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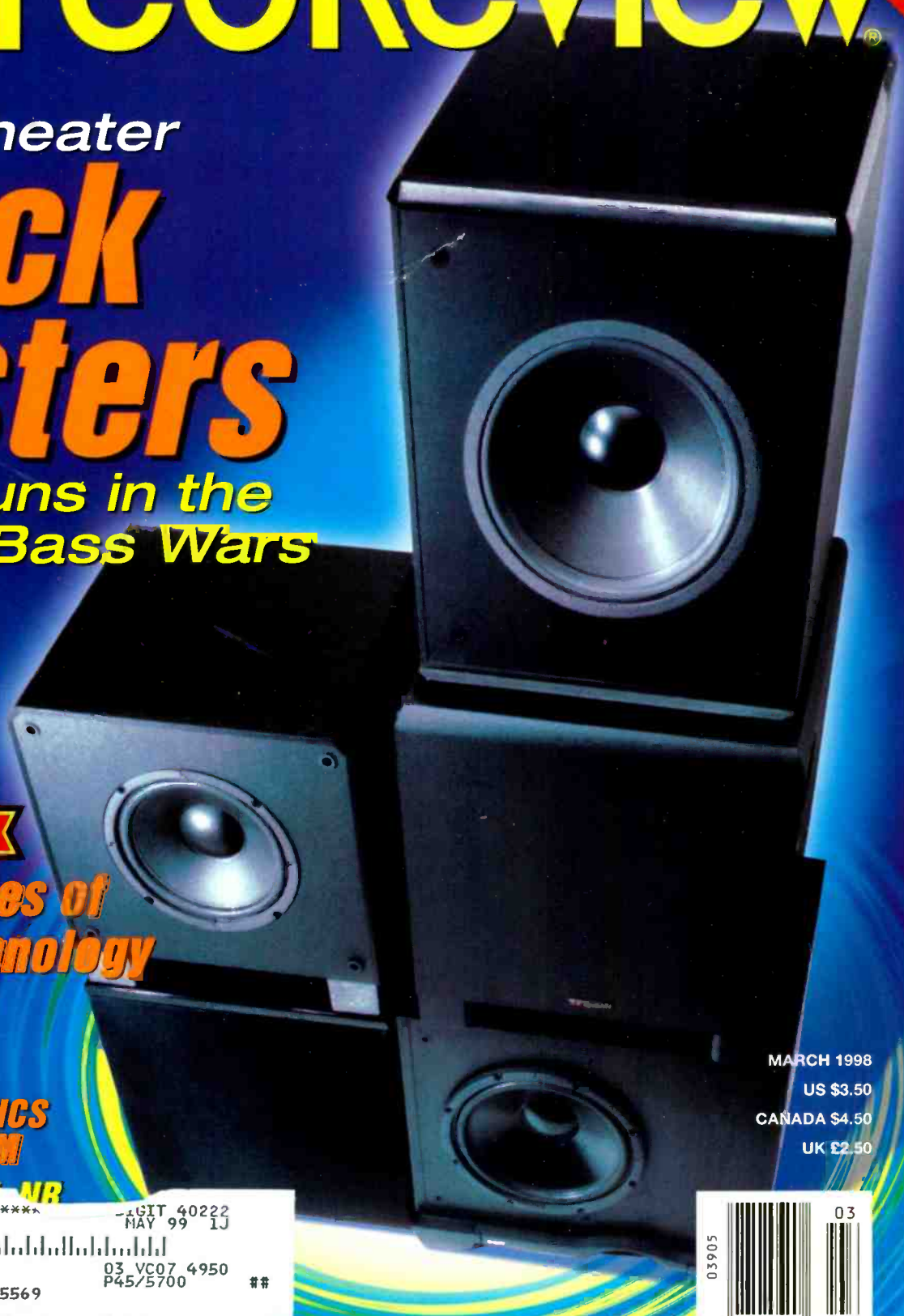
THE WORLD'S #1 A/V MAGAZINE

# StereoReview

Home Theater

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5 Top Guns in the Bottom Bass Wars



