to its factory to do the same thing. Huntingdon is, after all, Major's constituency.

Meridian's rapid growth is just as noteworthy as Verity's, and it's due in no small part to the success of its Atlanta-based division, which increased Meridian's American sales 20-fold. I suppose this reinforces my correspondent's belief that Meridian, if not all the rest of the world's hi-fi manufacturers, needs America. A



**THE ENTIRE
CAMBRIDGE/HUNTINGDON
AREA IS TURNING INTO
A BRITISH HI-FI ANSWER
TO SILICON VALLEY.**

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S-90

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S-90/MX-90

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V-125






"Is that turbulence
or is my vodka martini
wearing off?"

30,000 FEET

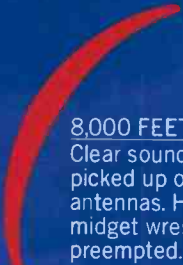
Air currents move
to a groovy beat.
Aircraft passengers
feel compelled
to either tap feet
or vomit.

20,000 FEET


Due to changes
in pressure, clouds
form into the shape
of an enormous
phlegm ball.




15,000 FEET
Causes mild incontinence in migrating sparrows and high-flying fruit bats.



8,000 FEET
Clear sound is picked up on TV antennas. Hot-oil midget wrestling preempted.



3,000 FEET
Booming bass frequencies may disrupt Bigfoot mating season.



10-50 FEET
Extreme sound causes rock slides and severe paranoia in rodents.



GROUND LEVEL
Driver hits Play and Pioneer car speakers and subwoofers immediately respond. Passengers feel compelled to tear off shirts and mosh in backseat.



The advent of Dolby Digital AC-3 and discrete multichannel sound has me salivating, big time! I was not prepared for such a substantial improvement in clarity, spatial precision, and dynamics. It's the kind of unexpectedly dramatic step up that I've experienced only a few other times—when I first added a true subwoofer to my system, when CD came on the scene, when I first experienced high-quality surround sound. But the advent of Dolby Digital also raises some interesting questions, particularly with regard to bass management.

One aspect of the system that holds a special allure for many enthusiasts is its provision of full bandwidth on all five main channels. There's a certain sexy symmetry to the idea of identical full-range loudspeakers at all five primary speaker locations. At least on paper. And there is sentiment that low bass already has crept into the surround channels of garden-variety Dolby Surround soundtracks. Another bottle of gasoline thrown on the full-range multiple-channel bonfire!

On the other hand, Dolby Labs has shown convincingly that deep bass in the surround channels of a conventional Dolby Surround soundtrack simply duplicates the bass in the main channels, so it does not need to be reproduced separately. Other research ("Subwoofer Secrets," *Stereo Review*, January 1995) has shown that spatial and ambience cues in stereo or multichannel recordings lie above 80 Hz; thus, stereo or multiple-channel subwoofers are not needed to improve low-frequency imaging or to enhance spaciousness, even if the surround channels carry separate low-frequency sounds. Hence, the convention of making Pro Logic decoders with a single subwoofer output and, frequently, no low bass fed to the surround outputs.

Dolby Digital playback equipment, however, allows just about any bass arrangement, ranging from all channels feeding their

2 subs in a corner

be

Two subs in a corner beats

by TOM NOUSAINE

5 IN THE ats ROUND

bass to a single subwoofer to the use of full-range speakers (or smaller speakers plus subwoofers) at all five primary speaker positions (front left, front center, front right, and the left and right surrounds) plus a subwoofer for the low-frequency effects (LFE) channel. Although the former arrangement is easier (and usually cheaper) to set up, the Dreamweaver keeps whispering in our ears that bass distribution in our living rooms would improve markedly if we drove those rooms with full-bandwidth signals, bass and all, from a number of separate points.

Let's discuss the logic here. At low frequencies (below 80 to 100 Hz or so) the main problems are room modes (standing waves). The two lowest modes, associated with the length and width of the room, are fairly widely spaced. This gap leaves a "hole" in the bass response somewhere. For example, in my room (which measures $22\frac{1}{4} \times 12$ feet) the two lowest axial modes produce standing waves at 25 and 47 Hz; this leaves a pronounced hole in the response near 35 Hz when speakers are at the primary left and right stereo locations. A related problem is that the bass may differ radically for different seating positions, because the modes cause "hot" and "cold" spots in bass coverage and because the pressure inside a room tends to be maximized near its walls.

If you have just one subwoofer, the best placement strategy is almost invariably to put it in a corner. This excites additional room modes that involve multiple wall surfaces; the added modes help fill in the hole at good listening positions. However, bass may still vary from seat to seat. Conventional wisdom suggests that multiple bass channels, exciting the room from a number of different locations, will average out acoustically and make the bass more even throughout the room.

five in the round

photo by JOHN WILKES

PLACING THE BASS

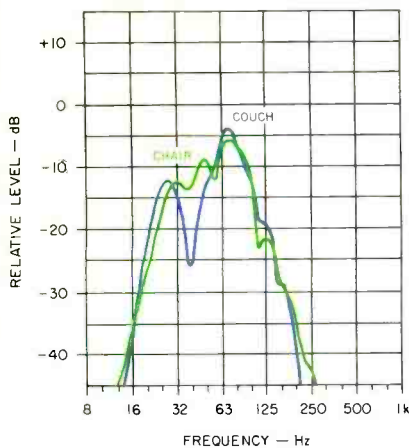
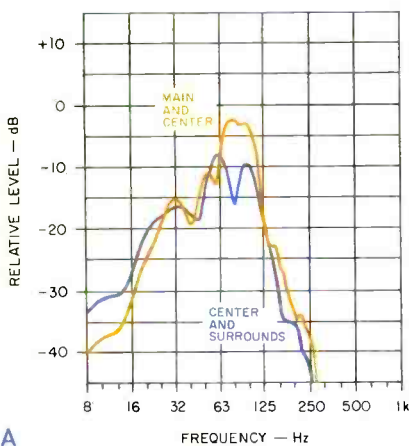
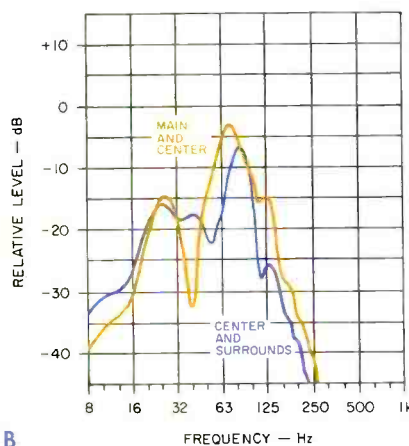


Fig. 1—Response at two listening positions with subwoofers under the two stereo speakers.



A



B

Fig. 2—Response for three subs in center-plus-main and center-plus-surround positions, measured at chair (A) and couch (B).

Although Dolby Digital facilitates such a strategy by making all five primary channels full-range, there are two practical complications. For one thing, surround performance is optimal only when the surround speakers are placed so their main high-frequency axes are well above the listeners' ears; full-range speakers look awkward when raised that high. The other problem is that dipolar surround speakers (which deliver the best overall surround performance, even with discrete surround channels) tend to lack bass because of cancellations at low frequencies.

THE EXPERIMENT

We can get around both these problems by using subwoofers to bring multiple bass-excitation points into our rooms. But how many subwoofers should we use? And where should we put them?

To find out, I put five subwoofers in my listening room and combined them in various ways, from a simple left and right pair to a full five-channel setup. I also compared the performance of these arrangements to that of one or two subwoofers in a corner or corners of the room.

I used five powered bandpass subwoofers, a trio of ADS MS3 10-inch units and two Paradigm PS-1200 12-inch models. These systems all reach 26 Hz in my room and have similar operating characteristics. The ADS subs were used at left, center, right, and near-field locations, while the Paradigms were positioned directly under the dipolar surround speakers. The ADS subs were also used in a corner stack for comparative measurements.

My listening-room furnishings include a couch, centered in the room and facing the TV, and a chair against one side wall, near a large doorway. Measurements were taken with the various subwoofer setups at three primary listening positions: dead center on the couch, at the end of that couch, and in the chair at the side of the room.

I originally checked out various sub locations by placing a single subwoofer at a listening position and recording its

impulse response from various possible subwoofer locations, using a microphone and a MLSSA analyzer. Then I summed the time responses in various combinations and calculated the frequency response to get an idea of how things were likely to play out. This enabled me to assess a number of setups without actually having to move all the subwoofers around.

Unlike the preliminary checks just described, the graphs show actual acoustical responses, combined in the room as they would be when I played music. Measurements were made with an MLS (maximum-length sequence) test signal, as measured with a MLSSA acoustical analyzer; the data

Staggering crossover frequencies may be the most effective way to even out bass in a room.

was then subjected to third-octave averaging. Selected combinations were validated by playing pink noise and sine waves and measuring the results with an AudioControl AC3050a real-time analyzer and the MLSSA.

RESULTS

I began with a basic two-subwoofer arrangement, stationing them under the main left and right speakers (Fig. 1). My room's main modal notch, at 35 Hz, is noticeable at the couch seats whereas the chair, which is near a wall, gets fairly smooth response. Notice the big buildup of energy around 70 Hz, where the modes begin piling up. Adding a center subwoofer (not shown) produced a louder version of the two-subwoofer pattern, but it also added energy at lower frequencies because the piston area from multiple subs becomes additive below the room's lowest mode.

Changing from two subwoofers to three improved performance, and the improvement was greater when the subs were placed by the center and two surround speakers than when they were placed at the center and two main speaker positions. This held true for listeners in the chair (Fig. 2A) and on the couch (Fig. 2B). Interestingly, when I increased the sub count to four (at the two main and the two surround positions), response below 25 Hz seemed to worsen, although there was a considerable increase in output above this frequency at the center listening spot. This is because the Paradigm subwoofers I used at the surround locations have less output below 25 Hz than the ADS subs I used elsewhere; as a result, the summing at extremely low frequencies may be deceptively poor in some graphs.

However, Fig. 3 shows that four subs (at the two main and two surround positions) yield greater output and smoothness at the chair position than three subs (at the center and two surround positions) and that using five subs makes the performance across listening positions more uniform. Yet we still are plagued with a buildup between 40 and 100 Hz, a major performance flaw that cannot easily be offset with an equalizer.

In contrast, a single subwoofer in the corner easily beats five (or four) subwoofers in output and smoothness above 25 Hz (Fig. 4). The only sacrifice is a fair degree of output at extremely low frequencies, caused by the particular subwoofer's output limitations. Adding a second, matched subwoofer in the same corner yields performance that is superior or equal in smoothness, extension, and output at every frequency. This is true at all couch positions and in the chair. For a listener in the chair, the four-subwoofer strategy proved marginally better than using corner subwoofers, but the four-sub setup was far worse than the corner setup for listeners on the couch.

Another advantage of corner locations shown in Fig. 4 is that the outputs of subwoofers placed there add together coherently. Adding a second subwoofer in the corner not only beefs up the low bass but increases sound pressure level (SPL) linearly by 6 dB across the rest of the operating range. Adding a third sub increased output by another 3 dB; a fourth would have yielded still another 3 dB.

That doesn't mean we've achieved perfection. The corner-subwoofer strategy still suffers from unequal response at different seats (Fig. 5). Listeners at the end of the couch get sound about 6 dB louder from 40 to 60 Hz than those at the center of the couch do, while a listener in the chair hears 7 dB more from 40 to 80 Hz but 8 dB less between 25 and 40 Hz. In other words, listeners near the wall hear an apparent increase in overall bass level but actually get less sound in the true low-bass range.

Next, I tried a different approach. It would seem that if a listener were in a subwoofer's near field, it would help reduce the modal effects of the room by making the speaker's direct output relatively more prominent. How about putting each listener in the near field of a subwoofer? Placing two subwoofers immediately behind the couch positions and another near the chair showed that this strategy didn't work as I'd hoped: As shown in Fig. 6, the notch remains and the peaks are unabated.

My next experiment was to assess the effect of system tuning. With a pair of subs stacked in the corner, I tried adjusting the level, crossover frequency, and polarity control of a single subwoofer placed near the chair. My intent was to tune the entire system to obtain a minimal variation in the response among the three listening positions. Indeed, by lowering the single sub's crossover frequency to its minimum setting, reversing the polarity (180°), and carefully reducing this subwoofer's level, I was able to achieve very good output and smoothness from 26 to 80 Hz at the center and end of the couch while reducing the deviation and level imbalance between the couch and chair by a healthy 3 dB.

I thought this was a real discovery until I realized that switching the single sub's polarity only caused cancellations that effectively lowered its crossover even further. The same results could have been obtained simply by reducing the crossover frequency of the subs in the corner and eliminating the other woofer altogether. Worse yet, tuning the system for best response at that chair markedly reduced smoothness at a chair on the opposite wall.

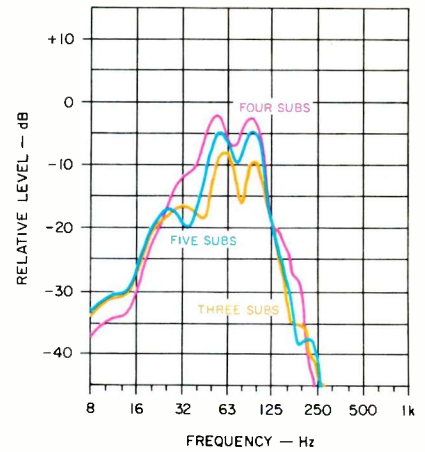


Fig. 3—Response with three, four, and five subwoofers, measured at chair.

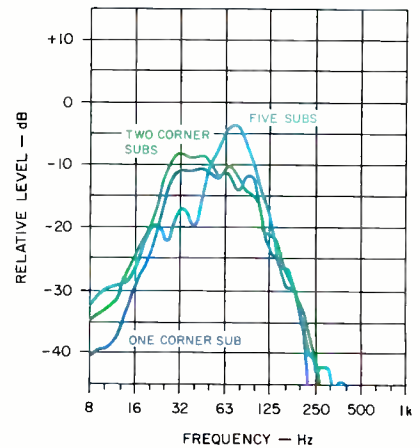


Fig. 4—Response with one and two corner subwoofers vs. response with five subwoofers dispersed to the main, center, and surround speaker locations.

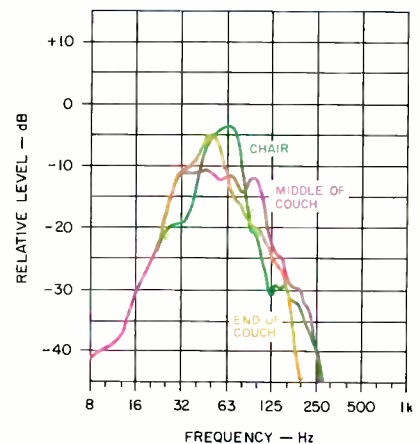


Fig. 5—Changes in response with listener position for single corner subwoofer.

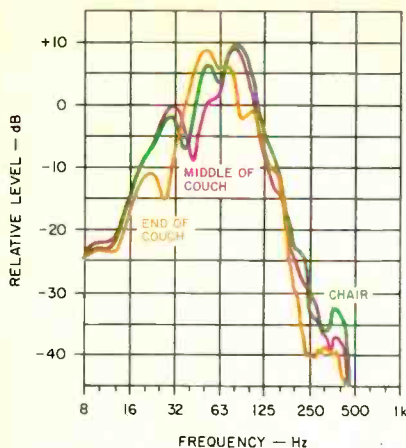


Fig. 6—Response of near-field subwoofer at all three listening positions.

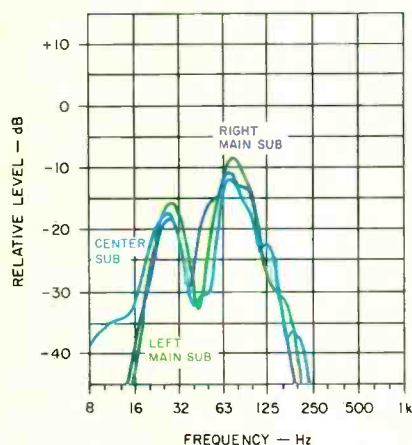


Fig. 7—Response of subwoofer at left main, right main, and center speaker positions.

The results of my experiments do not support the hypothesis that driving a room from multiple points delivers smoother bass response. The best and smoothest results, at all listening positions, are obtained with subwoofers located in a corner. In retrospect, this comes as no surprise. At very low frequencies, below the modal range (starting at about 25 Hz in my room), room effects reinforce the bass at a rate of 12 dB per octave as frequency falls; this happens no matter where the subwoofers are located in the room. Below the modal range, all the subwoofers are well within one wavelength of all six room surfaces, and linear cone displacement becomes the limiting factor for bass output.

In the bass range where the modal hole occurs, between 30 and 45 Hz, there are only two ways to smooth response. One is to excite as many additional multiple-wall modes as possible, to fill in the gap between the two lowest axial modes. Alternatively, we can try to find a set of staggered subwoofer locations where modes will combine destructively (cancel) to knock down the energy at the frequencies adjacent to the hole and average things out. However, if there is a real lack of energy between the room's two lowest primary axial modes (the hole in the bass response mentioned earlier), this will succeed only in reducing the level at these adjacent frequencies to the level in the hole, making it difficult to get an acceptable output level. Therefore, at least one subwoofer will need to be in a corner; this will excite the modes necessary to increase acoustical energy in the hole, no matter how we deploy additional subwoofers. The individual responses of subs at the left, right, and center speaker positions (Fig. 7) show that they cannot possibly average out the way we want.

Below the modal range, subwoofer extension and linear displacement are the main factors controlling output. If more 20-Hz information is needed, the only way to get it in a normal-size room is to use more, bigger, and more powerful subwoofers. At such low frequencies, it doesn't matter where the subs are placed in the room.

In the modal range (roughly 30 to 80 Hz in typical rooms), bass distribution throughout the room will be uneven. Seats located near walls may get an apparent bass boost of 3 or 4 dB, with roughly twice as much deviation as in more central seats. With corner subwoofers, these problems are diminished and bass output will be at its maximum.

Tuning the system carefully may minimize bass-response variations at some seats but will probably increase the variation at other listening positions—and it will be practically impossible to accomplish without instrumentation. When I tried such tuning, I found that staggering crossover frequencies may be the single most effective method of reducing bass unevenness in rooms. If the system sounds too boomy, try

lowering the crossover point of your subwoofer low-pass filter or raising the crossover point on the high-pass that feeds the main channels. This approach will spread the crossover points so that less energy is radiated into the room between 60 and 80 Hz, and it is probably the best way to address the problem for seats located well away from the main listening position. (Do not, however, lower the frequency of the high-pass feeding the main speakers to match your lowered subwoofer crossover; that would only transfer the problem from one set of speakers to the other.)

My measurements show that the main problems are an acoustic hole between the main modes (at 27 and 50 Hz, in my room)

When the frequencies get low enough, it doesn't matter where your subs are.

and a pileup of output where multiple modes combine with the main floor-to-ceiling mode (usually at about 72 Hz because most rooms have 8-foot ceilings). Corner location of a subwoofer solves the problem completely at the primary listening position. Avoiding excitation at 72 Hz by any channel may be the best technique for balancing bass once you have put your subwoofer in the corner.

Perhaps the most interesting overall conclusion is that full-range speakers may almost never be optimal for any kind of system, including ordinary two-channel stereo setups. Your chances of getting both proper imaging and smooth, extended bass are much improved if all the lowest frequencies are radiated from a corner-located subwoofer (or two), irrespective of where the other speakers are placed.

"Madness"

It falls apart, destroys amplifiers, there's no bass and no volume, only one person at a time can listen, it takes up too much

space and it's dangerous. But its clarity is beyond any other loudspeaker known to man. *~* The year was 1978, and

everyone said I was mad. Back then, their fears of electrostatic loudspeaker technology were well-founded. But I was

obsessed with the clarity, and determined to create a loudspeaker the like of which this world had never known. *~*

After four years of struggle and disappointment, Martin-Logan introduced the Monolith I. We had eliminated every problem

and overcome every fear. *~* All that remained was the incredible clarity. *~* When you become disenchanted

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what it is to touch space, feel an image, relish a sublime madness.

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EDWARD J. FOSTER

ARAGON 8008ST AMPLIFIER



The 8008ST is the latest power amp in the upscale Aragon line from Mondial Designs. (On a less lofty level, Mondial also offers the Acurus line; I was quite taken with the Acurus 200X3 amp when I reviewed it in the February 1995 issue.) Actually there are two Aragon 8008 power amps, the "ST" version that I reviewed and a more expensive "BB" version. By the usual rules of the game, both qualify as dual-mono designs. However, the ST version has a single

2,000-volt-ampere toroidal power transformer, whereas the BB amp has separate 1,100-volt-ampere transformers for each channel (which, I suppose, makes it somewhat "more dual mono"). Nonetheless, the

only thing shared by the 8008ST's channels is the transformer's core, since separate windings, rectifiers, and filters are used for left and right. For the curious, the BB version of the 8008 is outfitted with balanced as well as single-ended inputs (the ST is configured only for single-ended signals), and the matched output-stage transistors of the BB are said to be "increased by 50%." I was thus somewhat surprised to find the manufacturer stating that "the 8008ST can be upgraded to the BB,"

which would seem to imply fairly extensive replacement of components.