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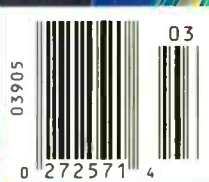
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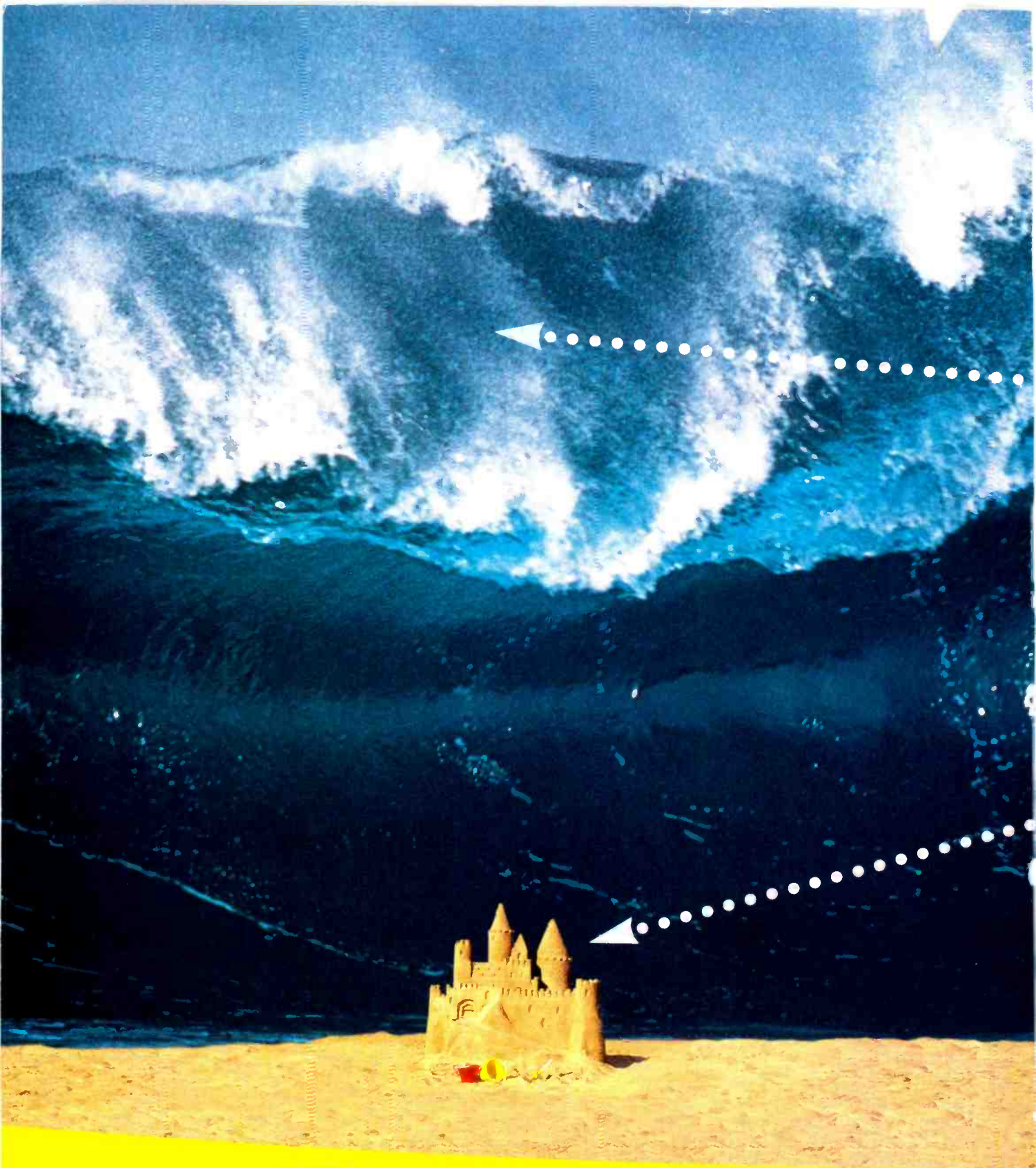


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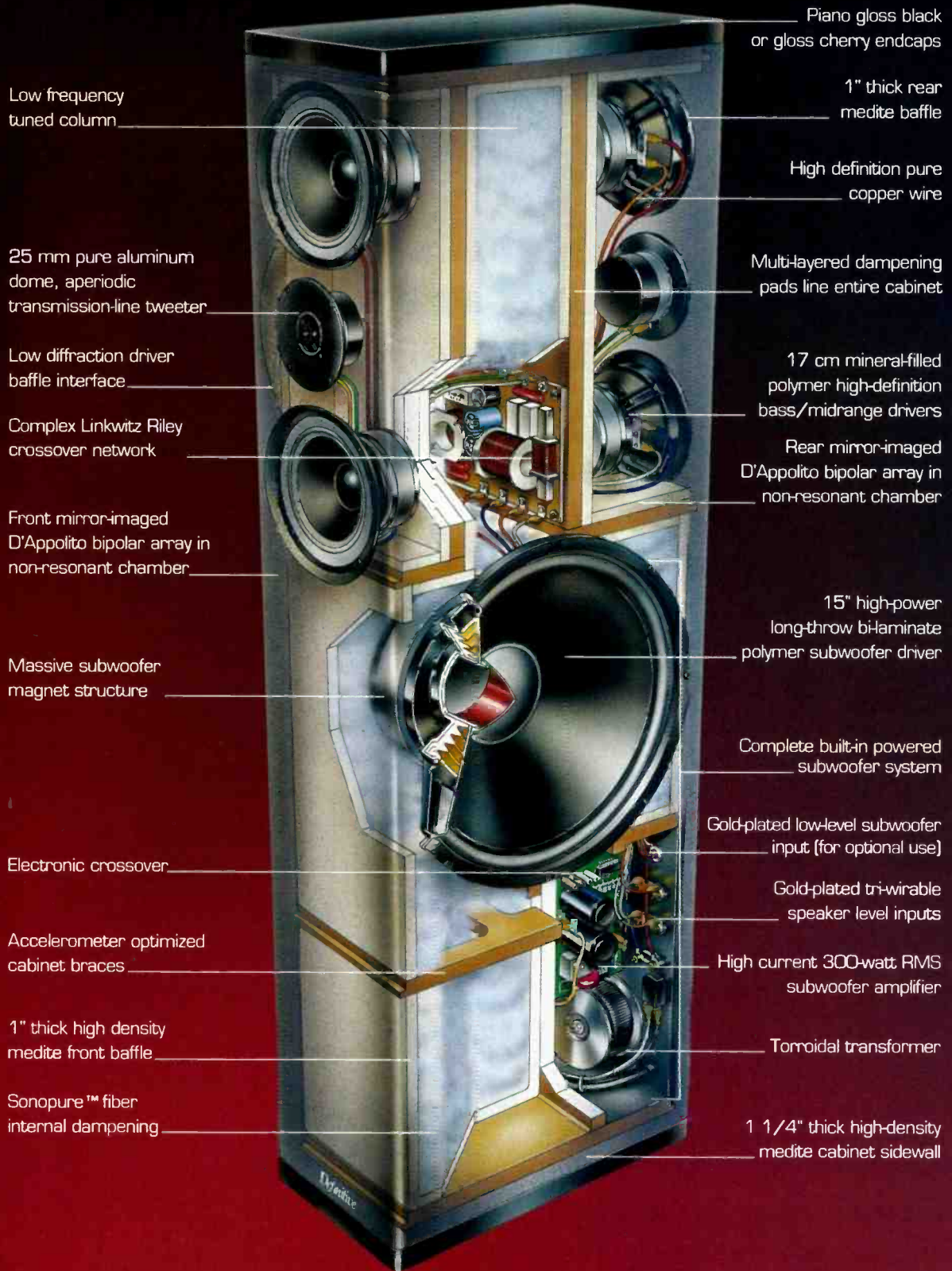


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# bulletin

BY BOB ANKOSKO & WILLIAM LIVINGSTONE

## cat's back, zep rules

Yusuf Islam, the Seventies artist formerly known as Cat Stevens, has made his first recording in nearly two decades. It's a song called "The Little Ones," a tribute to children killed in Bosnia and Scotland. Islam, who abandoned the celebrity life in 1977 and became a Muslim educator, made his first concert appearance since then in Sarajevo, Bosnia, last November. A live recording may be released this year. . . . Metal pioneer Led Zeppelin has been certified by the Recording Industry Association of America as the second top-selling group after the Beatles (whose total sales are nearing 100 million). By the end of 1997, Led Zep's cumulative sales reached 63.8 million.

## divx update

Digital Video Express (Divx), inventor of the controversial DVD-offshoot system that plays regular DVDs and limited-play Divx discs (see "Pay-Per-View DVD," December 1997), has announced that 100 Divx DVD titles from several movie studios will be available this summer when Divx players from RCA, Panasonic, and Zenith hit stores. The company expects 500 titles to be available in the first year.

## operatic operations

Recent research reveals that young American adults are increasingly interested in opera. As if in response, Doubleday has published *The American Opera Singer* (\$40) by Peter G. Davis, music critic for *New York* magazine, and BMG Classics has issued a companion two-CD set of recordings made by thirty-six American opera stars between 1906 and 1995. The U.S. Postal Service has also issued a set of stamps honoring the singers Lily Pons, Rosa Ponselle, Lawrence Tibbett, and Richard Tucker. Further afield, La Scala opera



## minidisc gets the big push

Half a decade has passed since Sony introduced MiniDisc (MD) and Philips the Digital Compact Cassette (DCC), both hailed as successor to the almighty analog cassette. Of course, DCC has since fallen by the wayside, and while MD has found a respectable niche in radio broadcasting, it hasn't caught on as a home recording format here in the U.S. Still, Sony is far from giving up on MiniDisc. Spurred by the format's rousing success in Japan and declining cassette sales, Sony is bolstering its 1998 MD lineup with ten new models and plans to spend millions to promote the format this year. Meanwhile, other well-known audio companies are taking a second look at MD. Denon, Kenwood, JVC, Sharp, Aiwa, and Sanyo are beefing up their MD offerings, and Pioneer and Yamaha will roll out their first home recorders. On the media side, Maxell is pushing MD in its advertising and offering its MD74 discs in four-packs that sell for as low as \$20 in some stores. TDK's new MD-XG blanks, in 60- and 74-minute lengths, sell for about \$7 and \$9 each, while Sony MDs are available at list prices ranging from \$13 for a two-pack to \$55 for a ten-pack.

company in Milan, Italy, is working with TDK to archive more than 5,000 hours of original open-reel recordings from 1951 to the present on CD-R.

## pirate plays

When songs from Pearl Jam's new album "Yield" appeared on the Internet in "near-CD quality"

a couple of months before its scheduled February release, the band and its record label (Epic) feared that the leak would hurt sales of the new release. As it turned out, most of the cyberpirates were Pearl Jam fans; one of them argued that, if anything, the postings generated advance publicity that would yield *more*

sales — not less. Nonetheless, most agreed to remove the pirated material on request from lawyers. . . . Elsewhere in the deep dark world of audio piracy, \$100,000 worth of duplicating equipment seized in a sting has been donated to the Library of Congress's National Library Service for the Blind and Physically Handicapped to produce books on tape.

## csw's retro warranty

To commemorate its 10th anniversary, Cambridge SoundWorks has retroactively extended the warranty to 10 years on every nonpowered speaker system it has sold since July 1988. CSW also increased the warranty on all its current nonpowered speaker systems to 10 years.

## hard copy

"DVD Video: The New Wave in Home Entertainment," a brochure that explains the features and benefits of the DVD format, is available for free from the DVD Video Group. Call 213-845-0160, or e-mail [getinfo@dvdvideogroup.com](mailto:getinfo@dvdvideogroup.com). . . . *The POOGE Chronicles*, a book of sixteen articles from *The Audio Amateur*, guides do-it-yourself audio enthusiasts in modifying their equipment to improve performance. Price: \$24.95 plus shipping. To order, call 888-924-9465.

## recognition

Rock star philanthropist Elton John was knighted in England at the beginning of the New Year and should now be addressed as Sir Elton. . . . The Trumpet Awards, given in Atlanta by Turner Broadcasting, single out African-Americans who have succeeded in their fields and inspired others to excel. Among the latest honorees are Whitney Houston, Kenneth "Babyface" Edmonds, and Wynton Marsalis.



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# Stereo Review



**ON THE COVER**

Bigger bass boxes: clockwise from top right, the Energy ES-12XL, Klipsch KSW300, B&W ASW2000, PSB Stratus SubSonic 3i, and Velodyne VA1012-XII. See page 62 for details.