Perhaps the rather unusual mechanical design of Aragon's 8008 amplifier helps facilitate the transformation. If you look at

the 8008 from the front, the power supply is on the left and the two audio amps are on the right (as opposed to the usual configuration, in which a central power supply is flanked by the amps). Each channel is constructed separately, with the output devices mounted to heat sinks that also support the p.c. boards and ancillary components. That much is conventional, but, instead of facing the heat sinks outward, the 8008 faces them inward, creating a sort of chimney that extends from the front to the back of the chassis, toward the right end of the chassis. The tops of the sinks are angled downward, forming the unique "V" you see when facing the amp.

According to a Mondial brochure, "The notch carved into the top of the chassis insures that the heat generated by all this power will be properly dissipated even if a shelf or another component is placed immediately above the amplifier." The owner's manual is a bit more cautious and suggests at least 1½ inches of top and rear clearance to allow sufficient airflow through the ventilation slots. Since the 8008 is rated at 200 watts per channel into 8 ohms (400 watts per channel into 4 ohms) and uses conventional Class-AB topology, I'd agree with the manual. Nonetheless, the sheer heft of the heat sinks (they have twenty-six ¼-inch-thick fins per side) apparently does enable them to do a particularly fine job of heat dissipation.

The signal for each channel enters the 8008ST via a gold-plated RCA input jack and exits via two sets of gold-plated multi-way binding posts that facilitate bi-wiring. The color-coded output posts are on stand-

**THE ARAGON 8008ST'S
STRIKING LOOK COMES
FROM AN INTERESTING
ARRANGEMENT
OF ITS HEAT SINKS.**

Rated Power Output: 200 watts per channel into 8 ohms or 400 watts per channel into 4 ohms, both channels driven.

THD + N: Less than 0.05% at rated power into 8 ohms.

Full-Power Bandwidth: 5 Hz to 20 kHz.

Dimensions: 19 in. W x 6½ in. H x 14½ in. D (48.3 cm x 16.5 cm x 36.8 cm).

Weight: 67 lbs. (30.4 kg).

Price: \$1,999.

Company Address: c/o Mondial Designs, 20 Livingstone Ave., Dobbs Ferry, N.Y. 10522; 914/693-8008.

For literature, circle No. 90

ard 3/4-inch centers that accept dual-banana (“GR”) plugs, single-banana plugs, spade lugs, etc. The drilled holes, however, are too small to directly accept heavy-gauge speaker cable.

Each connector’s signal ground is isolated from the chassis, and, in fact, the two channels’ signal grounds are kept independent of each other and the chassis ground. Signal ground for each channel is tied to the chassis via a 10-ohm resistor, which is bypassed at RF frequencies. This resistor limits the ground-loop “hum” currents that sometimes flow when the preamp and power amp chassis are connected to power-line ground via three-wire power cords. The Aragon’s grounding arrangement thus helps to improve signal-to-hum ratio as well as to isolate left- and right-channel signal grounds, thereby augmenting channel separation. This arrangement does, however, preclude operating the channels in bridged mode.

Mondial says that all of the Aragon products “utilize only epoxy-sealed resistors to insure that they will exhibit the same 1% tolerance under any and all climatic conditions. . . . Every transistor in every Aragon is precisely matched” so that multiple transistors in the circuit can “act as a single transistor, increasing the operating precision under even the most strenuous conditions.” In addition, signal wiring is “silver composite jacketed with Teflon”; all components “are mounted in a solid glass-epoxy circuit board coated with oxygen-free copper.”

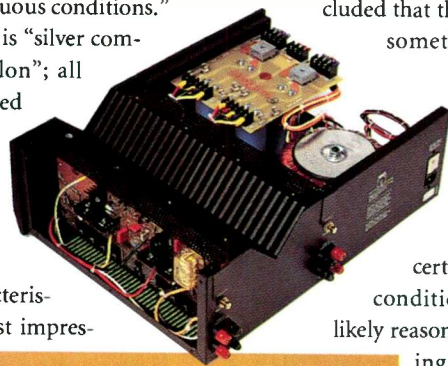
Measurements

Interestingly, the characteristics I find technically most impressive in the Aragon 8008ST, its remarkably wide frequency response and uniformity of output impedance with frequency, are neither touted in the sales literature nor even listed in the specifications. It’s not often that I find an amplifier that’s flat within ± 0.01 dB (the limit of my test system) from 20 Hz to 20 kHz, down less than 0.4 dB at 100 kHz, and less than 1.5 dB down at 200

kHz (the highest frequency I can measure). And it’s not often that I find an amplifier whose output impedance rises from a very low 19.2 milliohms at 50 Hz (equivalent to a damping factor of 415) to a high of only 31.8 milliohms at 20 kHz. This tells me that the 8008ST was designed without the series inductor (coil) that’s often used to protect the output stage from wayward loudspeaker loads. Since I find output inductors have audible drawbacks—aberrations in frequency response when driving real loudspeakers, for example—I’m happy to see them absent.

I did have some initial problems testing the amplifier, however. The first 8008ST I put on the bench blew a right-channel power-supply rail fuse as soon as it was turned on. Replacing the fuse brought the amplifier back to life, but I found that I couldn’t get completely consistent distortion data. After much head-scratching and experimentation, trading amp samples with Mondial, and conversations with both Mondial and the makers of my Audio Precision System One measurement gear, I concluded that there was probably something about the test setup that was causing the amplifier to go into extremely high-frequency oscillation under certain measurement conditions. The most likely reason for a noninverting

amplifier to go into high-frequency oscillation is feedback from output to input. This can occur because of capacitive coupling between input and output cables or because of current flow through a common ground. I take numerous precautions against both conditions on the test bench, including operating the Audio Precision in its “floating” generator



**IN MANY RESPECTS,
SUCH AS ITS EXTREMELY
LOW NOISE,
THE 8008ST PROVED
EXTRAORDINARY.**

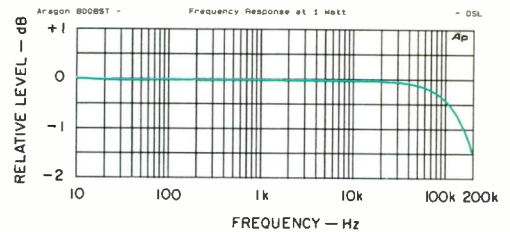


Fig. 1—Frequency response.

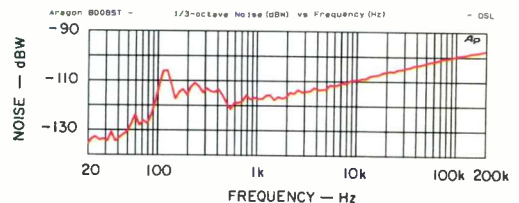


Fig. 2—Noise spectrum.

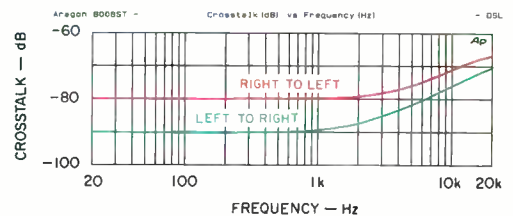
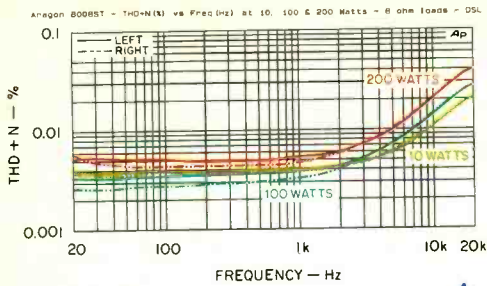


Fig. 3—Interchannel crosstalk.

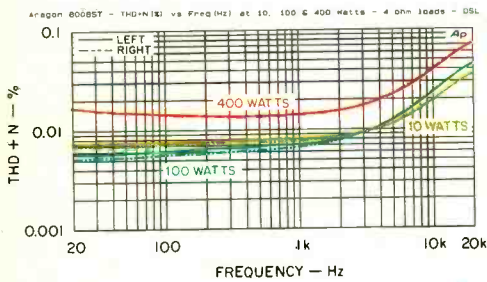
mode, which ensures that neither input nor output grounds are connected to the AP’s chassis, at least in the audio range. It turns out, however, that the Audio Precision’s electronics are bypassed to the chassis at radio frequencies to prevent problems when the equipment is used near a broadcast transmitter. Most amplifiers don’t pass frequencies high enough for this coupling to create feedback, but the 8008ST, apparently, is an exception. Fortunately, this rather fluky condition is highly improbable with the amplifier set up normally in a home audio system.

To make a long story short, I found that I could obtain reasonable behavior when I coupled the two 8008ST inputs with a Y-connector and drove them from only one of the AP’s two generator outputs, strapped the 8008ST chassis to the AP chassis with an RF braid, and locked down the AP’s auto-ranging circuitry to fix its input gain. All data that you see here (except for channel separation) was taken in this manner.

In many respects, the Aragon 8008ST proved extraordinary. Channel balance was absolutely perfect, and left and right response curves overlay so closely that only

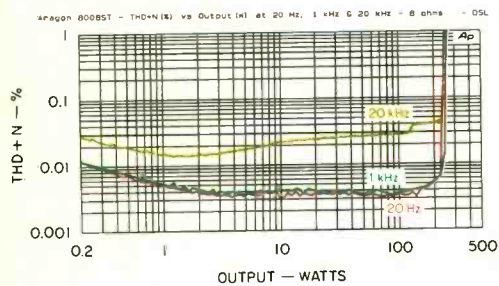


A

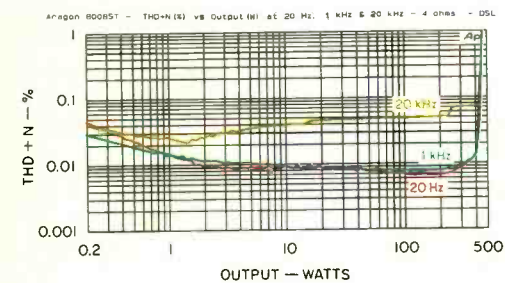


B

Fig. 4—THD + N vs. frequency with 8-ohm loads (A) and 4-ohm loads (B).



A



B

Fig. 5—THD + N vs. output with 8-ohm loads (A) and 4-ohm loads (B).

the left channel's results are shown in Fig. 1. Considering the 8008ST's relatively high voltage gain (27.7 dB), input impedance (23 kilohms), and power rating (23 dBW), its A-weighted residual noise (-101.6 dBW) was remarkably low. Theoretical dynamic range, calculated from the noise and power measurements, exceeds 124 dB.

Figure 2 shows the left channel's noise spectrum. With the exception of a tiny (and negligible) amount of power-supply ripple

at 120 and 240 Hz, the noise's character is "white," especially from 500 Hz up.

Channel separation (Fig. 3) is better than 71 dB, worst case, from 20 Hz to 10 kHz, and, out to about 1 kHz, crosstalk is below -80 dB between right and left channels and is about 10 dB better than that between left and right.

Figure 4A shows total harmonic distortion plus noise (THD + N) versus frequency, taken with both channels driving 8-ohm loads; Fig. 4B shows similar data taken with 4-ohm loads. The three pairs of curves on each graph are for output levels of 10 watts, 100 watts, and rated power (200 watts with 8-ohm loads, 400 watts with 4-ohm loads). From 20 Hz to 1 kHz, distortion is uniform; at higher frequencies it starts to inch up but remains less than 0.04% at 20 kHz (a bit better than Mondial's specification) with 8-ohm loads and is barely more than 0.07% at 20 kHz with 4-ohm loading. While this is not the very lowest THD + N I've measured, it certainly represents fine performance.

Figure 5 shows THD + N versus output level for the left channel, with both channels driven. The data was taken with 8-ohm loads (Fig. 5A) and 4-ohm loads (Fig. 5B). The shape of these curves is unusual. On most amps, THD + N falls with increasing output level. It usually bottoms out rather close to the clipping point, where the curves rise sharply. This characteristic suggests that the THD + N is more noise than distortion, up to the point where the curves flatten or start to rise. On the Aragon 8008ST, the curves flatten in the range from 3 to 5 watts and remain relatively constant to within a few dB of clipping.

Clearly the 8008ST more than meets its distortion spec (0.05% THD at 200 watts per channel) when driving 8-ohm loads and easily drives 400 watts per channel into 4-ohm loads. (Mondial doesn't give a distortion spec for 4-ohm loading.) On steady-state sine waves, clipping didn't oc-

cur until 265 watts per channel into 8 ohms and 480 watts per channel into 4 ohms, which is 1.2 and 0.8 dB, respectively, above the continuous output power ratings. With IHF tone bursts, the 8008ST clocked in somewhat higher: 300 watts per channel into 8-ohm loads and a formidable 540 watts per channel with 4-ohm loading.

Use and Listening Tests

The Aragon 8008ST has seemingly endless power reserves, and its low output impedance in the high treble contributes to a bright top end. The opening cymbal crash in Aaron Copland's "Fanfare for the Common Man," performed by Louis Lane and the Atlanta Symphony Orchestra (Telarc

Continued on page 55

MEASURED DATA

Output Power at Clipping (1% THD at 1 kHz): Into 8 ohms, 265 watts (24.2 dBW) per channel, both channels driven; into 4 ohms, 480 watts (26.8 dBW) per channel, both channels driven.

Dynamic Output Power: Into 8 ohms, 300 watts (24.8 dBW); into 4 ohms, 540 watts (27.3 dBW).

Dynamic Headroom: 1.8 dB re 8-ohm rated power and 1.3 dB re 4-ohm rated power.

THD + N, 20 Hz to 20 kHz, at Rated Output: Less than 0.0396% into 8 ohms and less than 0.0703% into 4 ohms.

THD + N, 20 Hz to 20 kHz, at 10 Watts Out: Less than 0.0212% into 8 ohms and less than 0.0360% into 4 ohms.

Damping Factor: 415 at 50 Hz for 8-ohm loading.

Output Impedance: At 1 kHz, 19.7 milliohms; at 5 kHz, 22.0 milliohms; at 10 kHz, 26.5 milliohms; at 20 kHz, 31.8 milliohms.

Frequency Response: 20 Hz to 20 kHz, ± 0.01 dB, with -3 dB points below 10 Hz and above 200 kHz.

Sensitivity: 117 mV for 0-dBW (1-watt) output and 1.65 V for rated output.

A-Weighted Noise: -101.6 dBW.

Input Impedance: 23 kilohms.

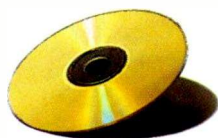
Channel Separation: Greater than 71 dB from 100 Hz to 10 kHz.

Channel Balance: ± 0.00 dB.



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D. B. KEELE, JR.

KEF REFERENCE SERIES MODEL FOUR SPEAKER

The Model Four is at the top of KEF's high-end Reference line, which comprises four models that range from \$6,400 down to \$1,600 per pair, all with magnetic shielding. It's also KEF's second most expensive speaker, exceeded in price only by the Model 107/2 at \$7,500 per pair; the latter is part of KEF's Raymond Cooke Series, named in honor of the company's late founder. (I reviewed the original Model 107 in the February 1988 issue.)

The current Reference Series was conceived and developed by engineer Enrico Cecconi, who has been at KEF for more than 17 years. Like the previous Reference Series, this line is based around KEF's Uni-Q two-way coincident driver technology, which puts a very small dome tweeter at the apex of a midrange cone. The precursor to the Model Four was the similarly configured Model 105/3 (*Audio*, June 1991). Like the 105/3, the Model Four is a large, floor-standing tower; it's also a four-way system using six KEF-built drivers, two of which

Rated Frequency Response: 35 Hz to 20 kHz, ± 3 dB.

Rated Sensitivity: 92 dB at 1 meter, 2.83 volts rms applied.

Rated Impedance: 4 ohms, nominal.

Recommended Amplifier Power: 50 to 400 watts per channel.

Dimensions: 47 $\frac{3}{4}$ in. H x 11 $\frac{3}{4}$ in. W x 15 $\frac{3}{8}$ in. D (121.4 cm x 30 cm x 39 cm).

Weight: 108 $\frac{1}{4}$ lbs. (49.1 kg) each.

Price: \$5,200 to \$6,400 per pair, depending on finish; available in black ash, Rosetta Burr, or Santos rosewood.

Company Address: 89 Doug Brown Way, Holliston, Mass. 01746; 508/429-3600.

For literature, circle No. 91



are concealed inside. Both models' higher frequencies are handled by a single Uni-Q driver with a 6 $\frac{1}{2}$ -inch cone and a 1-inch soft-dome tweeter.

Although the Model Four looks similar to the 105/3, it differs in two significant ways. First, the Model Four's Uni-Q driver is above the other drivers; the 105/3's Uni-Q driver was between the two other midrange drivers, in a D'Appolito configuration. The second difference is the woofer system. The 105/3 used two 8-inch woofers in separate, sealed enclosures that fed into a common "coupled cavity"; bass radiated

into the room from this cavity, through a large circular port. The Model Four's InterPort coupled-cavity bass-loading system is similar but has a vented rather than a sealed enclosure for each woofer and has larger, 10-inch, bass drivers.

A conventional bandpass vented enclosure normally has a single box resonance in the center of the woofer's passband. By contrast, the InterPort design has an additional box resonance at the low end of the

woofer's range. The two box-tuning frequencies reduce cone motion and distortion over a much wider range than a single-tuned bandpass design does.

The 105/3 had two woofers, one facing up in the top half of the cabinet and the other facing down in the bottom half. These woofers were connected solidly together by a force-canceling rod. In the Model Four, the rod is actually much thicker, an assembly comprising two internally braced tubes of extruded aluminum that are connected by a threaded turnbuckle rod. Since the drivers face 180° apart, they move in opposite

Photos: Michael Groen

directions—or would, if the rigid coupling between them did not effectively cancel those motions out, thereby reducing the amount of mechanical energy coupled to the cabinet. In a further move to reduce energy coupling, the Model Four's woofers are not bolted directly to the cabinet; instead, they are isolated from it by gaskets and pressed into place by the rod assembly. The 10-inch woofers are long-throw designs and have large magnets, pulp cones, and rubber surrounds.

The lower midrange frequencies, between 160 and 500 Hz, are handled in the Model Four by two parallel-connected 6½-inch drivers in a vertical array, just below

**KEF'S UNI-Q MODELS
HAVE THE MOST UNIFORM
VERTICAL AND
HORIZONTAL RESPONSE
I'VE SEEN.**

the coincident upper-midrange and high-frequency drivers. This array provides a controlled vertical coverage pattern and wide horizontal coverage. All three of the Model Four's midrange drivers have curvilinear polypropylene cones. The new mounting bezel blends gently into the driver's surround, providing a smooth acoustic transition from cone to baffle that is said to reduce diffraction and improve frequency response.

Frequencies above 500 Hz are handled by a fourth-generation version of the Uni-Q driver. The tweeter, which is located inside the 1½-inch voice coil of the upper-midrange cone driver, has a soft, silk-fabric dome and a rare-earth (neodymium/boron/iron) magnet. The tweeter's concentric location at the base of the upper midrange's cone essentially aligns the acoustic centers (where the sound waves seem to originate) of the midrange and the tweeter; this gives the Uni-Q driver a point-source configuration that yields virtually the same radiation pattern horizontally as well as vertically.

The Uni-Q's midrange cone acts as an acoustic waveguide to ensure that the directional patterns of the tweeter and midrange match very closely through their crossover

region. The result is very even coverage for seated and standing listeners, including listeners far to the sides. Like previous KEF Uni-Q models, the Model Four is designed to have wide but controlled coverage; this improves imaging by minimizing the wall, floor, and ceiling reflections that might otherwise interfere with the sound reaching the listener and by helping the spectral balance of the sound radiated to these surfaces match that of the direct sound.

The Model Four's crossover is on two p.c. boards, one for the Uni-Q driver and one for the drivers handling the lower frequencies. The two boards are separated, to reduce interactions between them. The crossover's construction is first-rate, and all parts used are of very high quality. The crossover contains 35 components (13 resistors, nine inductors, and 13 capacitors). These components form a second-order low-pass network for the woofers, a fourth-order bandpass for the lower midranges, a fourth-order bandpass for the upper midrange, and a third-order high-pass for the tweeter. Conjugate impedance-compensation networks for each driver, and other impedance-leveling circuits, smooth and minimize variations in the impedance curve. Crossover components are computer-matched to ensure that the speakers in any given pair match each other and match the speaker used as a production standard. (KEF can even provide an exact match for any speaker if the unit it was originally paired with should be lost or damaged.)

Two sets of gold-plated input terminals on the rear enable bi-amplification or bi-wiring. Gold-plated straps are supplied for conventional, single-wire hookups.

The Model Four's enclosure is very well braced. It has gently rounded corners on all side and upper edges to minimize diffraction. A molded baffle holds the midrange and Uni-Q drivers. The baffle

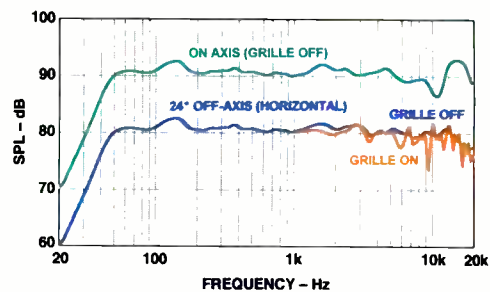


Fig. 1—On-axis frequency response.

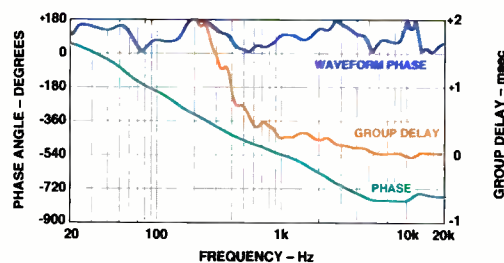


Fig. 2—On-axis phase response, group delay, and waveform phase.

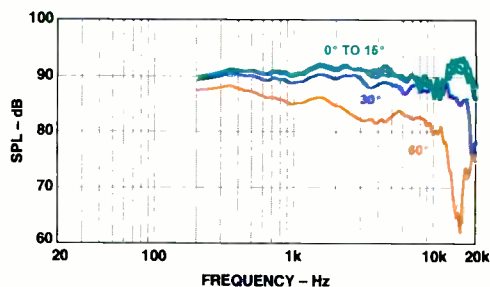


Fig. 3—Horizontal off-axis frequency responses.

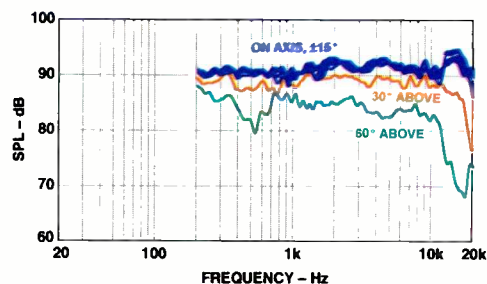
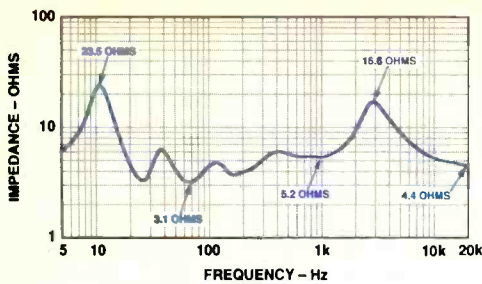
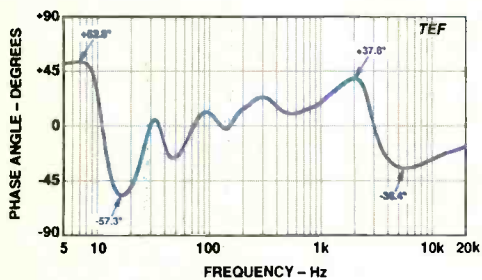


Fig. 4—Vertical off-axis frequency responses.



A



B

Fig. 5—Impedance magnitude (A) and phase (B).

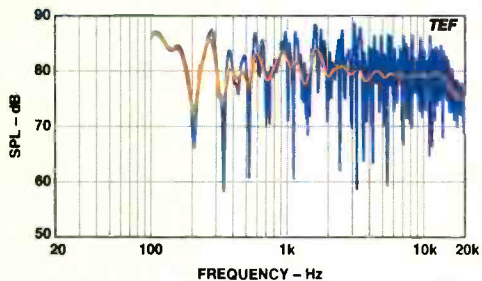


Fig. 6—Three-meter room response.



The terminals allow bi-wiring and are easy to reach and grip, but they won't accept double-banana plugs.

is covered with a space-frame grille that attaches to the front panel with pegs and matching receptacles. A plinth base, 1½ inches high, is provided; this base can be filled with sand or lead shot to add stability and mass-damping. Gold-plated, solid-brass adjustable feet with locking collars are also provided; the feet are reversible, with sharp spikes at one end and pads at the other.

Measurements

Figure 1 shows the Model Four's frequency response. Measurements were taken in a large anechoic chamber, and I smoothed the curves with a tenth-octave filter.

The on-axis response with the grille off is very flat except for a high-frequency dip at 10.5 kHz and a peak at 16 kHz. These response anomalies are typical of many coaxial transducers, including KEF's Uni-Q (which exhibits them only within a narrow range of angles near the axis). However, the difference between the peak and dip in the Model Four's on-axis response is significantly smaller than in previous KEF Uni-Q models I have tested. Because of these on- and near-axis anomalies, KEF recommends a listening position somewhat off axis.

This listening position is automatically achieved when the speakers are aimed straight into the room, with their axes parallel to the room's side walls. KEF recommends this setup rather than canting the speakers toward the listener. In my listening room, with the speakers about 8 feet apart and about 10 feet from my seat, this would correspond to an angle of 24° off axis. I therefore measured response at this angle. As you can see in Fig. 1, the 24° response is significantly smoother than the on-axis curve above 9 kHz and exhibits only a slight rolloff above 14 kHz. In fact, response with the grille removed is extremely flat and smooth, with just a slight bump at

about 150 Hz. It fits an exceptionally tight, 3-dB, window over the wide bandwidth from 47 Hz to 16 kHz. If we exclude the little 150-Hz hump, the window is even tighter: 2.3 dB! Within the much looser, 6-dB, window of KEF's ±3 dB specification, the response is 40 Hz to 20 kHz, only a few hertz shy of KEF's rating.

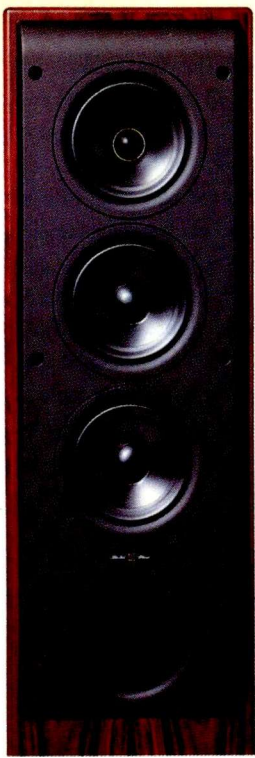
The effect of the grille is also shown in Fig. 1, in an unsmoothed curve. The grille causes many high-Q peaks and dips and perturbs the response by as much as 7 dB in narrow ranges; I suggest leaving it off for serious listening. Averaged from 250 Hz to 4 kHz, the Model Four's sensitivity measured a high 91 dB SPL at 1 meter for a 2.83-volt input, only 1 dB below KEF's specified 92 dB.

Figure 2 shows the Model Four's phase and group-delay responses, referenced to the tweeter's arrival time, as well as waveform phase. The phase curve is quite well behaved. The group-delay curve indicates that the upper midrange is delayed relative to the tweeter by approximately 0.25 millisecond. The Model Four's waveform phase indicates that waveshapes will not be preserved in any frequency range. (Waveshapes are preserved only where the curve

**EVEN AT 200 WATTS,
THE MODEL FOUR
SOUNDED VERY CLEAN
AND EFFORTLESS
AT 41.2 Hz.**

stays near 0° or 180°, and they are inverted when the curve is near 180°. But very few conventional loudspeakers do preserve these shapes.)

The Model Four's horizontal on- and off-axis frequency response curves, taken at selected angles, are shown in Fig. 3. The axial grouping (0° to 15°, in 5° steps) forms a quite compact bundle over the entire measured range, which indicates extremely uniform response near the axis. The 30° curve has the same general shape as the axial grouping but is somewhat lower in level, indicating directivity, and drops off above 15 kHz. The 60° curve slopes downward, with slight undulations, and cuts off sharply above 12.5 kHz.



In KEF's Uni-Q driver (top), a 1-inch dome tweeter nestles within a midrange's voice coil.

Figure 4 shows the KEF's response above and below the speaker's axis. The axial grouping includes all the curves within $\pm 15^\circ$ of the axis (seven curves in all). Note how very similar these are to the near-axial horizontal curves in Fig. 3. The Model Four's response within 30° of the axis is extremely uniform in both the horizontal and vertical planes; KEF's Uni-Q speaker systems are easily the best I've measured in this respect.

The Model Four's impedance-magnitude curve (Fig. 5A) has an infrasonic peak at 11 Hz. From 20 Hz to 20 kHz, the maximum is 16.6 ohms at 3 kHz and the minimum is 3.1 ohms at 700 Hz, a ratio of 5.4 to 1. KEF has not leveled out the Model Four's impedance as aggressively as it did that of the 105/3, which had a 2.4 max/min ratio. The rationale was that money saved by not leveling the impedance quite as much could be invested more usefully; since speakers of the Model Four's caliber would normally be used only with cables of reasonably high quality, KEF decided it made no sense to design in compatibility with high-impedance cables. If the amps used with the speakers have low output impedance, as most solid-state amps do, this argument holds; with amps having higher impedance, such as tube models, the argument is less persuasive.

In the audio range, the Model Four's impedance phase (Fig. 5B) reaches a maximum of about 38° (inductive) at 2 kHz and

a minimum of about -36° (capacitive) at 5.5 kHz. Despite the fact that these extremes are somewhat high, the Model Four should pose no serious problem for any well-designed amplifier.

A high-level sine-wave sweep revealed that the Model Four's enclosure is very rigid and inert, with no appreciable wall vibrations or resonances. This speaker's clean and powerful low-frequency output on sine waves extended down below 30 Hz, a big improvement over the performance of the Model 105/3.

Figure 6 shows the Model Four's 3-meter room response, with both raw and sixth-octave-smoothed data. The speaker was in the right-hand stereo position, with its axis parallel to the side walls of my listening room (as KEF recommends), and the test microphone was at ear height (36 inches) at the main listening position on my sofa. The averaged curve is very well behaved and fits a quite tight, 6-dB, window between 360 Hz and 16 kHz. Some room effect is evident below 360 Hz, and there's a slight rolloff above 16 kHz. All in all, this is one of the best room-response curves I have obtained.

Figure 7 shows the speaker's E_1 (41.2-Hz) harmonic distortion. At full power (200 watts), the second harmonic reaches 3.6%, which is quite low; the third harmonic is an even lower 1.7%, the fourth is 2.4%, and the fifth is 1.2%. At 1 meter in free space, the KEF generated a quite loud 109 dB SPL from a 200-watt input. Even at this power level, the Model Four sounded very clean and quite effortless at 41.2 Hz.

Harmonic distortion is not shown for A_2 (110 Hz) and A_4 (440 Hz) because distortion at these frequencies was so low I could barely measure it. At both frequencies, the Model Four sounded quite clean at full power. Intermodulation distortion was also too low to present here; it reached only 2.3% at 200 watts when the Model Four was fed 440-Hz (A_4) and 41.2-Hz (E_1) tones of equal amplitude.

Figure 8 shows the speaker's short-term peak-power input and output capabilities. (Peak input power was calculated by assuming that the measured peak voltage was

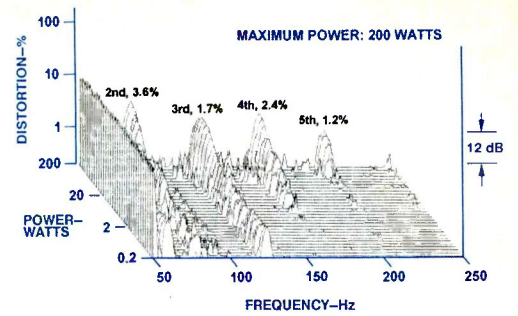


Fig. 7—Harmonic distortion for E_1 (41.2 Hz).

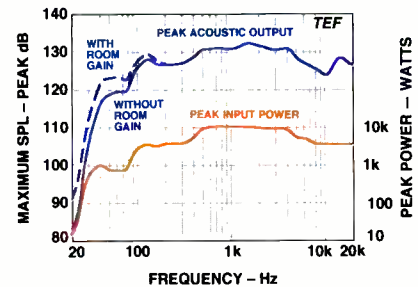
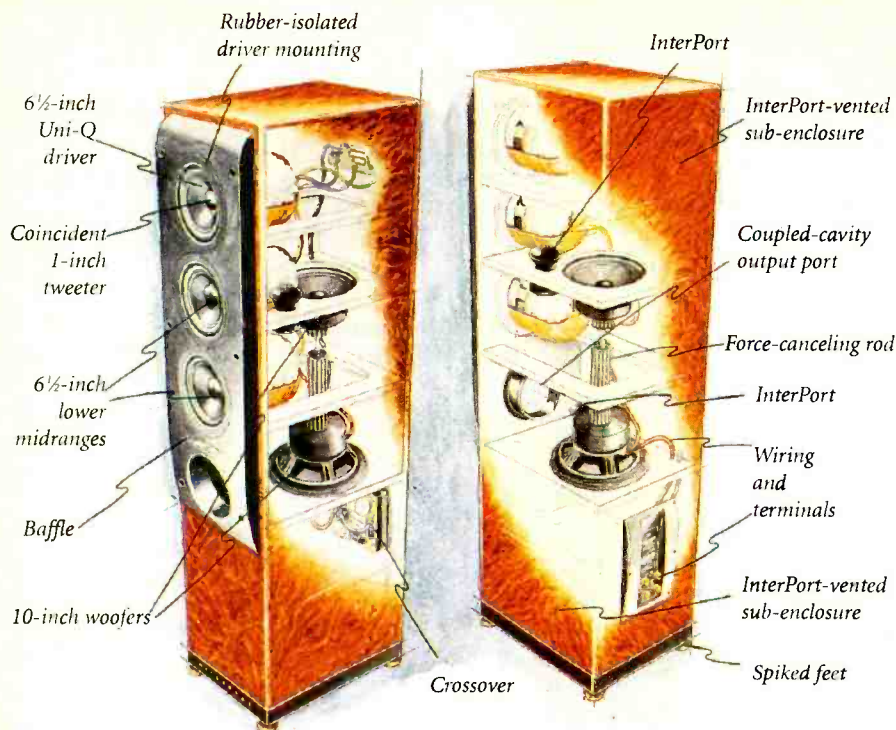


Fig. 8—Peak input power and sound output.

applied across the rated 4-ohm impedance.) The peak input power starts low (20 watts at 20 Hz), rises rapidly to a local maximum (1,000 watts at 40 Hz), falls a bit, rises to a plateau between 120 and 300 Hz of about 3 kilowatts, and then rises very high (to 10 kilowatts) between 500 Hz and 4 kHz. At higher frequencies, power handling falls somewhat, to about 4 kilowatts, and remains there up to 20 kHz. The Model Four's low impedance made it a difficult load for my test amplifier. Below 300 Hz, I had to run the amplifier in its parallel-mono mode, doubling its current-drive capability. Even so, the plateau between 100 and 300 Hz in the input-power curve is due primarily to my amplifier running out of gas before the speaker did!

As you can see in Fig. 8, the KEF's maximum peak output with room gain starts at a loud 91 dB SPL at 20 Hz and then rises very rapidly, reaching a plateau of about 122 dB between 40 and 80 Hz; it then rises into the very loud range of 125 to 130 dB between 100 Hz and 8 kHz. At higher frequencies, the level drops somewhat, to about 125 dB SPL. The peak output reaches 110 dB SPL at a low 29 Hz; 120 dB SPL is reached at an impressively low 39 Hz. This



powerful low-frequency output places the Model Four in the top 10% of all speakers I have tested.

Use and Listening Tests

The Model Fours are packed one per carton. Even with the grilles packed separately, the speaker carton is so big and heavy that it takes two people (or one person and a handcart) to handle it. Thanks to KEF's well-designed packaging, however, it only takes one person to unpack the speakers; once the 108-pound Model Fours are out of their boxes, they can be "walked" into position by one person, too. The speakers are shipped with spiked feet attached to their bottoms. I removed the spike assemblies to facilitate moving the speakers on my carpeted floor, then reinstalled them for my listening tests. I chose not to add lead shot to the bases; the speakers were massive enough to be very stable without this added weight.

The Model Fours I received were supplied in the most expensive finish, Santos rosewood, and were quite gorgeous. The cabinet, with its smooth beveled edges, looks equally good with or without the grille. The large circular port on the front gives interested techies a convenient window to examine the speaker's internal workings; it let me see that the craftsman-

ship was just as fine on the inside of the enclosure as on the outside. The port also figured in the only problem I had that related to workmanship: During the high-level sine-wave sweep test for cabinet resonance, a piece of sound-absorptive foam broke loose and nearly blew out through this port.

The installation manual is a well-organized 20-page booklet, half in French, half in English, that serves KEF's whole Reference Series. In addition to providing general descriptions of each model and listing

**WIDE BANDWIDTH,
NEUTRALITY, BASS,
DYNAMICS, COVERAGE,
IMAGING—THESE KEFs
HAVE IT ALL.**

their specs, it covers magnetic shielding, unpacking, speaker placement, room acoustics, adjustment of feet and spikes, speaker cables and connections, bi-wiring and bi-amplification, speaker phasing, amplifier requirements, and power handling. (I found it curious, however, that more than twice as much space is devoted to adjustment of the feet and spikes than to room acoustics and speaker placement.) The

manual recommends that the speakers typically be placed 6 to 10 feet apart, well away from room corners and side walls, and (as mentioned earlier) with little or no toe-in.

The Model Fours are very easy to hook up because the terminals are very accessible and their knurled knobs are easy to grip. Unfortunately, the terminals are spaced 1½ inches apart, so you can't use standard double-banana plugs, which have ¾-inch spacing. The terminals will accept very large cable, up to 0.23 inch in diameter (AWG No. 4), even with the straps for single-wire connections in place.

I set the Model Fours about 8 feet apart, far from my room's walls, and listened at a point 3 meters away from each speaker. Components in my system included Onkyo and Rotel CD players and a Krell KRC pre-amp and KSA250 amp. For comparison, I used B&W 801 Matrix Series 3 speakers.

Soon after I started listening to the Model Fours, I knew they were very fine loudspeakers. They could handle virtually any program material I threw at them and performed nearly flawlessly. Neutrality, very wide bandwidth, extended and powerful bass response, excellent coverage, wide dynamic range, cleanliness, low coloration, accurate imaging—these speakers had it all.

While listening to a broad sampling of program material, I found my preferences shifting randomly between the KEFs and the B&Ws, depending on the recording. The KEFs had a slight edge in imaging, soundstaging, coverage, and dynamic range, whereas the B&Ws had a slight advantage in neutrality and in response below 30 Hz. With wide-range material, it was very hard to tell the systems apart when I switched between them, no matter where I was in the room or whether I was seated or standing. Matching the sound of the B&W 801s this closely requires a speaker that closely matches its three-dimensional polar and power response, smooth and flat wide-range response, and low distortion coupled with low coloration. However, I got this close a match only when I reduced the signal level to the KEFs, which are 4 or 5 dB more sensitive than the B&Ws.

When listening to pink noise through the Model Fours, I heard no tonal changes whatsoever when I stood up, which is quite rare. The only speakers I've heard that come close to this are the two other KEFs with

Uni-Q drivers that I've tested. (The B&Ws exhibit some very slight midrange tonal changes when I stand up during this test.) The Model Fours' octave-to-octave spectral balance was excellent, and they imposed no tonality on the pink noise. Considering that they're two different systems, the KEFs and B&Ws sounded as similar overall as they could.

On pink noise, the Model Fours did not generate much usable output in the 20- and 25-Hz third-octave bands. Their output was very usable at 30 Hz and became very strong, clean, and robust at 40 Hz and higher—actually stronger and cleaner than the B&Ws' output at 40 and 50 Hz. Port wind noise was very low to nonexistent (the B&Ws generate loud wind noise at 20 and 25 Hz when driven hard).

The KEFs' imaging and soundstaging capabilities were demonstrated extremely well by "On The Run" and "Time," on Pink Floyd's *Dark Side of the Moon* (Capitol 46001, a favorite of mine). I felt that I could reach right out and touch the performers, and the sound was very realistic. Judging by this CD, even acid-rock freaks should be satisfied with the Model Fours.

The KEFs handled male and female vocals very well, with absolutely no harshness. The Model Fours were equally at ease revealing the low-level detail in the room sound of a finely recorded string quartet and at separating the instrument sounds in a massive, complex Mahler symphony.

I had a lot of fun listening to the KEFs, and I found myself digging out old CDs that profit from being played on a dynamic and wide-range playback system. These included such favorites as *Bachbusters*, *Ein Straussfest*, and *William Tell and Other Favorite Overtures* (Telarc CD-80123, CD-80098, and CD-80116, respectively) as well as the highly dynamic sound effects on *The Digital Domain* (Elektra 9 60303). The imaging of the synthesized plucked string sounds on track 14 of the Elektra was a knockout! On all these CDs, the KEFs' performance ranged from floor-shaking, to incredible, to wow!

Are you getting the idea that I really like the KEF Model Fours? You're right! They have many virtues worth raving about and very few faults. Check them out for yourself, but be prepared to enjoy yourself a lot while you do the checking. A

ARAGON, continued from page 48 CD-80078), testifies to both points. However, in less aggressive, more musical passages—for example, in the relatively soft woodwind and string passages of *Appalachian Spring* (on the same CD)—the sound struck me as slightly muddled.