Digital Imaging by  
Chris Gould

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BY KEN C. POHLMANN



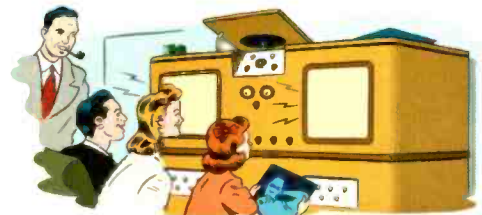
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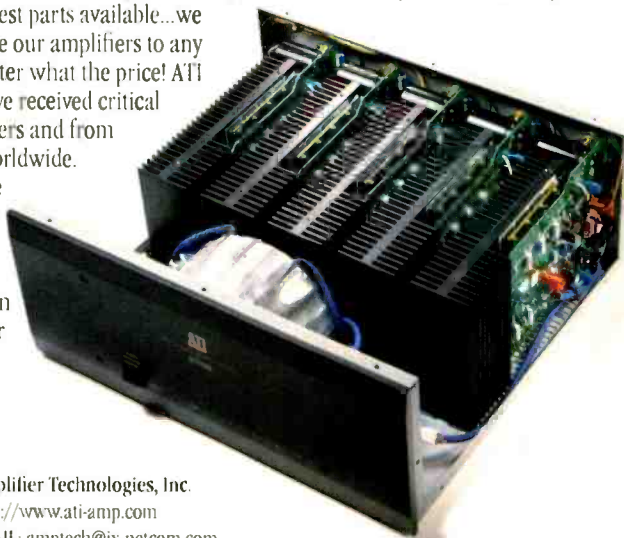
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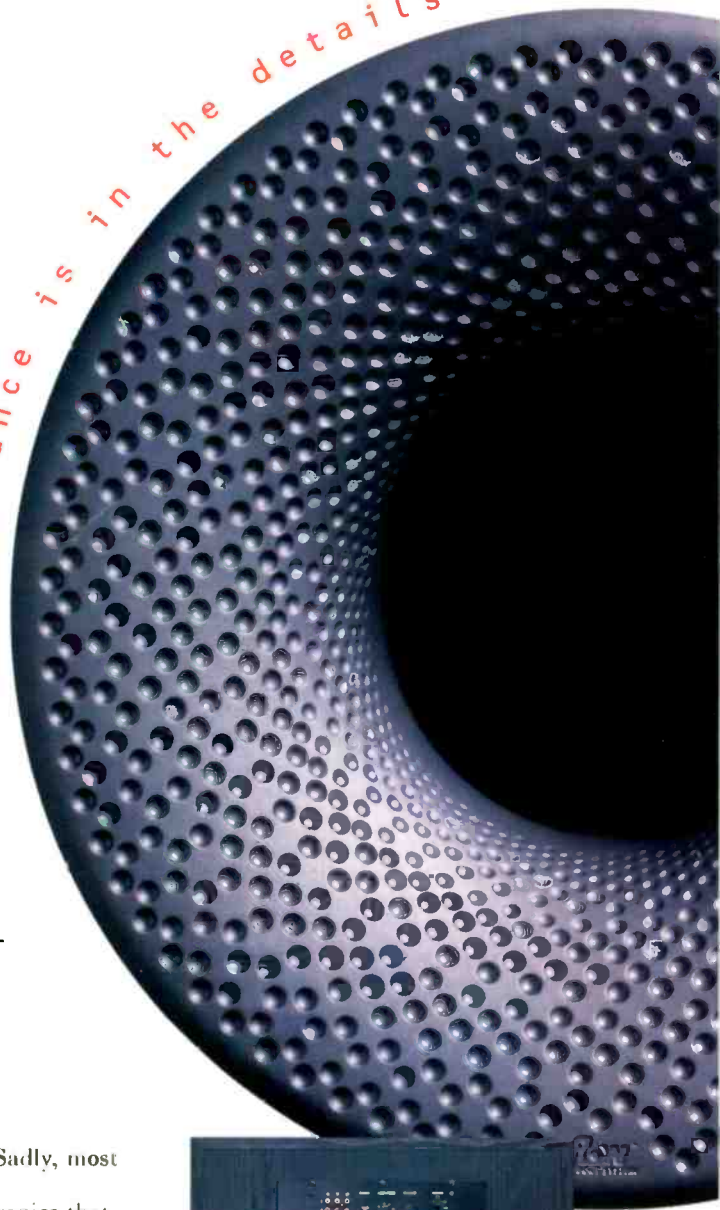
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*ASW2000 rear view featuring high current toroidal power supply and discrete 175 watt amplifier*

**home recording**

Rich Warren's "The Future of Home Recording" in January clarified the swirl of digital recording formats. My own adoption of the MiniDisc as the successor to the venerable audio cassette took into consideration its relatively greater imperturbability to magnetic fields, its protective cover (which the CD and DVD should have had), its superb track-editing and tiling facilities, its portability (greater than CD's), and, not least, according to my 56-year-old hearing, its sound quality, which comes within a heartbeat of that of CD. **Richard Reid**  
Grand Rapids, MI

In the 1970s, the tape cassette gained prominence because it made our record collections portable. Instead of griping about its inferior sound quality (greatly enhanced over the years) and even more inferior song-locating ability, we were glad just to have portable music. With the invention of the MiniDisc and recordable CD, many of the inherent limitations of tape have been superseded.

What has also been superseded is the public's need for recording devices. I recently archived the last of my LPs onto MDs, but in most cases I could have simply bought the CD. Home recording is now a hobby rather than a necessity. My CDs are easily portable, and I have yet to see the logic in making a recording of something I already own, especially when it is recorded on the most durable medium in the history of information storage. There are only two reasons to buy one of the advanced digital recording systems: fun or piracy. And my MD recorder provides me with more fun than any other piece of audio gear ever.