I switched to Rachmaninoff's Symphony No. 2, performed by the Royal Concertgebouw Orchestra and Vladimir Ashkenazy, to hear a larger orchestra and a selection with massed strings (London 400081). Also a little bright, and somewhat lacking in definition. How about single violin with piano? Brahms' Violin Sonatas, Nos. 1, 2, and

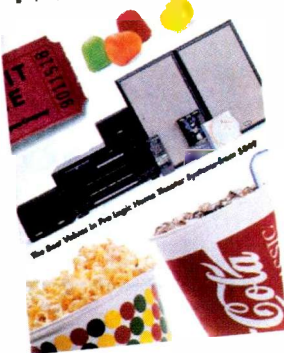
I WAS MOST IMPRESSED
BY THE ARAGON'S WIDE
FREQUENCY RESPONSE
AND UNIFORM
OUTPUT IMPEDANCE.

3, with Itzhak Perlman and Ashkenazy (EMI CDC 47403), sounded hard on both instruments, especially on Perlman's fiddle. Then I tried a recent recording of Evgeny Kissin playing the Brahms Fantasias for Piano, Op. 116 (DGG 435028). Not my taste in piano sound, but since I wasn't fully familiar with this disc, I switched to a DAT of the same piece that I had recorded myself. Different sound but still not what I had heard live. Nor was it what I heard when I played this tape through another amp.

Equipment used included Allison One speakers connected with paralleled pairs of 14-gauge cable. Sources were a Sony CDP-XA7ES CD player and DTC-59ES DAT deck feeding a Bryston BP-20 preamp. Interconnects were high-quality coaxial cable.

Are the results symptomatic, or did my early difficulties with the 8008ST in the lab affect my judgment in the audition? They may have, even though I started my listening expecting no problem. Honestly, I can't be sure—after all, listening is subjective! Certainly the amplifier measured very well, and its design is similar in many respects, including exceptionally wide bandwidth, to that of the Acurus amplifier I reviewed a while back and liked quite a lot. So your best bet probably is to listen to the 8008ST yourself and make up your own mind. A

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EDWARD M. LONG

SENNHEISER HD 580 PRECISION EARPHONES



When I first listened to the Sennheiser HD 580 Precision dynamic earphones, I knew they were something special. Even the quirkily translated manual is above average, covering such matters as the pressure that holds the earphones against your head, diffuse-field response, and measurement standards. After measuring them, I was even more convinced that the HD 580 earphones were, indeed, special.

The HD 580's ear cushions are circumaural, completely encircling the pinna (outer ear). Their elliptical shape matches most ears, so they won't clamp down on your earlobes, as round cushions do. The foam-filled, velvet-covered ear cushions, which are replaceable, are very comfortable for long-term listening. The inside face of each earcup is covered with a foam pad to prevent transducer contamination.

The HD 580's earcups are open on the rear, allowing outside sounds to be heard

quite easily. Sennheiser introduced this "open-air" design many years ago in the HD 414 earphones (which, by the way, have been brought back as a Jubilee model in honor of Sennheiser's 50th anniversary). The earcups are plastic, and the rear of each cup has a plastic grille (which looks like metal mesh) that protects the transducers from possible damage. The open back contributes greatly to the quality of the sound. Most closed earphones sound "canned" because of interference reflected from the resonant chamber behind the diaphragm. As the owner's manual notes, you can get this effect from the HD 580s by putting your hands over the grilles. (Of course, if you're recording live music and are in the same room as the performers, sounds entering the open earcups will mix at your ear with those being fed to your earphones from the microphone; this will make it difficult to tell which sounds are actually being recorded.)

The headband is two pieces of spring steel, each an inch wide, that slide within a plastic cover to adjust to the width of your head; detents keep the steel pieces from sliding accidentally. The headband is cushioned by four pads of cloth-covered foam. The earcups tilt up and down about 30° in the plastic bails that hold them to the headband; the bails also swivel about 30° from side to side. All this allows plenty of room for adjustment to make the HD 580s fit comfortably.

The earphone cord is about 9½ feet long, including the 10-inch wires that lead to each earcup. These wires plug into the earcups, allowing the cord to be removed and replaced if necessary. At the other end of the cord is a ¼-inch stereo mini-plug

Transducer Design: Dynamic.

Coupling to the Ear: Circumaural (open air).

Rated Frequency Response: 16 Hz to 30 kHz, +0, -3 dB; -10 dB at 12 Hz and 38 kHz.

Rated Impedance: 300 ohms.

Weight (Without Cable): 9.2 oz. (260 grams).

Price: \$349.

Company Address: P.O. Box 987, Old Lyme, Conn. 06371; 860/434-9190.

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Photo: David Hamsley

that fits portable equipment; a ¼-inch stereo phone-plug adaptor is supplied to fit the jacks on most home audio components. I was somewhat surprised to see that the plugs were not gold-plated; on the other hand, the wires in the cord are of oxygen-free copper and the insulation is reinforced with Kevlar fibers.

Sennheiser claims bandwidth between -3 dB points of 16 Hz to 30 kHz; I tested the HD 580s only to 20 kHz, but they showed no sign of diminished output. I concluded from this and from my pulse tests that the Sennheisers probably do go out to 30 kHz, which is remarkable. The HD 580s did an

**ON FIRST HEARING,
I KNEW THE HD 580s
WERE SPECIAL,
AND MY MEASUREMENTS
CONFIRMED IT.**

amazing job of reproducing square waves; remarkably good reproduction of a 7.5-kHz square wave indicated that the earphones reproduced the harmonics that constitute the wave with sufficient level and in proper polarity. Both the frequency and phase responses were very smooth, except for a small deviation around 4 kHz and some minor peaks and dips above 10 kHz. The left and right earphones were very closely matched below 10 kHz; even above this frequency, the interchannel mismatch was very small, less than 3 dB. The HD 580 earphones are the smoothest and most closely matched of any I have measured. Driving them from a 100-ohm source lowered their output by about 3 dB but didn't change their response, so they should perform consistently with different amplifiers.

The 20-kHz cosine pulse in Fig. 1 shows that the HD 580s do not invert polarity and that they have excellent frequency response. The positive-going output is almost identical to the input pulse and confirms the extended high-frequency response; the quick recovery demonstrates that the HD 580s go down to a very low frequency.

The sensitivity of the HD 580s was 97.3 dB for a 1-milliwatt input, which is 0.3 dB better than Sennheiser's specification. Neodymium magnets help the HD 580s achieve this high sensitivity while keeping their weight down.

Both the left and right earphones had the same impedance, 303 ohms, showing the precision with which their aluminum voice

coils are wound. The fine wire used can easily be stretched during the winding procedure. This makes winding closely matched coils difficult and adds to the cost, but Sennheiser feels it is worth the effort. These coils and the care taken in selecting the lightweight diaphragms are the main reasons why the HD 580s have such closely matched left and right channels. As a result, the placement of instruments in the sound

field should be very good. Indeed, some members of my listening panel commented on how easy it was to hear clear and stable images.

My listening comparisons between the Sennheiser HD 580s

and the Stax Omega reference electrostatic earphones revealed that the Sennheisers have a diffuse-field response similar to that of the Stax. Comments from panel members confirmed the similarity. While listening to David Benoit's "Things Change," on *The Sheffield Jazz Experience* (Sheffield Lab 10046-2-G), panel members commented: "Piano slightly less bright" and "piano a little further back" for the HD 580s as com-

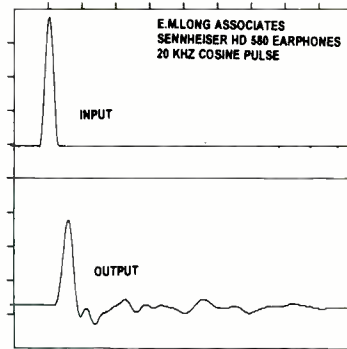


Fig. 1—Cosine-pulse test.

pared to the Stax 'phones. Remarks on percussion reproduction on the same track were: "Very slight lack of snap," "close to Stax," and "a tossup." The trumpet that comes in elicited varying remarks, among them: "Trumpet very close to Stax" and "trumpet a tiny bit further back." A general consensus was that the HD 580s had a little less openness and sense of space. I believe that the smaller inside diameter and closer fit of the HD 580 ear cushions may have contributed to these perceptions.

The panel and I also listened to a binaural CD of Richard Strauss's "Also Sprach Zarathustra," with Jorge Mester conducting

EARPHONE EVALUATION

PARAMETER	RATING	COMMENTS
Overall Sound	Excellent	"Very close to reference 'phones"
Bass	Very good	"Slightly boomier," "Bass not as tight as Stax," and "Bass more resonant"
Midrange	Excellent	"Trumpet very close to Stax" and "Trumpet a tiny bit further back"
Treble	Excellent	"Cymbals sound the same" and "Cymbals close on both"
Overall Isolation	Low	"Very little isolation from outside sounds"
Bass	Low	"Outside rumble noises are easy to hear"
Midrange	Low	"Conversation is easy while wearing the HD 580s"
Treble	Fair	"High-frequency sounds are muffled"
Comfort	Very good	"Very comfortable" and "They feel better than most 'phones"
Value	Excellent	"Good price for this high level of performance"

GENERAL COMMENTS: Clear, precise sound. Instrumental timbre and placement in the sound field are excellent. Comfortable for long-term listening. Good value.

the Pasadena Symphony (Newport Classical Auracle NCAU-10001). I noticed that the HD 580s were listed as the monitoring headphones used in making this limited-edition disc. The panel members were very positive about both the recording and the HD 580 earphones. At the beginning of the piece, the Sennheisers reproduced the organ's low C (about 32 Hz) at the same level and timbre as the Stax earphones did. Comments were: "Excellent bass," "very strong organ pedal," and "organ bass tone as good as reference." During a crescendo in track 9,

the panel members clearly heard some differences in the way the two sets of earphones reproduced the tympani and double basses, commenting: "580s are slightly boomier," "bass not as tight as Stax," and "bass more resonant." These reactions may have been due to the smaller chamber size of the HD 580's earcups; without a direct comparison with the Stax, it would be difficult to notice these bass effects, since the HD 580s exhibit them to a far lesser degree than most other earphones do. The aforementioned crescendo is one of the loudest

ever composed, and the fact that the instruments remained clear and distinct is a tribute to the quality of the HD 580s and of the 20-bit digital recording. (This is the only binaural recording of this piece and probably the best symphonic binaural recording available, but I still consider the Chicago Symphony Orchestra's early RCA recording with Fritz Reiner to be the best rendition.)

"Winter Wonderland," from Bob Lark and the DePaul University Jazz Ensemble's *Big Band Basie* (Reference Recordings RR-63CD), showed how the excellent matching between the HD 580's left and right channels yielded very precise instrument positioning (except for the flute, which jumped

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MOST CLOSELY MATCHED
EARPHONES I'VE TESTED.**

around—probably because of the miking). The listening panel indicated that the HD 580s sounded much like the Stax except in the bass "boom" range, around 100 to 150 Hz. One listener said that the "room sounds boomier with the HD 580s." For high-frequency sounds, comments were: "Cymbals sound the same" and "cymbals close on both." It was amazing that the panel members found the Sennheiser's instrument sounds to be so similar to the Stax's—especially in the high-frequency range, where electrostatic 'phones are usually superior to dynamic designs. (By the way, this excellent recording was engineered by Prof. Keith O. Johnson, using the Pacific Microsonics HDCD process, for which he was partially responsible.)

The HD 580 dynamic earphones cost \$349. They are not Sennheiser's most expensive model: That title belongs to the HE/HEV90, a \$12,900 electrostatic earphone system that includes a tube amplifier and a D/A converter. I haven't auditioned the electrostatic system, but at that price it would have to have fantastic sound to beat the HD 580s. If you are looking for a comfortable, wide-range pair of high-quality earphones, you should check out the Sennheiser HD 580s. You won't be disappointed. A

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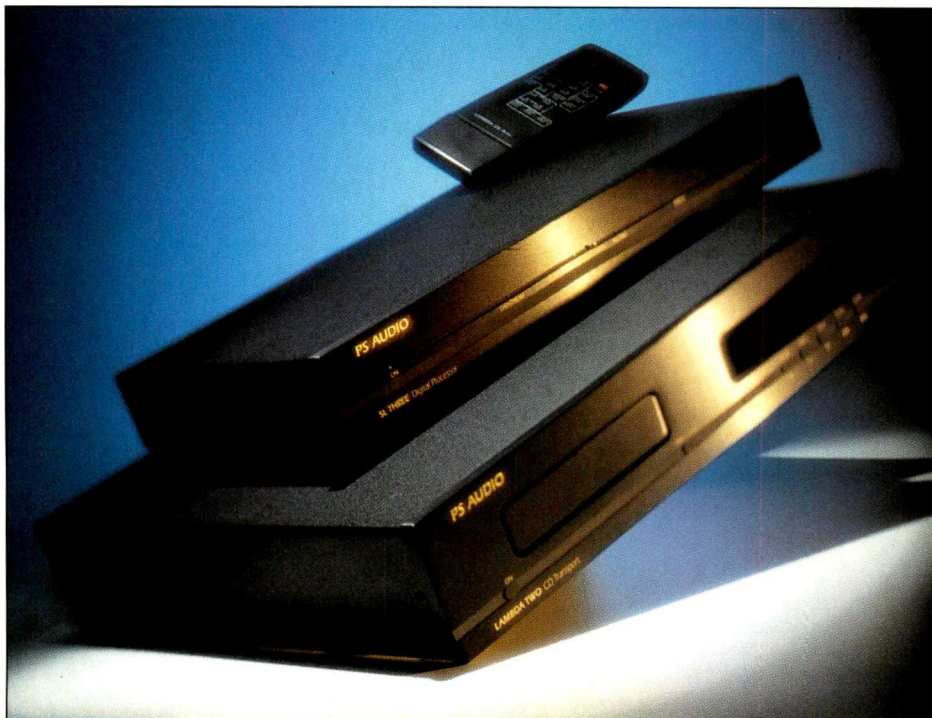
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PS AUDIO LAMBDA TWO CD TRANSPORT AND SL THREE D/A CONVERTER



If you consider their cost, PS Audio's Lambda Two CD transport and SL Three D/A converter come surprisingly close to the state of the art; the CD transport is priced at \$1,995 and the D/A converter at \$1,295. In terms of sheer resolving power, their sound is very similar to that of several other recent top-quality models; in fact, that sound increasingly seems to be limited by CD technology itself.

The Lambda Two CD transport is a major upgrade of the original

Lambda, which enjoyed a considerable reputation for its low jitter. It is based on the Philips CDM9 Pro silver-alloy mechanism and uses four

**THESE PS AUDIO
COMPONENTS COME
SURPRISINGLY
CLOSE TO
THE STATE OF THE ART.**

isolation transformers, a redesigned power supply, digital servo correction, a Hall-effect brushless DC motor, and proprietary mechanical damping. PS Audio claims that the Lambda Two has very low inherent

jitter, not much more than 20 picoseconds. It is normally supplied with coaxial and AES/EBU outputs (a version with an AT&T output is \$2,295). Earlier Lambda transports can be upgraded to the Lambda Two.

The SL Three D/A converter offers 20-bit conversion with eight-times oversampling and includes HDCD filtering and decoding. It uses Ultra-Analog's AES-21 digital receiver chip with proprietary reclocking and can accept 20-bit input. The DACs are a matched pair of "J sort" Burr-Brown PCM-63 chips, with what PS Audio states is a true 20-bit architecture.

The SL Three's high-current, low-noise toroidal transformer is followed by six separate regulating circuits, for maximum isolation. Its discrete Class-A analog output stage is buffered to drive any possible load. The circuitry, on short-path boards, uses high-quality electrolytic capacitors and Wima film capacitors. A 16-gauge chassis shields the SL Three against RF. It has AES/EBU, Toslink, and coaxial digital inputs and balanced and unbalanced outputs.

Both units have black cabinets and small, recessed black buttons. The front-panel controls seem designed for farsighted people who have superb night vision and extraordinarily tiny fingertips; fortunately, the transport's remote control is far easier to read and use.

The good news about the sound quality of these PS Audio components is that it is comparable, in important ways, to that of far more expensive units. You can get extraordinary resolution and musical definition from this relatively affordable (for the high end) pair.

The bad news? My exposure to 18- and 20-bit digital tape recordings leads me to believe that the converging sound quality of top CD components is due to three basic limitations of CD technology:

First, my comparisons with digital tape reveal that CD lacks sufficient harmonic detail; this is particularly apparent with recordings of solo acoustic instruments (violin, cello,

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harpichord, grand piano, clarinet, snare drum, cymbal, et al.). I am not saying that CD cannot provide a very musical listening experience, because the SL Three and Lambda Two do just that. However, I hear consistently better reproduction of harmonic textures from digital master tapes—and even from recordable-CD copies of those tapes—than I do from CD. [Recordable CDs do conform to CD standards, however, including 16-bit word length.—M.R.]

Second, even through the best playback gear, CD never provides quite the same de-

gree of naturalness and musicality as the best digital master tapes. It is clear that higher data rates can deliver better sound.

Third, no matter how well digital playback components handle musical dynamics (and they vary considerably), none of them lets me hear quite the dynamic excitement and transient life from CDs that I hear in 20- or 18-bit tapes of the same performances. It is unfair to describe CDs *per se* as compressed; I have many exciting CDs in my collection, and the Lambda Two and SL Three do a good job of reproducing them.

But in my opinion, CD is not up to the state of the art in recording technology.

I do not find that the HDCD processing in the SL Three (or in any other D/A converter I have tried) makes a convincing or consistent improvement in any of these areas. I have the greatest respect for the work done by Reference Recordings, and I agree that the Pacific Microsonics PMD-100 HDCD chip used in the SL Three is an excellent filter. Yet my overall opinion of HDCD is that it provides no better sound than other top CD recordings do. If the emperor's new clothes are more transparent, I can't discern it.

I do not mean to imply that all high-quality digital components sound alike or that the Lambda Two and SL Three are equal in every respect to CD playback equipment costing several times more. For example, although I was impressed with the upper octaves of the Lambda Two and SL Three, the top-of-the-line Theta Digital Data III transport and DS Pro Generation V-a D/A converter sounded somewhat cleaner in this region, as did the Mark Levinson No. 30.5 D/A converter when paired with the Lambda Two. The Theta combination had more open dynamics, and the Levinson/PS Audio combo seemed to be able to get the last bit of sound quality out of older and lower-quality CDs.

Further, the differences I heard between the PS Audio and the higher-priced components must be viewed more from the standpoint of personal taste than of musical realism. To my ears, the PS Audio D/A converter was a bit warmer than the Levinson but a bit less warm and dynamic than the Theta. The soundstage of the PS Audio CD transport and D/A converter was a bit less three-dimensional and detailed than that of the Mark Levinson No. 31 transport and No. 30.5 converter and had a bit less depth than the Theta combo. As with all high-end equipment, you will have to audition the Lambda Two and SL Three in your own system to determine how their sonic nuances complement it.

To sum up, the PS Audio Lambda Two CD transport and SL Three D/A converter will give you some of the best sound CD can deliver, at an exceptional price. You won't get miracles for your dollar, but you will get something surprisingly close to the state of the art. A

"...one of high end's most accomplished companies."

—Tom Müller, *The Audio Adventure*



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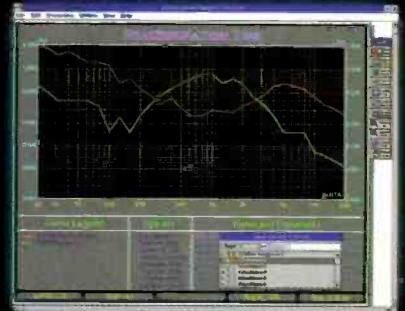
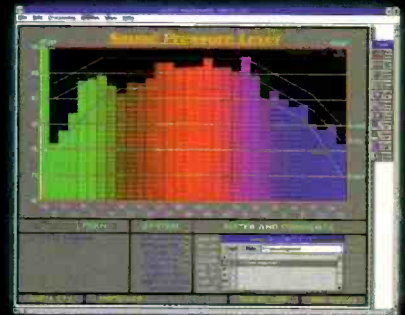
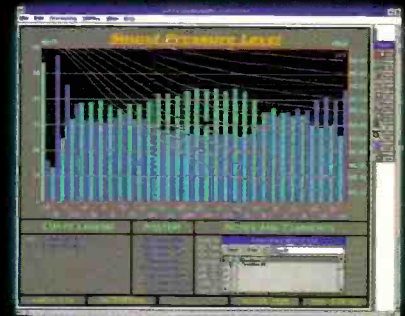
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When you've got questions about Audio and Video,

see a specialist

Q

Why do some of my TV channels look better than others?

A

As we better our home entertainment equipment, the equipment becomes more capable and we become more critical. Today, there is television capable of showing you improved picture detail. You are now able to see differences in the quality of one TV station's transmission versus another. These differences are real, much like hearing sounds on your favorite CD player you never noticed before—just because you are listening through better speakers. Some of these differences are not always problems with the television stations. They can be symptoms of cable, satellite or antenna problems. TV channels are broadcast over the air and sent through the cable in bands (groups of channels). Should you notice several channels in a sequence that are not as good as some grouped before or after, you should have your specialist check it out. Getting a cable or another problem like this taken care of will greatly enhance your enjoyment.

—Steve Brakke
Cooper for Stereo
Clearwater, Florida

COOPER
FOR STEREO



Q

With all the CD players and digital to analog converters on the market, how do you know which units have the best performance?

A

Do not pick a CD product based on the bit capability (1 bit, 18 bit, 20 bit), or by the amount of oversampling. Generally, the most important aspects of CD performance are those that are not highlighted on a spec sheet. Take, for example, the digital filter which precedes the DAC. The digital filter may be the most important element in the chain because it acts as the master traffic cop. This filter organizes and stores the instructions, giving the DAC the finest tutorial possible. Some manufacturers offer software based digital filters which allow the algorithm (instructions) to be altered to suit the circuit and give the DAC a more eloquent set of instructions. What does all this tech talk mean to you? If you are not able to uncover the identity of the digital filter, the best thing to do is pull out your most sophisticated test equipment; your ears! Digital products do not sound the same. Trust your ears—they won't steer you wrong.

—Dick Diamond
Audio Design
Salt Lake City, Utah

Audio Design
STEREO & HOME CINEMA



Each month, Audio Magazine's feature "See a Specialist" showcases the finest audio/video dealers from across the country. The dealers, chosen as a result of recommendations from equipment manufacturers, Audio Magazine staff and industry organizations, exemplify the best audio/video dealers from New York to California. The chosen dealers offer solutions to problems that can best be handled by a specialty audio/video retailer.

If you would like to submit questions to dealers in your area please write to :
See a Specialist, c/o Audio Magazine, 1633 Broadway, NY, NY 10019

Q What is DVD technology about?
Should I wait to purchase new equipment?

A The DVD (Digital Video Disc) looks like a compact disc. It will hold roughly more than seven times the amount of information that a current compact disc can. As yet, there are no standards set for the DVD as an audio medium. It is assumed that since there is so much capacity for data on one of these discs, there must be a way of exploiting that as a capacity for better audio reproduction. Beyond that there is nothing definite. Best bet? Why wait until they get the bugs out of a proposed new format. Enjoy the sound quality available now, wait five years or so, then check with your dealer to see how the future is shaping up.

—Bill Benson
Nuts About Hi-Fi
Silverdale, Washington



NUTS ABOUT HI-FI

Q Should I buy a shelf system or separate components?

A Shelf systems have been much improved in the past few years. However, a system of separate components will offer more flexibility and expandability as your lifestyle and stereo requirements change over time. A shelf system is "prepackaged" with options and speakers chosen by the manufacturer. Speakers are an integral part of an audio system, and the one-size-fits-all approach will not guarantee the best choice for your money, your room, or your musical preference. Also, a single power supply is typically used for a shelf system, powering all the components—CD, tape and receiver. Separates operate on their own dedicated power supplies, providing "cleaner" power, resulting in less noise and better sound. Finally, upgrading a separates system is most practical, since it can be done one component at a time, as space and cost factors allow.

—Randy Blanchard
Pecar's Home Theater Center
Detroit, Michigan



PECAR'S
HOME THEATER CENTER

SPATIALIZER HTMS-2510 STEREO-IMAGE PROCESSOR



Statistics show that five million homes have home theater surround systems. Despite this, and the fact that some people already have six-channel discrete reproduction, most home audio is still heard through systems using just one pair of speakers. Many people are intimidated by the expense of a five- or six-speaker array, the complexities of setup, and the space required.

That's why there's now so much research into creating a surround sound field with just two speakers. (At an Audio Engineering Convention a year or two ago, representatives of nine different companies presented approaches to this prob-

lem.) Most of this effort grows out of research on how our ears and brains process and localize sounds. After all, if a two-channel binaural system can convey a full 360° spherical sound field via headphones, why can't a similar surround field be achieved by "correcting" the spatial distortions of loudspeaker reproduction?

This is precisely what Spatializer technology aims to do. It was invented by recording engineer Stephen Desper, who for 17 years was

the acoustician for The Beach Boys. The PRO Spatializer has been used for some years in the production of professional recordings, in computer games, and in TV broadcasts. Such licensees as Panasonic, Sharp, Pro-

ton, and Hitachi have included Spatializer chips in their TVs and boomboxes, but the Spatializer Audio Labs HTMS-2510 (which costs less than \$250) is the first stand-alone unit for consumer use.

Some "3-D" sound techniques require that the signal be encoded at the recording or broadcast end and decoded at the listening end. With others, such as QSound, the processing occurs only at the origination point. Spatializer circuitry can be

used to process the signal at either end (an ability it shares with SRS). If incoming source material has already been "Spatialized," the HTMS-2510 compensates for this to ensure that the signals will not be over-processed.

Desper says that his approach "uses the hu-

man brain as a processor more than most other "3-D" techniques do." He observes that, since two speakers moving in and out is really all that the ear has to work with, the actual reproduction of the music all occurs in the brain. In his design of Spatializer 3-D audio processing, he "takes advantage of the brain's ability to ex-

trapolate from a simple sonic event to the entire musical or sound impression." Spatializer continuously generates both expanded and directional

sound fields from the original input signal, using the brain to construct this conceptual image space.

To move sounds out into those portions of the listening area where there are no loudspeakers, Spatializer

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For literature, circle No. 95

(like most other "3-D" techniques) uses modification of the head-related transfer functions (HRTFs) discovered in binaural research. These functions map the frequency variations that the outer ear imposes on sounds arriving from different directions. Using cues hidden in the stereo difference signal, Spatializer processing manipulates various parameters to place sounds around an arc surrounding the listener. (This arc is said to extend up to 350° with professional Spatializer gear and to 270° for the HTMS-2510 home unit.) Although Spatializer processing manipulates frequency cues to simulate HRTFs, it does not appear to modify the overall frequency balance; sounds seem to be unchanged in all respects except direction. The Spatializer process uses no artificial reverb.

The HTMS-2510 I auditioned offers three levels of "Space" enhancement, selected with up/down "Space" buttons on the front panel or turned off with a "Space Bypass" button. (All front-panel controls are duplicated on the remote.) A green "light-pipe" display shows which level of spatial enhancement is selected: One band of the display illuminates for the minimum setting, two bands illuminate for moderate enhancement, and all three bands illuminate for maximum spatial enhancement.

A "Bass EQ" switch compensates for poor low-end response in certain sources; it also activates a test mode to confirm that the 2510 is functioning normally. No input level adjustment is required or provided, thus eliminating a hassle you face with some other processors. But because there is no level adjustment, I had to reduce the tape output level from my preamp to its lowest setting to avoid driving the 2510 into distortion on signal peaks.

The HTMS-2510 can accept two inputs, selectable from the front panel or the remote, and has a single pair of output jacks. The two inputs would be handy for a simple home theater system, allowing, for example, easy switching between audio signals from the TV and VCR. Most people, however, will probably connect the 2510 into a tape or processor loop on their receiver or preamp. (You might arrange your installation so that you can reroute the 2510's output to feed the inputs of your VCR and audio recorder; this will let you encode tapes with Spatializer processing.)

I first tried the HTMS-2510 in my modest home theater system, which includes a Fosgate-Audionics surround processor, AudioSource amps, and Cambridge SoundWorks speakers. Results were excellent. Putting the Fosgate in bypass mode and setting the 2510 to its middle "Space" setting gave me a rich, expanded soundstage that extended so far to the right and the left that I had to put my ear near the side-mounted dipole speakers to be sure they weren't operating. And I detected no noticeable change in timbre or tone color, even when I played the most demanding classical or jazz laserdiscs.

When I used the 2510 in conjunction with the Fosgate processor to play surround-encoded programs, adding Spatializer processing enhanced the surround field. The sound arc from front to back and between the two main front speakers became more seamless and continuous, and the center image was pinpointed between the speakers (some "3-D" systems make it sound amorphous). Even with non-surround stereo soundtracks, the 2510 created an enveloping sound field. (However, it does not process mono signals.) The only slight artifact I heard when Spatializer processing was switched in was an

increase in noise (primarily hiss), especially at the maximum "Space" setting. I assume that there was a slight mismatch in the interface between components, since I heard some hiss even at the 2510's lowest "Space" setting (where its rated signal-to-noise ratio is a very respectable 95 dB) but did not hear the hiss when I used the 2510 in other systems of mine.

After trying the HTMS-2510 in my home theater, I put it into my studio's reference audio system, which includes a Cogent Research Simultaneous Polyphonic Isolator (SPI) to divide the stereo information among a bank of four matched Celestion SL-600si speakers in an arc and a pair of Celestion 6000 subwoofers. This array creates an enveloping expansion of the stereo soundstage, "unmixing" the additional spatial information crammed into two channels, but it's doing it the hard way. A simple

comparison soon proved that the 2510, which does it the easy way, came very close to matching this effect! The only advantages I heard with the four-speaker system were some subtle improvements in clarity and transparency on certain music sources. And these differences became discernible only after much comparative listening. Considering the additional expense (not to mention the extra space required) of another pair of matched speakers, another matched stereo amp, and the SPI box, the Spatializer's sonic achievement seems nothing less than phenomenal.

When I am not sitting in my studio's sweet spot, equidistant from all speakers, I usually turn off the outer pair of speakers and use only the inner pair, angled about 30° from my listening position. (This is also more appropriate for listening to some solo instruments, such as piano, that have been overmiked and come out sounding 30 feet wide.) With the 2510 in the circuit and only the two inner monitors on, I again had to

move close to one of the outer speakers to ascertain that it was not operating! The effect was clearly heard almost everywhere in the room except behind the speaker array.

This broadening of the sweet spot is also claimed by SRS, but I

have not found its sweet spot nearly as wide as Spatializer's or as free of tonal coloration. The 2510 really doesn't add its own sonic signature to the expanded sound field.

I also used the HTMS-2510 with another pair of Celestion surround speakers, which are in the rear of the studio and are fed by a Fine Line Audio PhaseAround passive surround processor and an integrated amp. Again, the Spatializer circuit enhanced the sound field without changing tonal color or affecting the subtle stereo surround effect obtained with the Fine Line Audio processor. The surround channels made a more seamless join with the front arc of speakers, spreading sound along the difficult-to-image sides of the studio.

The hiss problem I heard in my home theater setup was not present in my audio-only system. This was true even at the

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2510's maximum "Space" setting, although I again found the middle setting best for nearly all material.

For a final evaluation of the HTMS-2510, I fed a "Spatialized" signal through the budget speakers I have throughout my



**COMPARED TO COMPLEX,
 EXPENSIVE SYSTEMS,
 THE HTMS-2510'S
 ACHIEVEMENT
 SEEMS PHENOMENAL.**

house and through a pair of Cambridge SoundWorks outdoor speakers on my patio. The latter speakers are on a wall, each positioned about a third of the way from the end of the patio's long edge. I often eat lunch at a table at one corner on the patio's far side, which puts me much closer to one speaker than the other. When using the HTMS-2510, I enjoyed a palpable stereo sound field where previously only the near speaker was audible.

When I reviewed NuReality's Vivid 3D Theater SRS processor (April), I found that it sounded its best with the budget speakers scattered through my house. This was not true of the 2510, whose performance with better components was exemplary. However, the less expensive the equipment I used it with, the more immediately appreciable the benefits of Spatializer processing became. I see the Spatializer HTMS-2510 as a very effective, low-budget substitute for a complete multispeaker home theater system. It doesn't use up a lot of cash or space or involve you in wiring nightmares, yet it will give you about 80% of the experience of a typical, modest five-speaker home theater setup.

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ANTHONY H. CORDESMAN

VPI JMW MEMORIAL TONEARM

The “analog revival” is bringing us a steady flow of new audiophile LPs and high-end turntables, cartridges, and tonearms. High-end analog equipment, it seems, is continuing to evolve almost as quickly as the state of the art in digital. The best of these new analog products can reveal new information from a record collection, thereby providing a more involving listening experience. These components may not prevent the LP from fading into twilight, but it is a glorious sunset.

VPI's JMW Memorial tonearm is a good case in point. At \$2,300, it is designed to complement top-of-the-line turntables. Matched with a cartridge and turntable of equal quality, it delivers excellent sound that is competitive with digital gear. (The arm is named in memory of the late

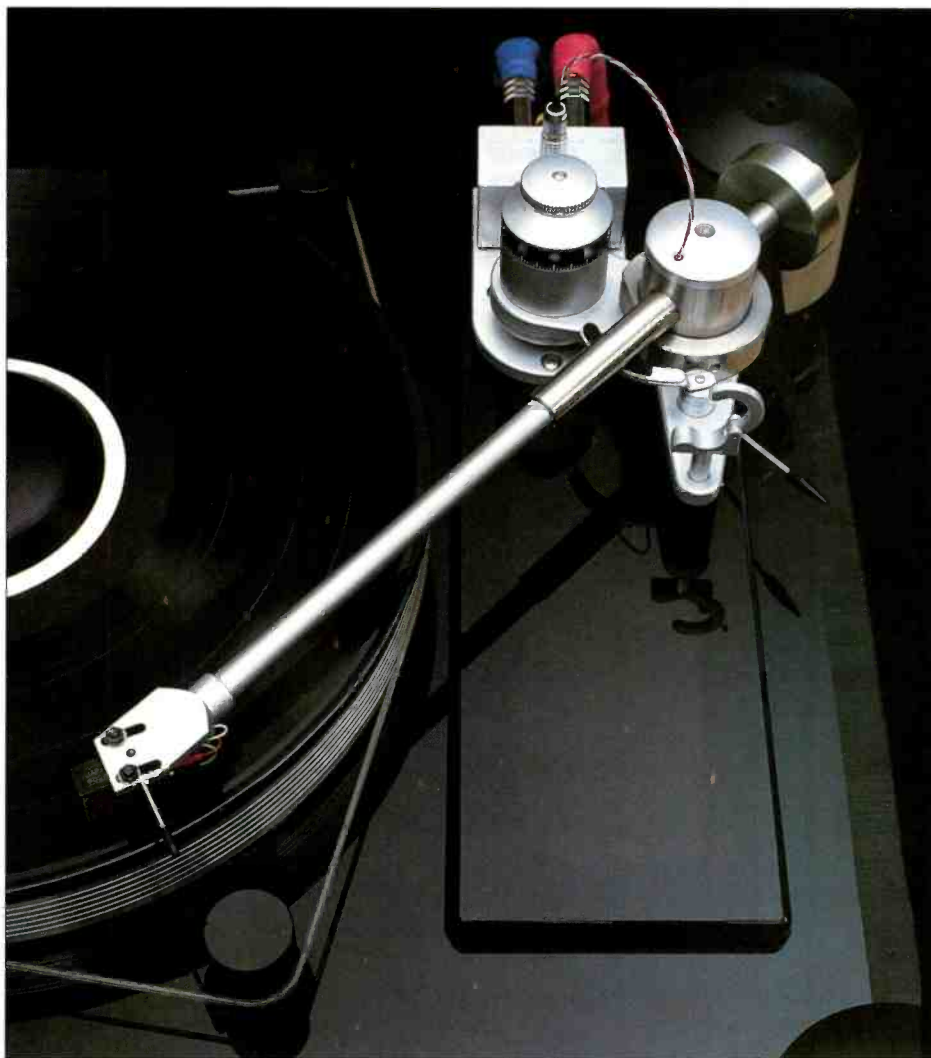
**THE JMW MEMORIAL
CAN REVEAL
NEW INFORMATION
FROM YOUR OLD LPs.**

Jonathan Mathew Weisfeld, son of VPI's founders, who had originally urged his parents to produce it.)

This tonearm's styling is clean and functional, with excellent machining and finish. Every part of the arm has enough mass and strength to ensure years of trouble-free use. A unipivot design, it has silicone damping in its bearing well. The arm's exceptional length (about 9 $\frac{7}{8}$ inches) and low offset angle increase its ability to track accurately. The entire assembly is grounded to minimize hum and noise; RCA output jacks and a ground connection enable you to use any type of interconnect.

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The JMW Memorial has one of the best “dial-in” adjustments for tonearm height that I have ever encountered; VPI thus makes it easy to set vertical tracking angle (VTA) while a record is playing. The rear counterweight is decoupled, and its very fine screw threads permit extremely precise adjustment of tracking force. The tonearm's wide range of counterbalance, tonearm-height, and overhang adjustments—and its

open cartridge mount—should allow it to work well with virtually any modern phono cartridge. (An extra counterweight is provided for use with heavy cartridges.)

The entire top of the arm lifts off the unipivot, and the wiring is connected to the arm base by a removable Lemo connector. This enables you to swap armtubes and cartridges rapidly without having to reset tracking force, offset angle, or az-

imuth. The only adjustment needed when switching arm tubes and cartridges is for VTA; the tonearm's precise VTA calibrations allow rapid resetting without extensive listening. It's a dream arm for making cartridge comparisons.

The JMW Memorial tonearm does not have an antiskate control. However, you can set antiskating by twisting the wiring that goes from the arm tube to the base.

Setup is relatively easy (to the extent that setting up any tonearm is easy), and VPI's instructions are adequate. I recommend using a pre-drilled board or having a dealer mount the arm, but the supplied alignment jig will suffice if you want to mount it yourself. Cartridge mounting is a snap because the arm can be removed from its base. Adjusting tracking force is easy if you have a decent gauge (and one is now included with the arm).

Adjusting azimuth, antiskating, and overhang is a bit of a pain, as it is with every tonearm. The fun begins with setting azimuth, which must be done with a record clamped to the turntable. The shapes of many cartridges make it difficult to determine whether their bodies are at 90° to the record. And even a visually accurate azimuth setting may not be completely correct. Unless you have a test record and the proper test equipment, your options for setting azimuth are to do the best you can visually (adequate for most purposes) or to find one of the handful of surviving dealers who can measure and adjust azimuth precisely. If you have a stereo test record, you can perform a rough check by playing it and checking the meters on whatever tape recorder is hooked up to your system. Adjust the azimuth until you get about the same output from each channel with high-frequency test tones.

Antiskating adjustment is always problematic. Even when an arm has a calibrated antiskating control, its calibration is unlikely to be correct with your specific cartridge and you have to guess what setting is really best. With the JMW Memorial, I suggest twisting the connecting wires just enough to make the arm drift outward when its counterbalance is set for zero tracking force. Then, when you set tracking force, add a tenth of a gram to the cartridge manufacturer's recommended setting and forget the whole thing.

Adjusting overhang is not easy, and I am no fan of the adjustment protractor that comes with the arm. Have a dealer do it, or buy a Dennesen alignment device.

One has to be cautious when ranking high-quality tonearms. Each has its own nuances and virtues. The fine nuances are also system-specific: The arm interacts with the cartridge, and one arm may damp, or "terminate," a cartridge better than others. The arm also interacts with its mounting board, the turntable, the turntable base, and whatever that base is resting on.

The JMW Memorial performs superbly with VPI's TNT Series 3 turntable. Percussion detail and the resolution of harmonics and transients are excellent. The sound of strings, woodwinds, piano, and guitar is outstanding, and reproduction of my chamber music LPs on the old Belgian Accent label has never been better. Orchestral music is clearly defined.

I normally use a Wheaton Triplanar IV as my reference tonearm. It has been my candidate for the best arm around, at least with the VPI TNT turntable. The JMW Memorial, however, is the Wheaton's equal in overall transparency and detail and has slightly better dynamics and slightly deeper, more accurate bass. Similarly, I have long been a fan of Eminent Technology's 2.5 tonearm. Its strength has been its ability to retrieve detail, with excellent transparency and transient response. The JMW Memorial matches the 2.5 in these aspects and has better bass and a richer and more musical lower midrange.

Unlike some audiophiles, I do not believe that even the best LPs have bass as accurate as that on the better CDs. I always hear a touch of overhang and added warmth on vinyl that represent a loss of definition: euphonic bass achieved at the expense of accuracy. Yet really good tonearms help minimize these colorations to the extent

permitted by the LP you're playing, and the JMW Memorial tonearm produces some of the tightest and deepest bass I have ever heard from analog.

Phono's dynamics differ from those of CD: You are forced to listen through record noise at low levels, and you normally hear increasing compression and distortion at high levels. No tonearm is ever going to remove these limitations, but a good one can minimize them and help improve the reproduction of dynamics and low-level passages. The JMW Memorial is such an arm. Part of this improvement in dynamics comes from its exceptional ability to extract music from the grooves while minimizing surface noise and coloration. I cannot think of any technical reason why some tonearms and turntables cope with surface noise better than others, but years of experience have taught me that this is the case. The VPI tonearm even reduces the



**THE JMW MEMORIAL
PRODUCES SOME OF
THE TIGHTEST
AND DEEPEST BASS
I'VE HEARD IN ANALOG.**

noise on Mobile Fidelity's recent LPs (which set a new standard for low surface noise) and reduces it even more than such damn good arms as the Wheaton Triplanar IV and the Eminent Technology 2.5.