**Larry Bainbridge**  
Marcellus, MI

Various people quoted in "The Future of Home Recording" seemed baffled about why particular formats either catch on like wildfire, catch on slowly, or leave almost as soon as they arrive. I feel it's because the manufacturers are releasing new products too quickly for consumers to absorb them. It's all happening too fast.

The manufacturers should slow down on their production and release of all these new formats. Let consumers have a chance to check things out and decide for themselves which is best for them and their needs. I refuse to jump on the bandwagon every time a new format comes along.

**Christine M. Rockledge**  
Manchester, CT

Here's what people want: the ability to record on (a) erasable discs that will (b) play on a regular CD player and can (c) be easily

edited like a MiniDisc but with (d) no compression or loss of data and (e) cost less than \$10 apiece. When that is available, an avalanche of millions of buyers will go for it, including me. In the meantime, a huge number of consumers will continue to refrain from buying. It almost seems that manufacturers are insulting our intelligence with products so obviously different from what we want. Thirty dollars for a blank CD-RW? Get serious!

I suspect that concerns about piracy are affecting the judgment of the hi-fi industry's decision makers. Depriving consumers of the technology they want does not reduce the activity of pirates; it just keeps the rest of us from spending our money.

**Tom Slocombe**  
Edmond, OK

**digital ins and outs**

How do "coaxial" digital inputs and outputs differ from the "S/PDIF" inputs and outputs that utilize RCA jacks and are in common use in computer sound cards and recording equipment? I have a Digidesign Audiome-dia III PCI A/D-D/A card in my Macintosh computer. Is it possible to convert from the RCA-type S/PDIF inputs on this card to the "coaxial" type? What about the optical outputs that are commonly found on home CD players? Can these be converted to my RCA-type digital inputs? **James Weisbin**  
New York, NY

*The way we use the terms, a "coaxial" digital connection is the same as an RCA-type digital connection. "SPDIF" or "S/PDIF" simply refers to the standard Sony/Philips Digital Interface, and your sound card will work just fine with the coaxial/RCA digital outputs found on home audio equipment. An optical output can be converted to a coaxial/RCA input only by using an accessory device designed for that purpose or by running the signal through another digital component that has an optical input and a coaxial output.*

**rerecordable CD vs. MD**

I was a bit upset at David Ranada's January test report on the Philips CDR870 rewritable CD (CD-RW) recorder. His bias was clearly shown in prejudicial statements like, "The CDR870 was sonically superior to all the MiniDisc machines we have tested, and I'd be willing to bet that it is better than any possible MiniDisc recorder." He never stated which machines it was tested against, or how much better the CDR870 was than the MD recorders. It sounds more like hearsay and bias than an objective comparison.

Well, I love MiniDisc! You can do so

much more with it than any other format out there, such as combining tracks, dividing tracks, deleting tracks, moving tracks around, and being able to rerecord the same disc up to a million times. In addition, it offers absolutely great-sounding recordings, direct track access, smaller discs that can fit in your pocket, blank discs for only \$3 to \$6, and a case that protects against fingerprints. I can't think of any product I have bought in the last ten years that has made me so excited.

MiniDisc may not sound quite as good as CD, but the difference is very small, maybe even negligible. I have not been able to tell the difference in my MD recordings from the CD originals. **Thomas Gantt**  
Van Nuys, CA

*Technical Editor David Ranada replies: My "prejudicial" statement was based on what Sony's Roger Lagadec, a digital audio expert, told me when I asked if it was possible, given an "infinitely good" ATRAC encoder, for MD to be as sonically transparent as CD. His well-considered answer was "No." That's because the ATRAC audio data-compression system used by MD — even when it's operating "perfectly" — does not save enough of the right kinds of audio information (Dolby Digital does much better). The Philips CD-RW recorder, despite its non-bit-accurate recording, is sonically transparent to true 16-bit digital input signals. Nonetheless, I am also a fan of the MD system and think it works superbly in the primary application for which it was designed: replacing the analog cassette.*

**more divx fallout**

Over the past few months, I have read with disquieting interest the articles written about the Divx pay-per-view video format being touted by Circuit City and backed by Disney, DreamWorks, Paramount, and Universal. I have even heard rumors that some people in the music industry find the thought of pay-per-play music attractive. If this is where the entertainment industry is headed, I desperately want to be left behind.

In the same way that Gutenberg's printing press democratized learning and literature in the fifteenth century, the mass media of the twentieth century have democratized music, the arts, and news. People no longer have to be wealthy to listen to a symphony played by a fine orchestra. Radio and the recording industry have brought all kinds of music to everyone. The cinema and television have done the same for drama, comedy, and news. What was once available only to the privileged, powerful, and wealthy is now within the grasp of almost everyone.

Now that we are about to enter a new



# Marlboro



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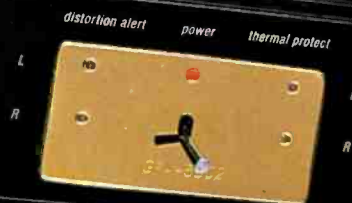
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amplifier

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To produce this remarkable amplifier, Adcom started with an enormous toroidal power transformer. Totally separate secondary windings and independent ground connections assure each channel is completely isolated from crosstalk and



# GFA-5802

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Adcom's new GFA-5802 power amplifier also has exceptionally large capacitors to store large amounts of DC current for supply to the speakers.

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We use only International Rectifier Hexfets transistors in the signal path of the Adcom GFA-5802. These Hexfet circuits are reference grade, hybrid MOSFET transistors which reproduce all the punch and muscle of bipolar devices but with the musical sound of tube amps. And since the GFA-5802 has only three gain stages it out performs comparable amps which usually have five stages or more. The shorter the path of power resistance, the better the sound.