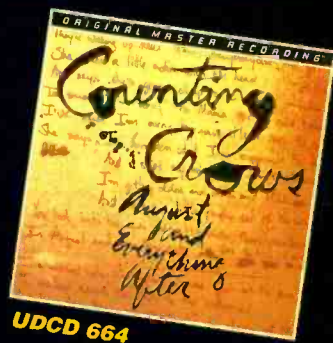
The JMW Memorial's capacity to minimize coloration is perhaps easier to understand. It has high mass wherever this minimizes vibration. It also has an excellent bearing, a well-decoupled counterweight, and what seems to be just the right amount of damping.

If I have any reservation about the JMW Memorial, it lies in its price. The steady decline in volume of tonearm sales has virtually eliminated economies of scale; high-end manufacturers increasingly target the top of the tonearm market, where price is no object. Yet by that standard, this tonearm is actually something of a bargain: You can easily pay three or four times the price of the JMW Memorial for equal or lesser sound quality. A

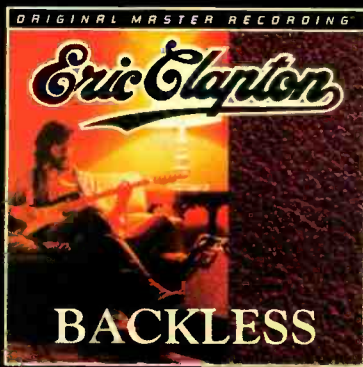
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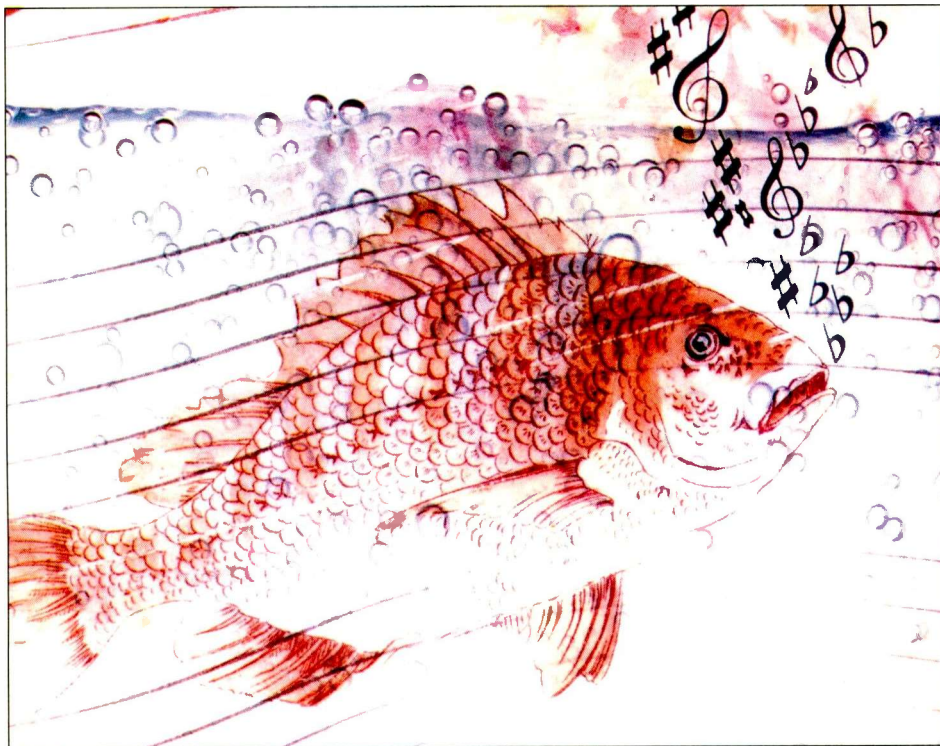
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Schubert: Quintet for Piano and Strings in A Major, "The Trout"; Mozart: Quartet for Piano and Strings in G Minor, K. 478

Alfred Brendel, piano;
Thomas Zehetmair, violin;
Tabea Zimmermann, viola;
Richard Duven, cello;
Peter Riegelbauer, double bass
PHILIPS 446 001, CD; DDD; 74:16
Sound: A+, Performance: A



Schubert: Quintet for Piano and Strings in A Major, "The Trout"; Sonata for Arpeggione in A Minor; "Die Forelle" ("The Trout")

Emanuel Ax, piano; Pamela Frank, violin; Rebecca Young, viola; Yo-Yo Ma, cello; Edgar Meyer, double bass; Barbara Bonney, soprano
SONY CLASSICAL SK61964
CD; DDD; 64:50
Sound: A-, Performance: A+

These two CDs feature Franz Schubert's "The Trout" Quintet but have marked differences. Alfred Brendel's musicians provide a tradi-

tional European interpretation, whereas Emanuel Ax, Yo-Yo Ma, and friends take a more American approach. Yet both performances are exceptionally effective.

"The Trout," Schubert's first great work for piano and strings, uses the theme from his delightful song of the same title. The lively score was completed quickly; it is said that for its first performance Schubert simply wrote out the string music and played the piano part himself, from memory. In contrast to the typical piano quintet of a piano plus a standard string quartet, the composer used only one violin and added a double bass, creating a unique resonance in the work's lower register. Although the music is lighter and less profound than some of his later chamber works, "The Trout" Quintet remains one of Schubert's most popular compositions.

Alfred Brendel's "The Trout" was recorded in Germany with some of

Europe's finest young musicians. Its rich, deep sound emphasizes the melodic line. Both Schubert and Mozart were known for their lyric melodies, and Brendel's ensemble brings out the singing quality of both composers' works on this Philips CD. The piano is clearly the preeminent instrument throughout, and the interpretation is masterful if rather traditional. This is the way most of us are used to hearing these Austrian chamber works performed at their best.

Ax, Ma, and friends' "The Trout," for Sony Classical, is equally enjoyable, and this ensemble has a novel point of view. The tempo of every movement is faster than in the Brendel recording, but what is lost in lyricism is made up for in animation; the breakneck speed of the Scherzo is particularly staggering. The piano is less prominent, becoming an equal partner in the ensemble's exquisite blend. The recording is a bit drier than Brendel's, something listeners accustomed to a concert-hall sound may disapprove of, but it does add clarity in the extremely rapid passages. To relate the quintet's famous theme to its source, this all-Schubert CD includes soprano Barbara Bonney's lovely rendition of Schubert's original song.

For a finishing touch, Yo-Yo Ma and Emanuel Ax give a luscious account of the "Arpeggione" Sonata. The instrument that Schubert originally used for this piece was held like a cello but had six strings tuned like a guitar. Except for Schubert's Sonata, history has completely forgotten this hybrid instrument. The transcription for cello is a challenge for any performer, but Ma plays even the most demanding phrases with finesse. His resplendent tone in the second movement is, in itself, worth the price of the album.

Order your "Trout" to suit your own taste, for each of these discs is commendable. Some listeners will want Franz Schubert's lyric beauty, while others will prefer the beauty of exhilaration. *Patrick Kavanaugh*

Photograph: David Hamsley

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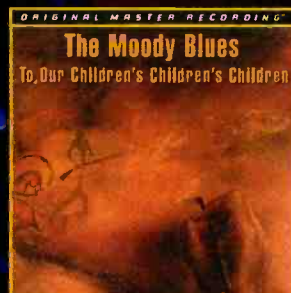
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CIRCLE NO. 17 ON READER SERVICE CARD

**Glière: Symphony No. 2 in C Minor;
The Red Poppy Ballet Suite**
New Jersey Symphony Orchestra,
Zdenek Macal
DELOS DE 3178, CD; DDD; 72:52
Sound: A+, Performance: A

This melodic and monumental Russian Romantic symphony sounds like a work created much earlier than its 1908 date. Reinhold Glière is perhaps best known for his "Russian Sailors' Dance," the final section of *The Red Poppy Ballet Suite*. While the music of Prokofiev and Shostakovich was being condemned by Soviet authorities, Glière sailed along on his tuneful, accessible way; his propagandistic ballet *The Red Poppy* even brought their official praises. There's no denying the composer had great technical skills, gentle lyricism, wonderful melodies based on Russian folk inspirations, and an exotically fantastic slant, all aided by his interest in music of the various Soviet ethnic minorities.

Glière wrote his Second Symphony just after his return from studying in Berlin, and there are shades of Richard Strauss and Wagner present. However, the last two movements display evidence of Russian themes. This epic symphony is not



only the product of a panoramic country but the first to benefit from the increased spatial panorama offered by Delos' new Virtual Reality Recording (VR²) process, which can provide as many as six ("5.1") discrete channels to preserve more of a concert hall's ambient and reverberant cues (see "Spectrum" in this issue). Although VR² presently must be reduced to a four-channel Dolby Surround matrix-encoded version, the increased sense of dimension is easily heard with a Dolby Pro Logic decoder or even a simple passive ambient decoder. (A subtle expansion of the soundstage can be heard with standard stereo speakers.) Glière's large-scale music is just the ticket for this super-surround demo, and Macal's version boasts great life and rich sound. *John Sunier*

Karaindrou: *Ulysses' Gaze*

Kim Kashkashian, viola;
various instrumentalists;
string orchestra, Lefteris Chalkiadakis
ECM NEW SERIES 78118-2 1570
CD; ADD; 59:43
Sound: A-, Performance: A-

Film music often adopts classical motifs, but it rarely achieves classical stature, despite John Williams' pretensions to that effect. The films of Greek director Theo Angelopoulos aren't well known in this country, which means that the works of his principal compos-

Hindemith

**Violin Concerto;
Concerto for Orchestra;
Kammermusik No. 4;
Ragtime; Suite of French Dances**
Michael Guttman, violin;
Philharmonia Orchestra, José Serebrier
ASV CD DCA 945, CD; DDD; 78:18
Sound: B+, Performance: A

As a comprehensive review of Paul Hindemith's orchestral writing, this CD is particularly interesting. The Concerto for Orchestra predates Bartók's and shares certain features with it. The most probable reason for the greater fame of the Bartók is his showier writing for the entire orchestra, which endears it to conductors in search of a display piece. Hindemith's Concerto for Orchestra stays closer to the concerto grosso model, with a solo group, so to speak, getting



most of the glory. The Violin Concerto is craggier but impressive.

The Ragtime is admittedly a sort of bagatelle. Various pieces were styled as Kammermusik (literally, room or chamber music) by Hindemith; they are particularly characteristic, and this one is a delight. But most startling is the anti-quarianism of the French Dances, based on a 16th-century collection. As his students at Yale were well aware, Hindemith was deeply interested in "Early Music," and this suite suggests what he heard in it.

The recordings were made in England, in well-known venues: Walthamstow Assembly Hall and All Saints' Church, Tooting. On my system, the sound is generally good but suffers from some congestion in the climaxes, which suggests overtaxed analog stages. The results still are good, but not good enough to rate an A. *Robert Long*

er, Eleni Karaindrou, are also little known. But for many years Karaindrou has been developing a fragile, solemn music that goes beyond film scoring; her compositions have a life of their own. Such is the case with *Ulysses' Gaze*, a hypnotic work that owes a slight debt to minimalism and shows an affinity with the



holy minimalists Henryk Górecki and Arvo Pärt. Like those composers, Karaindrou favors a harmonic music that has an almost folk-like simplicity in its melodic development. But she casts these melodies in muted hues and shades that could have been morphed out of a Mark Rothko painting. *Ulysses' Gaze* has only a handful of themes, but she milks every iota of expressive power from them.

Karaindrou casts an idiosyncratic chamber ensemble of oboe, accordion, trumpet, French horn, cello, and string orchestra and tops it off with virtuoso violist Kim Kashkashian, who is brilliantly expressive. She plays out melodies to a feathered edge—sometimes floating alone, sometimes accompanied by the plaintive cry of the accordion, sometimes drifting through the horns. The centerpiece is the 17-minute title theme, which employs the full instrumental force; whereas the previous melodies were fragile and occasionally

ephemeral, here they take on heroic and joyful proportions.

Like Górecki's Symphony No. 3 and Pärt's "Fratres," *Ulysses' Gaze* is connected to a deeply emotional expression that cannot really be labeled religious but does reach toward the spiritual. *John Diliberto*

Testimonies of War: Kriegszeugnisse, 1914-1945 (Works by Blacher, Shortall, Weill, Goldschmidt, Milhaud, and Vaughan Williams)

Soloists; BBC Symphony Chorus; London Philharmonic, Berlin Radio Symphony Orchestra, and Poznan Philharmonic;
Noam Sheriff, Berthold Goldschmidt,
and Andrzej Borejko, conductors
LARGO 5130, Two CDs; DDD; 1:56:46
Sound: A, Performance: A to B+

The producers of this international cooperative project, planned to commemorate the 50th anniversary of the end of World War II, view it as a companion to Benjamin Britten's War Requiem. The Britten work came out of the First World War experience; *Testimonies* serves not only as a memorial for the fallen in both wars but also as a fervent plea for world peace.



A principal composer was selected, one whose works could represent the period, along with other composers who are not necessarily less important but whose music fit specific historical perspectives. The choice for the project's principal composer was Boris Blacher, because he witnessed the Second World War in both Dresden and Berlin.

Some collectors may pass on this set because of its sociopolitical slant or because they expect it to be gloomy. But they would be missing some varied, fascinating, and captivating lighter music. Blacher's Dance Scenes and his ballet *Chiarina* are full of jazzy scherzos, rags, and tangos, akin to Shostakovich's light music but with a sophisticated Berliner "bite."

Kurt Weill's 1928 "At Potsdam Under the Oaks" dramatically sets a strong antiwar poem by Bertolt Brecht. One of the two 1935 Psalm settings by Berthold Goldschmidt receives its

world premiere. The Blacher Sonatina for Piano looks longingly toward the Paris of Erik Satie and Darius Milhaud and echoes forbidden sounds of Duke Ellington. Weill's early Chorale-Fantasia is closely tied to the tragic side of Mahler as well as to his *Mahagonny*. For Harrington Shortall's short Fanfare for Five Trumpets, the players are instructed to surround themselves with various unplayed stringed instruments, with open strings tuned to the pitches of the fanfare. *John Sunier*

Nørgård: Siddharta; For a Change

Gert Mortensen, percussion (in "For a Change"); cast, choruses (in Siddharta); Danish National Radio Symphony, Jan Latham-Koenig

MARCO POLO/DACAP0 8.224031-32

Two CDs; ADD; 2:16:14

Sound: A, Performance: A

I mean to raise questions for which I have no real answers; if you prefer platitudes, please stop reading now.

To be honest, I find elaborate intellectual underpinnings a turn-off when it comes to music. Years ago, when Dimitri Mitropoulos recorded Alban Berg's *Wozzeck* for Columbia, *Musical America* published a detailed structural analysis. Great parlor game, I thought, but what has this to do with the visceral impact of *Wozzeck*? Is that impact created somehow, mysteriously, because of this elaborate structure or in spite of it? I still don't know, though the impact of *Wozzeck* is undeniable.

Per Nørgård's *Siddharta* strikes me the same way. The booklet explores its underpinnings, which include such things as the use of "golden section" rhythmic relationships. Can I hear these relationships? Certainly not as such. Perhaps they make themselves felt subliminally? Perhaps. But what do they mean? Does the melody to which the golden-section device is applied derive its grace therefrom, as the booklet claims, or is the device a mere formalization or intellectualization—a rationalization, if you will—of a rhythmic/melodic figure that Nørgård had already at least half-conceived? And does it matter?

The fact is that I've never found Nørgård's music less than striking, and this opera-ballet (to a text by poet Ole Sarvig) recounts the rite of passage that transformed a prince into the Buddha-to-be—as does Hermann Hesse's novella *Siddhartha* (which I found uncommonly moving when I read it long ago). The visceral impact of the opera's images, both sonic and poetic, is undeniable. It's not a work I'd expect to enter the international operatic repertoire, but this recording is all the more valuable for that reason. The Danish text plus



KORNGOLD

Piano Sonatas, Nos. 1, 2, and 3

Geoffrey Tozer, piano
CHANDOS CHAN 9389
CD; DDD; 70:19
Sound: A, Performance: A

Although Erich Wolfgang Korngold is best known as a composer and orchestrator of Romantic-style scores for the concert hall, the opera stage, and Hollywood films, the piano was an essential instrument to him. He composed at the piano, often incorporated keyboards into his symphonic music, and wanted to make the piano sound like an orchestra.

The three piano sonatas on this disc are full of the lovely melodies and variation/cyclic structures of Korngold's orchestral music but have more dissonance and chromaticism. The First Sonata, written when Korngold was only 11, is amazingly sophisticated; it's no wonder Mahler pronounced him a genius at the age of 9! Sonata No. 2, a four-movement work nearly a half-hour long, is dedicated to Alexander von Zemlinsky, Korngold's teacher, and shows orchestral treatment of the piano. The frequent wide dynamic swings of Korngold's music are captured with ease in Chandos' transparent sound. The Third Sonata is more lyric and refined, with an almost Mahleresque slow movement. These are altogether fascinating works that deserve to be on recital programs and should not be ignored. *John Sunier*



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English and German translations are included in the booklet.

The filler piece, "For a Change," is a bemusically inventive concerto for percussion and orchestra. The sound throughout this disc, from analog recordings made in the Danish Radio Concert Hall in 1984, is without obvious fault or obvious distinction aside from having captured a rather difficult score admirably. *Robert Long*

Ravel: *Daphnis et Chloé* (complete ballet); *La Valse*

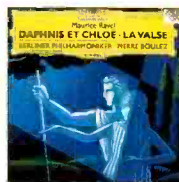
Berlin Philharmonic, Pierre Boulez
DEUTSCHE GRAMMOPHON
DG 447057, CD; DDD; 70:46
Sound: A, Performance: A

Pierre Monteux conducted the world premiere of Maurice Ravel's *Daphnis et Chloé* in 1912. And when he recorded this ballet with the London Symphony years later, it was acknowledged that he set the standard for Ravel's masterpiece. Yet this miraculous performance by Pierre Boulez (a fastidious technician of musical genius), with what may be the world's greatest orchestra exerting itself to the limit, offers that Monteux milestone serious competition—and probably surpasses it.

One may legitimately argue the advantage of recording the entire ballet score instead of the two suites Ravel derived from it. Deutsche Grammophon's exceptionally good booklet notes call this "a choreographic symphony in three parts." Ravel's ravishing harmonies and orchestrational wizardry provide brilliant flashes of light throughout, although the first part, minus performing dancers, contains little music of real interest. The second third, which Ravel adapted into the First Suite, picks up considerably. But it is not until the magical depiction of daybreak, which opens the third section (and the Second Suite), that Ravel's genius as an orchestral master comes fully into its own.

Boulez takes an exceptional approach to "La Valse," yet it's entirely in keeping with the original concept of Ravel, who composed the piece while still reeling with horror from his experiences as an ambulance driver in World War I. Boulez tends first toward a lovingly languorous, almost caressing approach to this gorgeous music, which gradually descends into something horrifying by the almost hysterical end.

Boulez makes heavy demands on his musicians in both works, at times pushing them to their technical limit. But the dazzling individual performances suggest that these *Philharmoniker* could play just about anything. The orchestra sounds downright magnificent. And



Mozart

Piano Concerto No. 18 in B-Flat Major (K. 456) and No. 19 in F Major (K. 459)

Melvyn Tan, *fortepiano*; Philharmonia
Baroque Orchestra, Nicholas McGegan
HARMONIA MUNDI FRANCE
907138, CD; 54:10
Sound: A—, Performance: A

San Francisco's Philharmonia Baroque Orchestra is known for striving to be authentic; its program notes actually list the makers of each early instrument (or modern copy) on which the musicians perform. So when the Philharmonia teamed up with Melvyn Tan, one of the finest fortepiano



specialists in the world, the result promised to be exceptional. And it is. Indeed, some may say that this recording is authentic to a fault, since the soloist's volume is not increased to the level typical of concerto recordings. But for those who want to hear Mozart's music as Mozart would have heard it, this disc is impeccable. *Patrick Kavanaugh*

for once the wordless chorus Ravel occasionally interpolates must sound the way he always wanted it: like just another integral section of the orchestra. *Paul Moor*

Telemann: Six Flute Duets, TWV 40: 130-135

Kimberly Reighley and Tom Moore, flutes
LYRICHORD EARLY MUSIC SERIES
LEMS 8019, CD; DDD; 57:32
Sound: A, Performance: A

Georg Philipp Telemann composed four sets of flute duets, each containing six sonatas of four movements. The first three sets have been well known for many years, but this disc contains the first recording of the final set. These duets differ from their predecessors in their use of very different keys (B-Flat Major, C Minor, E-Flat Major, F Minor, and E Major) for the one-keyed transverse flutes of Telemann's day.

Obviously, he was writing for virtuoso performers. The challenge of these pieces is favorably met by Kimberly Reighley and Tom Moore—two flutists specializing in Early Music. The recording site, the Crosswicks Friends Meeting House in Crosswicks, New Jersey, was built in 1773 and is well suited for the fascinating, austere sound of authentic transverse flute. *Patrick Kavanaugh*



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ROCK~POP

RECORDINGS



Set the Twilight Reeling

Lou Reed

WARNER BROS. 9 46159-2, 50:57

Sound: B+, Performance: A

Learly in his career, Lou Reed was hailed as the thinking man's Elvis: part street poet, part rock 'n' roll animal. Luckily for Reed, the moniker didn't stick, although he did manage to maintain that delicate balance of opposing traits. The old alchemy is still in place on his new album, but something's changed.