The GFA-5802 comes with versatile binding posts for easy speaker hook-ups. Accepting either standard stripped or 'tinned' wires, single or dual banana plugs or spade lug connectors, the GFA-5802 is a great match for any system. And since it can drive virtually any speaker system regardless of its impedance, even the most demanding speakers will sing beautiful music. Additionally, the GFA-5802 also comes equipped with two sets of binding posts for each channel. These extra binding posts allow the GFA-5802 to accommodate speaker systems that have 'bi-wire' capability.

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century and millennium, someone wants to take all that away from us once again. Live theater, opera, ballet, and most professional sporting events are already beyond the means of ordinary people, so let's take away movies, music, radio, and television, too, with \$10 movie tickets, personal seat licenses, cable TV, and pay-per-view.

I hope Divx will be a wake-up call for the masses. It is time to vote with our wallets.

**Jim Kolendo**  
Parma, OH

Nothing I've seen in *Stereo Review* has ever been more entertaining than Corey Greenberg's column, "The High End." Just when I thought things couldn't get any better than "Stooge-o-Phonics," he took satire to an entirely new level with January's "Divx Is a Four-Letter Word!"

**Fred Danowski**  
Stratford, CT

Corey Greenberg's column on Divx was offensive. Worse, it was bad writing.

1) Name-calling is not just bad manners. It indicates that you don't have strong arguments. If you're going to call folks "evil, greed-driven swine," you should have a lot better justification than he gave for it. I was sort of neutral on Divx before I read this column. Now I think that maybe it's a good idea if that's the best its opponents can come up with.

2) Sarcasm is very difficult to carry off in print. I'm sure many readers scanned the column, saw the words "most important, brilliant, downright sexy," "coolest," and "most awesome," and went away thinking Mr. Greenberg was praising the system.

3) Mr. Greenberg comes off as dishonest. I got the impression that if anyone retorted, "Well, you said . . .," he would reply, "No, I didn't say that. I said a *cynic* would say that."

4) He missed an opportunity to educate. Readers unfamiliar with DVD and Divx and some of the controversy would be totally perplexed by the column.

I explained the Divx concept to several of my friends who don't keep up with video technology (none of them had even heard of DVD). All of them thought the technology was intriguing and would be willing to buy it if the cost was right. They hate returning videos to the rental store.

Divx is not intended to compete with video rental, which is already so cheap that you cannot compete with it on cost. Where you are going to see Divx sold is at Wal-Mart or Safeway. Those who don't think it will succeed don't understand the depth of anger folks have at paying late fees at the video store. And compared with the cost of other entertainment, nobody will be concerned about the \$3 extra-play charge.

Divx is just a natural step toward online ordering of videos. The problem is that cur-

rent Internet bandwidth is nowhere close to that of Divx, but it will be someday, and when it is, the technology will be very similar. You'll download what you want and pay online to decrypt it.

**Michael Morse**  
Garrett Park, MD

I have put off buying a DVD player, but now that I've heard about Divx, I'm going to buy one right away. I will not wait for Divx. I am not going to pay extra for a player with Divx capability so that I can pay an outrageous \$4.99 for a rental. I can already rent a DVD for two days from a local store for \$2.50. It isn't so difficult to return a movie that I'm going to get sucked into Divx. People who don't want to travel to the rental store are going to get pay-per-view from cable or satellite anyway.

**David F. Toone**  
Tucson, AZ

### delos DVD spectacular

In December's "The High End," Corey Greenberg does an entertaining job of discussing the new Delos *DVD Spectacular* disc. He is right about its sound quality — it is a brilliant piece of work that signals the dawn of a new age in home audio — but wrong in stating that the disc was "encoded in Dolby Digital AC-3, held at its maximum bit rate of 384 kilobytes per second for the best sound quality."

The Dolby Digital transcription of the *1812 Overture* was done at a data rate of 448 kilobits (not kilobytes) per second. In addition, there is a "bonus" track on the disc [Title 29] that has a transcription of the same *1812* done at Dolby Digital's maximum rate of 640 kbps (some DVD players may not be able to play this section). While I have not been able to detect any digital artifacts with program material recorded at both the lower and higher rates (or at the 384-kbps rate used for most movies), the potential for the higher rate with audio-only releases should help allay the fears of the anti-data-reduction establishment.

**Howard Ferstler**  
Tallahassee, FL

### "catalog update" update

American CD rights to *Prologue* and *Ashes Are Burning* by the British progressive-rock group Renaissance — subject of last November's "Catalog Update" in the Popular Music section — have been reacquired by One Way, P.O. Box 6429, Albany, NY 12206-0429; telephone, 800-833-3553. □

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**Richard Stoltzman: Aria** ♦ Clarinet virtuoso in arias from Cimarosa, La bohème, more. (RCA Victor Red Seal) **C 21338**

**Schumann, Symphony No. 2: Konzertstück For 4 Horns** ♦ Philim. Orch./Christian Thielemann. (DG) **C 21368**

**Robert And Clara Schumann, Lieder** ♦ Barbara Bonney, soprano. (London) **C 21376**

**Dennis Brain: Mozart, Horn Concertos** ♦ The classic EMI recordings remastered! (EMI Classics) **C 21543**

**Mozart, Symphonies Nos. 39 & 40** ♦ Amsterdam Baroque Orch./Koopman. (Erato) **C 16689**

**Israel Philharmonic Orchestra: 60th Anniversary Gala Concert** ♦ With Stern, Shaham, other great violinists. (RCA Victor Red Seal) **C 16978**

**Haydn, Violin Concertos Nos. 1 & 4** ♦ Pinchas Zukerman, violin & conductor. (RCA Victor Red Seal) **C 02715**

**Stravinsky In America** ♦ LSO/Tilson Thomas in music Stravinsky wrote while living in the US. (RCA Victor Red Seal) **C 21203**

**Pablo Casals: Bach, The 6 Cello Suites** ♦ The historic 1936-39 recordings newly remastered. (EMI Classics) **C 21016**

**Holst, The Planets** ♦ An English Romantic's vision of worlds beyond Earth. Philim. Orch./Sladkin. (RCA Victor Red Seal) **C 20301**

**Mahler, Symphony No. 1; Songs Of A Wayfarer** ♦ Dietrich Fischer-Dieskau. Bavarian RSO/Kubelik. (DG Originals) **C 18759**

**Mozart, Symphonies Nos. 33 & 35, K. 385 "Haffner"; Serenade No. 9 "Posthorn"** ♦ ASMF/Iona Brown. (Hansler Classic) **C 21047**

**Pavarotti's Greatest Hits** ♦ Favorite arias (Puccini, Verdi, more) coupled with popular songs. (London) **C 21298**

**Chaconne** ♦ Splendid, seductive dance music from the Baroque age. Goebel, cond. (Archiv) **C 18130**

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**Puccini, La Rondine** ♦ Angela Gheorghiu, Roberto Alagna. (EMI Classics) **C 18797**

**Brahms, Symphony No. 4** ♦ Vienna Phil./Kleiber. (DG) **C 03114**

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**Ives, Three Places In New England; New England Holidays** ♦ Baltimore SO/Zinnman. (Argo) **C 13417**

**Strauss, Der Rosenkavalier (Highlights)** ♦ Te Kanawa, von Otter, Hendricks. Dresden State Opera/Haitink. (EMI Classics) **C 13419**

**Robert And Clara Schumann, Lieder** ♦ Barbara Bonney, soprano. (London) **C 21376**

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**Israel Philharmonic Orchestra: 60th Anniversary Gala Concert** ♦ With Stern, Shaham, other great violinists. (RCA Victor Red Seal) **C 16978**

**Haydn, Violin Concertos Nos. 1 & 4** ♦ Pinchas Zukerman, violin & conductor. (RCA Victor Red Seal) **C 02715**

**Stravinsky In America** ♦ LSO/Tilson Thomas in music Stravinsky wrote while living in the US. (RCA Victor Red Seal) **C 21203**

**Pablo Casals: Bach, The 6 Cello Suites** ♦ The historic 1936-39 recordings newly remastered. (EMI Classics) **C 21016**



**McCartney, Standing Stone** ♦ Paul McCartney's Celtic-inspired work. London SO & Chorus/Foster. (EMI Classics) **C 21395**

**Bruce, Symphony No. 1** ♦ Chicago Symphony Orch./Georg Solti. (London) **C 16046**

**Sibelius And Nielsen, Violin Concertos** ♦ Maxim Vengerov. Chicago SO/Barenboim. (Teldec) **C 16049**

**Bach, Violin Concertos** ♦ Mullyova Ensemble. Victoria Mullyova, soloist. (Philips) **C 16189**

**Ravel, Bolero; Mother Goose** ♦ Acad. St. Martin in the Fields/Marriner. (Hansler Classic) **C 16528**

**The Best Of Handel** ♦ Water Music, "Hallelujah" chorus more. (Philips) **C 16162**

**Kernis, Symphony No. 2; Music Celestis** ♦ City of Birmingham SO/Wolff. (Argo) **C 16846**

**Beaux Arts Trio Plays Turina And Granados** ♦ Rarely heard trios by two Spanish masters. (Philips) **C 16929**

**Saint Francis And The Minstrels Of God** ♦ Songs of praise with the Early Music ensemble Altramar. (Dorian Discovery) **C 18040**

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# NEW PRODUCTS



**Yamaha** Yamaha's DSP-A1 surround-sound processor/amplifier can decode both Dolby Digital and DTS-encoded software and has six-channel inputs for external decoders of other types that may be developed. The amplifier section is rated to deliver 110 watts each to the five standard channels; there are also two 25-watt channels for optional front-effects speakers used by some of the processor's thirty-nine sound-field modes. The DSP-A1 has inputs and switching for six A/V sources and five audio-only sources, including CD, phono, tuner, and two recording loops. A system remote control is included. Price: \$2,599. Yamaha, Dept. SR, 6660 Orangethorpe Ave., Buena Park, CA 90620. Phone, 800-492-6242.



**Meridian** The Meridian Model 508.24 CD player is designed to be compatible with so-called "super CDs" mastered with Meridian's Model 518 processor, which uses psychoacoustic-based noise-shaping to yield an effective dynamic range said to be greater than is possible with the standard 16 bits. Precision reclocking circuitry is said to eliminate timing-error distortion. The transport has a carbon and glass-fiber disc clamp that is said to eliminate vibration. Price: \$3,495. Meridian, Dept. SR, 3800 Camp Creek Pkwy., Building 2400, Suite 122, Atlanta, GA 30331. Phone, 404-344-7111.

## Polk Audio

Polk's RT5000 home-theater speaker system consists of two RT3000p front left/right speakers with integrated subwoofers, a CS1000p center speaker with a built-in powered sub, and a pair of f/x1000 full-range surround speakers



switchable between dipolar and bipolar operation. The system is available finished in black, white, or rosewood veneer (shown). Each RT3000p speaker consists of a mid/high-frequency module on top of a separate but connected powered sub, with a total height of 50 inches. The surround speakers have identical two-way drive complements mounted on opposing baffles offset at a 45-degree angle from the speaker's front axis. Price: \$6,000. Polk Audio, Dept. SR, 5601 Metro Dr., Baltimore, MD 21215. Phone, 800-377-7655.