Set the Twilight Reeling unveils a kinder, gentler—er, dare I say, even

happy—Lou Reed. Where did the arrogant SOB go? Reed murdered him, describing the details of the offing on "Trade In": "I had taken him apart/but when I put him back together/I couldn't find his heart." The irascible Lou Reed was transformed by his new love, performance artist Laurie Anderson. His intellect and emotions struggle for control, but his head and heart have come through the storm intact. From "Heroin" to "Walk on the Wild Side," his hideously beautiful X-ray lyrics exposed unsettling realities that long ago etched themselves into our collective consciousness; the lyrics of "Set the Twilight Reeling" may do the same. Reed is one of

the most incisive songwriters of his generation.

This time Reed's words share equal billing with his guitar; he wants you to hear it inside and out. Fernando Saunders' buoyant, rippling bass lines give Reed plenty of freedom and support, and Tony "Thunder" Smith's crisp drumming rivets this power trio's grooves with a surprisingly light touch. But this is a guitar record, as Reed proves again and again by making passionate love to his instrument. He gently caresses it on "NYC Man," whips up a froth

Quartet

Alison Brown

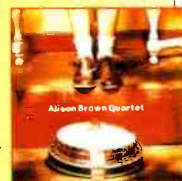
VANGUARD 79486-2, 36:39

Sound: B, Performance: B+

On her previous album, the exquisite *Look Left*, Alison Brown used her quartet as a home base to explore a wide variety of textures provided by guest players. Here, she keeps strictly to the quartet format, using its parameters to explore a range of possibilities.

The quartet features Brown on banjo and guitar, John R. Burr on piano, Rick Reed on drums, and bassist/producer Garry West. Brown wrote seven selections alone and co-wrote the remaining three with quartet members. The material ranges from the bluegrass/be-bop fusion of "G Bop" through the gentle waltz of "The Red Balloon" to the stately Old World feel of "Without Anastasia." The soft finale, "The Day Sweeps Back," eerily recalls "Tender Shepherd" from *Peter Pan*. This is a nicely rounded album, and different songs catch my ear each time I listen to it.

Engineer Bil VornDick's sound is very clean but a bit subdued. This quality is perhaps designed for the growing number of "smooth jazz" radio stations, where *Quartet* could do very well, but just a bit more presence and some of that mysterious "oomph" wouldn't have hurt. *Quartet* just sounds too polite. Still, this is a collection of friendly music from a classy, gently probing outfit. *Michael Tearson*



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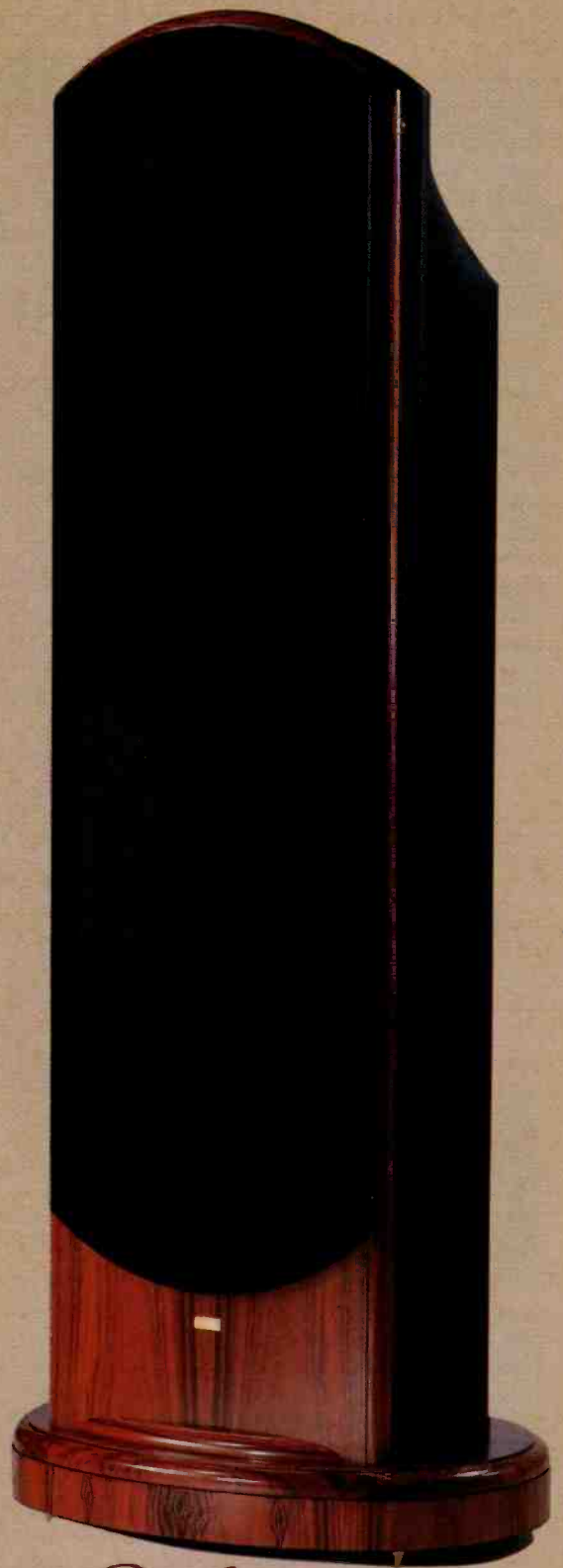
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on "Egg Cream," and gets downright physical on the Hendrixesque "Riptide." The man struts his stuff!

Reed has always been a stickler about the sound of his recordings, and *Set the Twilight Reeling* is an all-out attempt at a state-of-the-art rock 'n' roll album. He presents the full dynamics of the trio, especially his guitar pyrotechnics, with what he calls 3-D ambience. So far so good, but Reed's vocals sound physically and emotionally removed from the band; there's a wall between the words and music. Too bad, because in every other way, he's frustratingly close to his goal.

This is a transitional record for Reed. His last three solo efforts and the recent Velvet Underground reunion marked the close of his work's perpetually adolescent rock-star phase; on his new album he's started to express real concerns about other people in his life. The man's made a career of looking for new sensations. He's an explorer always looking for new challenges. *Steve Guttenberg*

On

Echobelly

550 MUSIC/EPIC BK-67368, 42:06

Sound: A, Performance: B

Echobelly's 1994 debut, *Everyone's Got One*, made the band the darling of international critics, and that album had respectable sales everywhere except America. *On* may or may not change this.

Although it fails to capture some of the magnetism and spontaneity of *Everyone's Got One*, *On* is still eminently



listenable. Singer and lyricist Sonya Aurora Madan sounds as if she has become more aware of the beauty and the strength in her voice,

which emerges with a more poised and practiced edge. And her overt social commentary, which highlighted the band's first album (songs addressed such issues as abortion and racism), is replaced here by more mundane, universal themes, like relationships.

Some rough edges are now much smoother and less overpowering, particularly Debbie Smith's and Glen Johansen's guitars, which have a pleasing, symbiotic relationship with Madan's vocals. The fervent comparisons of Echobelly to The Smiths that previously dogged the band no longer really apply here; The Smiths are only a passing influence rather than a heart worn on a sleeve.

The album's title reflects the band's feeling that it is on point with this release, but I miss the naiveté that made its first album so delicious. Nonetheless, Echobelly's essence remains a captivating and winning mix of flavors. *Tamara Palmer*

Gilded Stars and Zealous Hearts

SUB POP SPCD 340, 42:58

Sound: B+, Performance: C

Until now, Velocity Girl thrived on its cult status. The band recorded its albums quickly, left loose musicianship intact, and relied on the love of its craft to transcend the flaws in its sound. The group even opted for a five-record deal with indie label Sub Pop when major labels were making more lucrative offers. But judging by the sound of Velocity Girl's latest album, *Gilded Stars and Zealous Hearts*, the band has grown zealous for stardom and has undergone a change of heart. While Velocity Girl remains fond of layering guitars, the band has replaced its endearing, stratified jangle with pristine pop licks and radio-ready rhythms.



Sarah Shannon's vibrato-tinged vocals are as upfront and glossy as Pat Benatar's, and the new lyrics are light and breezy. Even when Velocity Girl aims to be deep, as on "Nothing," the band sounds about as profound as a fortune cookie ("Just as sure as you smile, I'll be gone for a while/Just as sure as the past, nothing

good ever lasts"). Occasionally the group's psychedelic roots surface through a haze of guitar effects (as on "Zealous Heart"), but for the most part, Velocity Girl is revving shamelessly toward the mainstream.

The band spent seven weeks in the studio recording this album (far longer than they've ever taken before), working with producer Cliff Norrell, who engineered R.E.M.'s *Automatic for the People*. The extra time and effort paid off sonically. The songs sound as polished as anything by Hootie & The Blowfish, but the album lacks emotional impact. Shannon's vocals may be perfectly on key, but they convey little passion. And although the band has smoothed many of its rough edges, it has drained itself of the artistic sensibility that was part of its former appeal. Sure, the songs are musically diverse, ranging from Top 40 to folk to country, but they all seem to have the same commercial aesthetic.

MTV Buzz Bin fans may embrace Velocity Girl's new direction, but indie aficionados should heed the band's words: "Nothing good ever lasts." *Jon Wiederhorn*

Shot

The Jesus Lizard

CAPITOL 8 36778, 43:00

Sound: B, Performance: B

No other punk band bleeds for its art like The Jesus Lizard. For the past seven years, frontman David Yow has flung his body around the stage with reckless abandon, often injuring himself while diving into throbbing fans. He happily leaps 15-foot chasms without hesitation (as he demonstrated numerous times on last year's Lollapalooza tour) and proudly displays his performance scars like war wounds.

In the recording studio, The Jesus Lizard has released the same kind of maniacal energy, creating visceral slabs of noise that resonate like underground construction sites. But the band's new disc, *Shot*, is a less frantic, more carefully constructed effort. Whereas The Jesus Lizard toned down the distortion a notch and sharpened up the songwriting on its previous record, *Liar*, it explores dynamics and sonic variation even further on *Shot*. Many of Yow's hysterical rants are now just semi-hys-

terical rants, and the rest of the band has sobered up its musicianship (figuratively, if not literally).

If Yow is the schoolroom bully, his bandmates are the brainy kids he copies homework from. Guitarist Duane Denison, who previously played somewhat pedestrian riffs to fit the group's infernal clamor, now has far more room to wander within the songs, expressing himself with stealthy fretwork ("Good Riddance"), unsettling slide guitar ("Thumbscrews"), and jazzy stabs ("Thumper").

But although *Shot* may be musically tamer, it's just as lyrically fierce as anything the band has recorded. "Thumbscrews" is about torturing and killing an uncaring landlord, while on "Blue Shot," Yow spitefully shouts, "Why don't you set up a camera to record your own death, dear?"

The package may be prettier, yet The Jesus Lizard still knows how to inflict a venomous bite. *Jon Wiederhorn*



I Feel Alright

Steve Earle

WARNER BROS. 9 46201, 39:02

Sound: A-, Performance: A

Steve Earle's new electric album is a thrill-packed roller-coaster ride. From the opening notes of "I Feel Alright," which are eerily reminiscent of Them's "Gloria," a thick, edgy tension suffuses the music.

Several songs convey pretty harrowing experiences: the road life of a "Hard-Core Troubadour," the wacky story of whacked bandits "Billy and Bonnie," the runaway's story in "Now She's Gone," and the spine-chilling "CCKMP" (which stands for "cocaine can't kill my pain"). That last tune is based around Earle's finger-picking style and played on a National guitar, as is the traditional-sounding "South Nashville Blues"; the distinct guitar tone is a terrific change of pace. The album's finale, "You're Still Standing There," is outstanding—a hit waiting to happen. It's a duet with Lucinda Williams, the only woman I can think of whose voice is even more world-weary and laconic than Earle's. The song's breathlessly glorious up-beat melody gives *I Feel Alright* a surprisingly happy ending.



Producers Richard Dodd, Richard Bennett, and Ray Kennedy meshed their efforts beautifully into a seamless whole that flies by too quickly. With only two of 12 songs longer than 3:38, Earle's songwriting is a model of economy. He gets maximal emotional kick from few words in a short time, a rare gift.

Following the excellent acoustic album *Train a Comin'* (Winter Harvest WH 3302), *I Feel Alright* is Earle's full-scale return to the music wars after several years of inactivity because of personal troubles. Welcome back, amigo.

Michael Tearson

Tiny Music...

Songs from the Vatican Gift Shop

Stone Temple Pilots

ATLANTIC 82871, 41:55

Sound: A-, Performance: A-

Next to Bush, Stone Temple Pilots is the most critically reviled band around. The group has been accused of plagiarizing its peers and acting like prima donnas and has been admonished for arriving on the Seattle scene late and staying too long. Vocalist Scott Weiland, in particular, has been mocked mercilessly for his drug use and his friendship with Courtney Love.



Colossal Head

Los Lobos

WARNER BROS. 9 46172, 43:07

Sound: A, Performance: A

An alternative to the current glut of uninspired rock/pop releases is this rootsy experimentation from East L.A. troubadours Los Lobos. Far beyond the cute populism of the group's hit remake of "La Bamba," *Colossal Head* is an outstanding collage of diverse cultural influences and bizarre studio treatments. And by creating a world influenced by the group's Spanish roots and early rock 'n' roll, Los Lobos is the ultimate American band.

Latin Playboys, a Los Lobos side project in 1994, was the quirky instrumental precursor to *Colossal Head*. This new album retains that project's twisted approach but merges it with the band's undeniably evocative songs. "Revolution" drives on a booming percussion track and glib guitar curlicues caressed by mournful accordion and Hammond organ. "Mas y Mas" recalls a '50s gang rumble, its ominous intent conveyed by harrowing guitars and bel-

lowing saxes. The quintet addresses traditional salsa ("Maricela"), funky folk ("Everybody Loves a Train"), and party music ("Life Is Good"), but it's on the stranger stuff that Los Lobos really shines. Slinky guitars carouse with herky-jerky drums in Little Feat/Captain Beefheart mode on "Can't Stop the Rain," while "Little Japan" floats eerily with wah-wah'd guitars and netherworldly percussion that recalls another East L.A. band, War. The title track's spiraling strings, scorched guitars, taunting and distorted female monosyllables, and looming saxophones bring to mind the music of early gangster films.

Now in their early 40s, the members of Los Lobos aren't out to prove themselves to an audience accustomed to post-grunge or synthesizer-slick R&B. Their music resides on a higher, sublime level where intuition, artistry, and talent chart an innovative course ahead. *Colossal Head* shows Los Lobos as a band diving unafraid into the future.

Ken Micallef



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The Minstrel Man from Georgia

Emmett Miller

COLUMBIA/LEGACY CK 66999, 62:33

Sound: B, Performance: A

A revelation. Emmett Miller, who was very popular in the '20s, is all but forgotten today. In retrospect he was hugely influential in the shaping of country music. The evidence is in this collection of 20 songs recorded in 1928 and 1929.

Miller's singing is eerily prescient of that of Jimmie Rodgers, the Singing Brakeman, and it may have been the model for Rodgers' "blue yodel" style. One song on *The Minstrel Man*, "Lovesick Blues," was heard by the young Hank Williams, who made a signature of it 20 years later. Miller's own signature song was the great "Anytime."

It's obvious that Miller had a great way with a song. And what a band he had behind him: Tommy and Jimmy Dorsey on trombone and reeds, Eddie Lang on guitar, and Arthur Schutt on piano. On the last three songs, young Gene Krupa takes the drum chair from Stan King, and Jack Teagarden bumps Tommy Dorsey over to trumpet. Not surprisingly, the playing is terrific.

But this album is still Miller's showcase. He was a fabulous talent whose star got lost in changing times and values. Whereas Al Jolson, a Northern minstrel star, found Hollywood, Miller eventually found oblivion. Although the comedy skits on *The Minstrel Man* are from the tradition that eventually peaked with Amos & Andy, and are now politically and culturally unacceptable, they should not blind us to the brilliance of Emmett Miller.

Michael Tearson

The band's self-titled debut, a shameful hybrid of Pearl Jam and Alice in Chains, deserved all the derision it received. But its sophomore effort, *Purple*, contained hints of original thought and crafty songwriting. The new disc, *Tiny Music... Songs from the Vatican Gift Shop*, is startlingly original and creative.

While the group's first two albums were fairly one-dimensional, the new one tackles a variety of music styles, from mellow jazz to high-octane garage rock. The band may have grown up on grunge, but its members have learned to temper rage with resource. And they do it with style, weaving each track into a glorious mixture of grace and power. "Big Bang Baby" merges Led Zeppelin stomp with the tunefulness of Cheap Trick, "Lady Picture Show" features psychedelic guitar shimmers and engaging vocal harmonies, and "Art School Girl" starts with a kitschy pop riff reminiscent of Steve Miller before bursting into an

explosive chorus that has more in common with Blue Cheer. In addition to the musical change of direction, Stone Temple Pilots has adopted a healthier, if not necessarily sober, attitude. Most of the songs on this album are either whimsical or triumphant, and they all exhibit a newfound lust for life.

For a band with more dirty laundry than John Popper, *Tiny Music* is a huge musical achievement.

Jon Wiederhorn

Second Toughest in the Infants

Underworld

WAX TRAX!/TVT 7420, 73:07

Sound: B+, Performance: B+

Underworld became famous in the underground club scene in 1994, injecting a healthy dose of guitar licks and sexily processed vocals into formulaic dance hits. If the group was known for a particular formula, it was for turning expected tunes on their ears. *Second Toughest in the Infants* preserves this approach (most notably in the electronic guitar anthem "Juanita," the album's opener) but experi-



ments further into the sound spectrum to unearth more new and appealing ideas: Detroit-influenced techno, dubby blues, and robotic electro flavors. And while many electronic dance acts have tried to integrate the quick percussive rhythms of the hybrid genre commonly referred to as drum & bass, it's Underworld that has come closest to successfully recontextualizing its elements (as on the effervescent "Pearl's Girl").

A few listens are necessary to really make a fair judgment of Underworld's latest effort, especially if dance-influenced music is not your cup of tea. At first, there seems to be little cohesiveness in *Second Toughest*, but further spins reveal that this just might be the glorious point.

Tamara Palmer

Kismet

Márta Sebestyén

HANNIBAL HNCD 1392, 46:16

Sound: B, Performance: B

As the lead singer of the Hungarian group Muzsikás, Márta Sebestyén has been resurrecting traditional Hungarian folk music for years. The members of Muzsikás have never been purists, however, and on her own, Sebestyén has even made Hungarian technopop, albeit with dubious success. But on her latest solo CD, *Kismet*, she may have found the true vehicle for her remarkable voice.

Like the singers of Le Mystère des Voix Bulgares, Sebestyén is at once innocent and world-weary, with a gentle nasal snarl coupled with a vibrato that sounds like she has a

whammy bar in her throat. It's a vocal quality you might hear in Indian dhrupad singing. In fact, on "Hindi Lullaby" she sets an American lullaby to Indian music, wrapping her captivating voice in sinewy coils around the melody.

Although Sebestyén sings songs from Bulgaria, India, and Russia, she finds a common thread that unites them. Arranger and multi-instrumentalist Nikola Parov puts Irish whistles and tablas on the Bulgarian lament "Sino Moi," while the Irish tune "Leaving Derry Quay" sounds like a Greek lament crossed with Celtic bluegrass.

Singers Loreena McKennitt, Sheila Chandra, and Lisa Gerard have made hybrid World Music recordings, but Sebestyén's voice is more deeply rooted within the folkloric tradition. She doesn't just evoke the atmospheres of an ancient time, she sounds like she could actually be performing at some ancient music crossroads.

John Diliberto

Bob Mould

RYKODISC RCD 10342, 42:37

Sound: B, Performance: B+

When Bob Mould was working on the last Sugar album, *File Under Easy Listening*, he ran into a formidable creative obstacle. He knew how he wanted the songs to sound, but in translating them to his bandmates, the wires of communication got snarled and Sugar wound up spending endless hours in the studio recording the same tracks over and over again. As a result, Mould scrapped the band and decided to play everything on his new, self-titled album himself. He also chose to record many of the songs in one or two takes, passing up technical proficiency in favor of creative spontaneity. It's a technique that's been skillfully practiced by artists ranging from Neil Young to Lou Barlow, and it works for Mould as well.

Bob Mould is an intensely confessional disc that runs the gamut from passionate ballads to ball-busting rockers, exposing the artist as both a creative force and an emotional wreck. For much of the album, Mould carries on in the same vein as he did with Sugar, but there's less of a pop focus. Although the songs have simple verse/chorus architecture, Mould manages to incorporate a wide range of bizarre noises and alluring hooks. "Next Time That You Leave" trades off gentle guitar playing with distorted rhythmic dives and features dynamic vocal harmonies; "Egoverride" blends underwater guitar sounds with a



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ce: B+

The Bad Brains and
24-7 Spyz, the slamming
trio dedicated to delivering
a crunchy heavy-metal assault.
of Slayer, a pinch of P-Funk, and a
of Fishbone, and you might get a better
ure of where these nasty boys are at.

Frontman Jimi Hazel makes a strong bid
for living guitar-hero status, flying up and
down the fretboard with impressive facility
while leaning heavily on the wah-wah pedal in
the great, expressive tradition of his name-
sakes, Jimi Hendrix and Eddie Hazel. And he
also demonstrates a new-found knack for
writing and singing melodic pop tunes
("Burned," "Free To Be," "Crushonya," and
"Eyes Don't Lie") that harkens back to Hen-
drix's more lyrical offerings ("One Rainy
Wish," "Drifting," "Long Hot Summer," and
"Electric Ladyland"). Jimi Hazel's anthemic
statement, "No Hope for Niggaz," is a virtual
roll call for the Black Guitarists Hall of Fame.

Spyz bassist Rick Skatore offers his own
jaundiced take on Los Angeles culture in his
sole contribution, "El Lame," which contains
the line: "If this is what it's all about, I'm
checking out." And though the prolific pen of
Jimi Hazel accounted for the bulk of the hard-
hitting material here, Spyz covers a couple of
tunes, turning in faithful yet typically intense
renditions of The Association's "Along Comes
Mary" and Love's "7 and 7 Is."

This album is a huge leap forward for an
exceptional, hard-rocking trio. *Bill Milkowski*

Golden Heart
Mark Knopfler

WARNER BROS. 9 46026, 70:22
Sound: A, Performance: B

Mark Knopfler's guitar work is so shimmering, luminous, and expressive that it

makes us overlook his monotone, clenched-jawed vocals. Of course, those who dig the Bob Dylan/Leonard Cohen/Lou Reed school of singing will have no problem whatsoever with Knopfler's rather listless vocal approach on *Golden Heart*. I, for one, am more intrigued by how he makes his guitar sing, particularly on such gentle songs as "I'm the Fool," "Nobody's Got the Gun," and the lovely title track. But he can also deliver nasty grunge tones, which he does with raunchy authority on the punchy "Don't You Get It," on the funky "No Can Do," and on his biting paean to the queen of all shoe buyers, "Imelda."

A distinct Irish folk music influence comes across in Knopfler's use of Uilleann pipes, fiddles, and pennywhistles on "Darling Pretty," "Donè with Bonaparte," and the lilting "A Night in Summer Long Ago." And he conjures up an Acadian vibe on the buoyant two-stepper "Cannibals," featuring Jo-El Sonnier's Cajun accordion, and on "Je Suis Désolé," which has Knopfler trading acoustic licks with slide guitar ace Sonny Landreth.

Knopfler's poetic observations about love, loss, and the human condition may score with some. But it's his tasty, fluid six-string work that really registers with me. *Bill Milkowski*

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JAZZ~BLUES

RECORDINGS



New Moon Daughter

Cassandra Wilson

BLUE NOTE

CDP 8 32861, 61:59

Sound: A, Performance: B+

Late in his career, Miles Davis took some guff for raiding Cyndi Lauper's repertoire for the ballad "Time After Time"; some felt it was inappropriate for an artist of his stature to cover a No. 1 MOR hit. Yet Davis maintained that jazz needed fresh standards and that reinterpreting "Body and Soul" ad infinitum wasn't his idea of fun. And one more thing: He liked "Time After Time."

This seems to have been Cassandra Wilson's thinking for *New Moon Daughter*. There's certainly some novel payoff for a jazz vocalist in covering Robert Johnson, as Wilson did on her acclaimed 1993 album *Blue Light 'Til Dawn*. But that her new album includes songs done by Hank Williams, U2, and The Monkees is all the more intriguing. The real point is that this rising star seeks

to expand the list of standards. And, of course, she *likes* these songs.

Actually, The Monkees' "Last Train to Clarksville" provides one of

the over-tune of Son Ho further of the rable blues. Betwe sortment of Carmichael here she mixes in five originals, all with ments built around Throughout, Wilson tralto comes through w tional ease.

Wilson scats
 What criticism Wilson received has centered around her ability for an unwavering tempo aura. I have no problem with a mellow milieu, but new textures could enliven the proceedings without altering the torchy ambience. Other than Graham Haynes' cornet on "Strange Fruit," *New Moon Daughter* is pretty much a string-driven affair. If it were just a bit brassier, Wilson would be all the more fetching.

Steven Stolder

joe locke quartet

Joe Locke brings his straight-ahead interpretations to nine Henry Mancini songs on *Moment to Moment*, the vibraphonist's American label debut. Mancini's works, most often heard in lush, MOR arrangements, lend themselves well to the traditional jazz settings found here. But these are not, by any means, formulaic, out-of-the-box, four-piece arrangements.

Eddie Gomez, one of the finest bass practitioners around, brings a dark, haunting, and almost frightening arco bass to "Whistling Away the Dark." On "Charade," pianist Billy Child's modal arpeggios and drummer Gene Jackson's syncopated rhythms add an underbed of mystery to the verses, which skillfully segue into a walking bass swing during the chorus. The interaction

among the musicians is so smooth, it sounds as if they have been playing together for decades.

Moment to Moment: The Music of Henry Mancini

Joe Locke Quartet

KEYSTONE/MILESTONE

MCD-9243, 56:50

Sound: A, Performance: A



The real star here is the band's namesake. Joe Locke is one of the premier vibists of our day and one of the great soloists on any instrument. He glides almost effortlessly through the melodies with great subtlety and attention to detail. Locke's solos are so musical and so seamlessly a part of a song's essence, it is difficult to imagine that they were not written into the song's fabric by Mancini himself. In particular, Locke's improvisations on "Moon River" and "Moment to Moment" transform the tunes without compromising their identity or integrity. They remain instantly recognizable and, at the same time, forever changed for the better.

Dan Levi

Pharoah Sanders

Message from Home

VERVE 314-529-578, 49:15
Sound: B+, Performance: A-

Probably more than any other saxophonist, Pharoah Sanders moves in the musical direction that John Coltrane charted late in his career. It's obvious in Sanders' urgent, rolling, 'Trane-like tone. And how he moves with grace from elegant statements to squealing frenzy. And when he rides modal tidal waves of sound. And it is particularly obvious in the way his instrument issues a spiritual call rooted in ancient traditional musics and headed straight to the future.



On *Message from Home*, Sanders' sound is embedded in a dark and murky mix typical of all Bill Laswell productions. But it's a satisfying melting pot, with the delicate sounds of Foday Musa Suso's kora bubbling to the top one moment, Hamid Drake's tablas percolating the next, and Tibetan bowls resonating moments later. Michael White's violin adds sonic spice to "Noziphoo," and Bernie Worrell's keyboard wizardry funks up "Tomoki." Most striking of all in *Message from Home* is "Kumba," a lovely collaborative composition from Sanders and Suso.

Larry Blumenfeld

The New Standard

Herbie Hancock

VERVE 314 529 5842, 72:06
Sound: A+, Performance: B-

For his first straight-ahead outing since *Quartet* in the early '80s, legendary pianist Herbie Hancock uses both the past and present for inspiration. Rewriting contemporary "standards" for a thoroughbred jazz ensemble, Hancock adopts the approach used by jazz musicians past, possibly hoping to challenge the current bleak state of retro/revisionist jazz.

Lushly recorded with an outstanding cast—John Scofield, Michael Brecker, Don Alias, Jack DeJohnette, and Dave Holland—*The New Standard* draws from a catalog of '60s and '80s pop hits. The album's opener, Don Henley's "New York Minute," is barely recognizable, the original dirge transformed into a sailing romp with nimble solos all around. DeJohnette and Alias create a bubbling Brazilian percussion intro for Stevie Wonder's "You've



Got It Bad Girl"; the band then quickly launches into a freewheeling improv. The wistful melody of Simon and Garfunkel's "Scarborough Fair" remains intact, yet the players find plenty of sustenance in a medium-tempo swing treatment. Hancock is exhilarating, executing a maze of elevating phrases met at each turn by DeJohnette; the two ratchet up the solos, notch by notch, until Brecker restates the melody.

Other tracks don't fare as well. Prince's "Thieves in the Temple" is a plodding, rote remake; "Norwegian Wood" is uninteresting as a sleepy waltz. And although Alias's congas and Scofield's muted guitar create a wondrous mood on Peter Gabriel's "Mercy Street," the song wanders aimlessly. Finally, Kurt Cobain's "All Apologies" works for the sheer oddity of its inclusion and handling: Sco on guitar-as-sitar (a guitar synth, perhaps?) and Hancock on neo-ragtime keys.

A better idea would be to take these tunes into the truth-revealing confines of the Village Vanguard and watch Hancock and band discover this material afresh, in the same manner Hancock did 30 years ago on Miles Davis' remarkable *Four and More*. Then *The New Standard* might just live up to its lofty title.

Ken Micallef

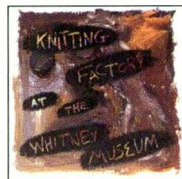
The Knitting Factory at the Whitney Museum

Various Artists

KNITTING FACTORY WORKS
KFW 161, 52:15

Sound: A-, Performance: A-

The Knitting Factory is New York City's prime venue (they call it a laboratory) for



experimental jazz, rock, World Music, poetry, video, performance art, or anything that defies categorization. A veritable Who's Who of the avant-

garde has graced its stage: Philip Glass, Laurie Anderson, Yoko Ono, John Zorn—just about everyone on the outer limits of music today. Almost from the beginning, the Knit recorded all its live shows, so the idea of starting its own record label to give exposure to unsigned artists just seemed to fall into place naturally. (It now has about 100 titles in print.) The *Whitney* compilation showcases 10 Knitting Factory artists who gave a series of live concerts at the museum during its Biennial exhibition in 1995.

One highlight is saxophonist Roy Nathanson (ex-Lounge Lizard, current Jazz Passenger) and keyboardist Anthony Coleman performing a little magic on Charles Mingus's "Orange Was the Color of Her Dress, Then Silk Blue," a soulful dance for

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GUMBO NOUVEAU

Nicholas Payton

VERVE 314 531 199, 57:01

Sound: B+, Performance: A

Nicholas Payton's recording of early New Orleans jazz repertoire, *Gumbo Nouveau*, is a perfect way for the Young Turk to bridge the gap between old and new, between our hunger for innovation and our near-uncontrollable appetite for reissues. To accomplish this, the 21-year-old trumpeter uses traditional Big Easy standards (like "St. James Infirmary" and "When the Saints. . .") as springboards into a powerfully modern style, his speedy, focused soloing laced with echoes of Satchmo.

With Jesse Davis on alto sax and Tim Warfield on tenor sax, Payton buttresses



his action with decisive young talent that can swing ("Whoopin' Blues"), bop ("Down in Honky Tonk Town"), linger ("Way Down Yonder in New Orleans"), or zing into improv ("Weather Bird"). Pianist Anthony Wonsey adds some energetic dexterity on "I Gotta Right To Sing the Blues" and "L'il Liza Jane," while the rhythm section of Reuben Rogers (on bass) and Adonis Rose (on drums) never allows Payton's flights to soar too far from their axis.

More confident and challenging than *From This Moment*, Payton's 1994 debut, *Gumbo Nouveau* further solidifies his place in the shadow of Louis Armstrong. In this time of bridging gaps and pleasing people, that's a very good place for Nicholas Payton to be. *Bob Gulla*

horns that jape, swing, and wail in an almost gospel kind of way. It's over in 4:46, and you'll wish it went on longer. The Tronzo Trio's take on "Monk's Dream" is right on, with Dave Tronzo's brilliant, electric slide guitar pulling off a true Monk trajectory (quite a feat!). Andrea Parkins bangs out clusters of notes (à la Cecil Taylor) on "automata" as Reuben Radding's bass rolls out a tidal wave on the bottom and Kenny Wollesen's drum kit churns textures into rhythms. On "Roofys 7," by The Paradox Trio, a throbbing underbelly is teased by Matt Darriau's soprano sax doubling Brad Schoepach's electric guitar. (Imagine The Mahavishnu Orchestra at a more sedate pace.) And yes, there's a lot more.

The Knitting Factory's recordings serve as an outreach program for some of the newest, most cutting edge music around. For those looking for adventurous sounds, the *Whitney* compilation is a good place to start. *Steve Guttenberg*

Night Song

Nusrat Fateh Ali Khan
& Michael Brook

REALWORLD/CAROLINE

CAROL 2354, 48:07

Sound: B-, Performance: A

Night Song is the kind of record whose mood ensnares so thoroughly that each listen yields another quiet treasure. Were *Night Song* in English, I would trace every lyrical nuance and every harrowing intonation. Because it's not, and because most of

Nusrat Fateh Ali Khan's vocals are a kind of devotional scattering, I have to judge this album mostly on instrumental criteria.

Which is a shame. Not only because Khan is considered in various quarters to be the greatest living exponent of Qawwali (the mystic song ritual of Sufism) and to possess one of the world's greatest voices, but because *Night Song* is a quiet little revolution of an album. With nary a trace of techno, disco, or other common East-meets-West production gimmicks, the Pakistani superstar is presented in a contemporary ambient rock setting not unexpected of Peter Gabriel or U2. Global music, at long last.

While the most striking thing about *Night Song* is its sustained, dark velvet mood, the individual songs bear repeated listening. Entranced by the low harmonics of Khan's instrument, you might miss the bluesy kora lick and major-key vamp on "My Comfort Remains." Or how the high-tech ambience of that track segues flawlessly with the rootsy guitar, bass, and drums of "Longing." There are strains of Daniel Lanois' gossamer earthiness in the production and some tricks that Eno might use, but collaborator Michael Brook has come into his own as the guy to build a sonic world around you.

In 10 years, if arena rockers are dropping mystic Persian vocalise over their guitar solos, you heard it here first. *Mark Schwartz*



Luna

Astor Piazzolla

HEMISPHERE/IRS 8 35595, 56:45

Sound: B, Performance: B+

57 Minutos con la Realidad

Astor Piazzolla

INTUITION INT 3079, 53:11

Sound: B-, Performance: B-

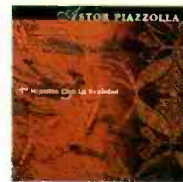
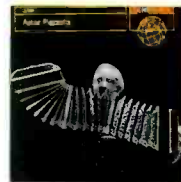
Astor Piazzolla was always more than a World Musician or sophisticated folk artist. His Tango Nuevo ensemble embodied tango's roots and the classical heights to which he aspired. That's evident on both these albums, recorded a few years before his death in 1992.

Luna, recorded live in 1989, showcases a vibrant performer whose music was emboldened, but rarely compromised, in concert. Piazzolla thought in terms of color and shading as much as notes and rhythms. On this album, he used rather odd dissonances, crossing lines with his second bandoneon player (Daniel Binelli), and used the inside of the piano and string-scraping techniques to evoke various moods.

Although Piazzolla did compose for orchestra, his music had an orchestral sensibility even when performed by a sextet. *Luna's* "Camorra 3," in particular, shows off his arranging gifts with a Gershwin-esque bravado, as if he were strutting down the street, grabbing at life. His musicians, especially the brilliant pianist Gerardo Gandini, always played big. Gandini could strut with tango authority one moment and lash out with splashing solos that recall Cecil Taylor the next.

57 Minutos con la Realidad (57 Minutes with Reality) is constructed from sessions produced by Kip Hanrahan, the man responsible for bringing Piazzolla's music to American audiences in the mid-'80s. Although it doesn't hold together the same way as the concert date, the performances and compositions remain undiminished. "Imágenes" is a vibrant work; on the extended "Mumuki," Piazzolla works toward abstract terrain, creating an impressionistic chamber-music sound that owes as much to George Crumb as it does to tango.

It's because of these compositions that Astor Piazzolla's passing is so sad. Fortunately, I suspect that a trove of live recordings like *Luna* is out there, waiting its turn to be unearthed. *John Diliberto*




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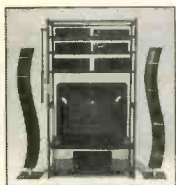
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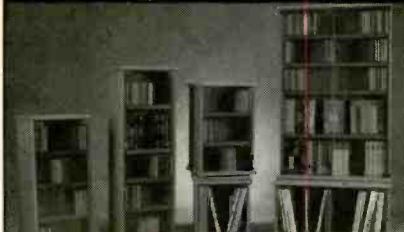
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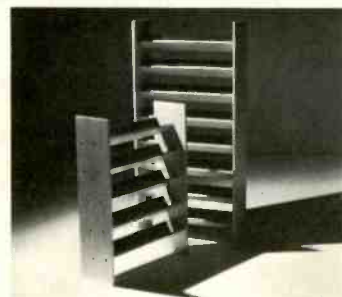
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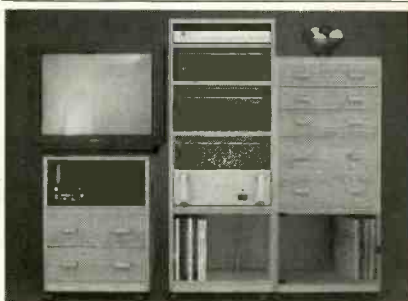


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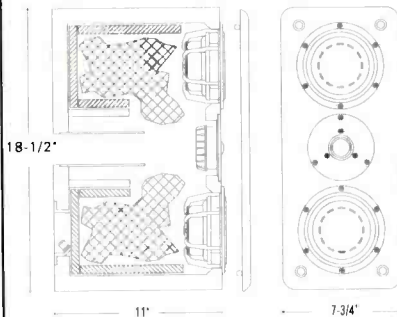
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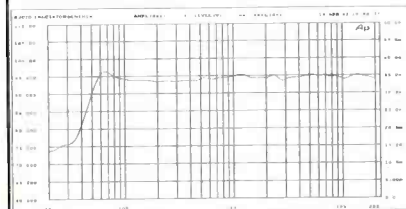
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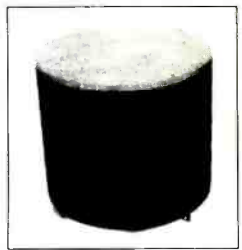
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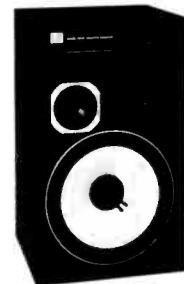
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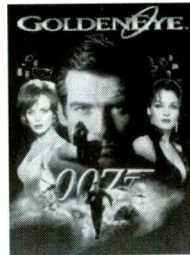
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PlayBack

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For literature, circle No. 125

GRADE: B+



AUDIX NILE X SPEAKER

Audix is mainly known for its professional performance mikes and high-end monitors, of which the Nile X (\$1,995 per pair) anchors the top of its Studio Series line.

The Nile X is a very good hi-fi speaker; no shortcuts were taken with these large bookshelf-size units (22½ x 10 x 13½ inches). Features include two 7-inch Kevlar bass drivers, a 1-inch cloth-dome tweeter, and a very heavy (45 pounds each), internally braced, inert cabinet. Power handling is rated as 50 to 350 watts.

Having heard the Nile X previously during a professional console mix, I was impressed with its performance as a home speaker—if placed correctly. With a slotted rear port, this speaker can

overemphasize the bass in the 40-Hz region unless it is placed a minimum of 3 feet



GRADE: B+

from any walls. (Audix plans another version with a front port.)

I set up the Nile X pair on metal stands with spikes, 4 feet from the wall behind them.

Sonically, the speaker was very neutral in the mid-range and treble. There were no

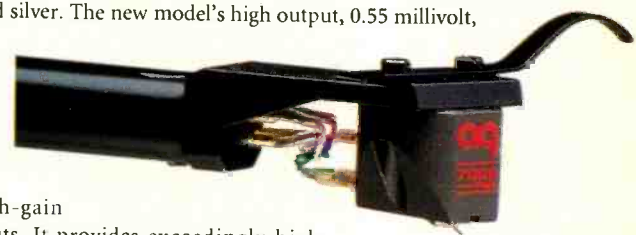
cabinet colorations, and the tweeter exhibited no sibilant "s" sounds on female vocals. Excellent tone on piano and violin.

John Gatski

For literature, circle No. 126

AudioQuest 7000Fe5 Phono Cartridge

The latest in AudioQuest's excellent 7000 series of moving-coil cartridges is the Fe5, named for the purity of its iron coil core ("five-nines," or 99.999%); the coils themselves are of solid silver. The new model's high output, 0.55 millivolt, makes it compatible with virtually any solid-state preamp having a moving-coil input and with some solid-state and tube preamps having high-gain



moving-magnet inputs. It provides exceedingly high resolution and does not reduce low midrange energy, as do many other cartridges. This gives the 7000Fe5 the flat, neutral timbre required in a system that mixes phono with other program sources. The 7000Fe5 is highly dynamic but without exaggeration and ringing. Track the 7000Fe5 at 1.8 to 1.85 grams, set the vertical tracking angle so that the cartridge is slightly tail down, give it about 50 hours to break in, and you'll get terrific sound. The only painful part about this cartridge is its price tag: \$2,550.

GRADE: A

Anthony H. Cordesman

For literature, circle No. 127

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The Sensible Sound, Issue #54



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Stereophile
Vol. 19, No. 4, April 1996

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Martin G. DeWulf
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