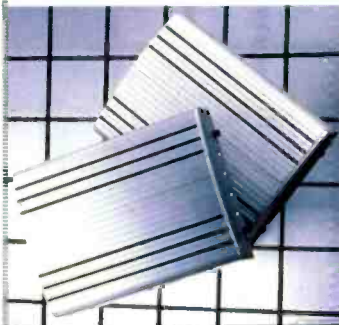
## Entech

The Number Cruncher 203.2 and the Number Cruncher 205.2 digital-to-analog (D/A) converters from the Entech division of Monster Cable are said to "smooth the sound and open the music coming from a CD player." Both converters are designed to accept a digital input signal from a CD transport and to feed an analog output signal to an amplifier, preamp, or receiver. Prices: 203.2, \$300; 205.2, \$450. Monster Cable, Dept. SR, 274 Wattis Way, South San Francisco, CA 94080. Phone, 650-871-6000.



## M&K Sound

The amplifier in the MX-5000THX Mark II powered subwoofer from Miller & Kreisel Sound is rated to deliver 400 watts rms. The maximum output of its dual 12-inch drivers is said to exceed THX requirements. Frequency response is rated flat within  $\pm 2$  dB to below 20 Hz. The black oak-finish cabinet measures 23 1/4 x 15 1/2 x 26 inches and weighs 115 pounds. Price: \$2,695. M&K, Dept. SR, 10391 Jefferson Blvd., Culver City, CA 90232. Phone, 310-204-2854.



# NEW PRODUCTS



**MSB** The MSB Digital Director digital switcher has two Toslink optical and four coaxial digital inputs, and one Toslink optical and two coaxial digital outputs. Digital inputs are selected automatically and routed to both the optical and coaxial outputs; manual selection is not possible. If two of the digital inputs have a signal present, the one at the lower-numbered input will be selected. Green and amber LEDs indicate the active and selected inputs. The Digital Director measures 17 x 6 x 2 inches and weighs 7 pounds. It is available finished in a metallic charcoal as shown or in a silver-gray finish. Price: \$399. MSB, Dept. SR, 14251 Pescadero Rd., La Honda, CA 94020. Phone, 650-747-0400.

## XS Technologies

The Strata Power Command Center from XS Technologies can protect up to five electronic devices from damage caused by power loss, brownouts, or power surges and spikes. It contains a microprocessor-controlled uninterruptible power supply that delivers a constant voltage by automatically decreasing output if the line voltage surges or boosting it if the voltage drops. A battery-backed power supply kicks in if the line voltage drops further. The self-standing unit can be rack-mounted with an optional kit, and its control panel can be mounted remotely. Two models are available. The Strata 800AV (\$599) has an 800-VA battery, the Strata 1000AV (\$749) a 1,000-VA battery. XS Technologies, Dept. SR, 3001 Curry Ford Rd., Orlando, FL 32806. Phone, 888-978-3241.



## Case Logic

Case Logic's KSW-100 and KSW-36 CD organizers are made of Koskin, which is said to look and feel like leather. The KSW-100 can hold up to 100 CDs along with their booklets and features a carrying handle. The KSW-36 can hold 36 CDs and booklets. Both organizers feature a zipper closure and pockets with a soft lining so that the CD's playing surface is not scratched. The booklets are held separately. Prices: KSW-100, \$50; KSW-36, \$30. Case Logic, Dept. SR, 6303 Dry Creek Pkwy., Longmont, CO 80503. Phone, 800-447-4848.



**B&W** B&W's Compact Digital Monitor series includes the CDM7SE, a three-way floor-standing model that's 37 $\frac{3}{8}$  inches high, and the CDM1SE and CDM2SE speakers for stand or shelf mounting. All have vented cabinets and are available in black ash, red ash, or cherry veneer. Prices (per pair): CDM1SE, \$1,100; CDM2SE, \$800; CDM7SE, \$1,800. B&W, Dept. SR, 54 Concord St., North Reading, MA 01864. Phone, 508-664-2870.

**Cerwin-Vega** Cerwin-Vega's HT-CTR25 center-channel speaker has dual 4-inch woofers and a 1-inch inverted silk-dome tweeter, all of them magnetically shielded. Dual ports are said to contribute to the speaker's high sensitivity, which is given as 92 dB. Frequency response is rated as 80 Hz to 22 kHz  $\pm$ 2.5 dB, nominal impedance as 8 ohms, and power handling as 150 watts. The trapezoidal enclosure, which measures 5 $\frac{1}{4}$  x 15 x 6 $\frac{3}{8}$  inches, is finished in black woodgrain vinyl and has a removable cloth-covered grille. Price: \$229. Cerwin-Vega, Dept. SR, 555 E. Easy St., Simi Valley, CA 93065. Phone, 805-584-9332.





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## NEW PRODUCTS



**Panamax** The Panamax MAX 1500 component-style surge protector is designed for high-end home-theater systems. It provides ten electrical outlets as well as protection for one telephone line, one coaxial feed from a satellite receiver, and two cable/antenna coaxial lines. Power-line-conditioning circuitry in the MAX 1500 is said to eliminate up to 99.9 percent of all electromagnetic and radio-frequency interference over its rated bandwidth of 100 kHz to 1 MHz. The rack-mountable unit has a height of two rack spaces. Features include sequential startup, automatic shutoff, and under/over-voltage protection. Indicator lights show line-fault or ground-fault conditions. The MAX 1500 has a UL 1449 surge-protector rating of 330 volts and can dissipate 672 joules of energy with a maximum spike capacity of 40,000 amperes. Price: \$449. Panamax, Dept. SR, 150 Mitchell Blvd., San Rafael, CA 94903. Phone, 800-472-5555.



**AudioControl** The AEQ-26 equalizer from AudioControl is designed for use with in-wall speakers. It features six bands of equalization centered at 45, 150, 300, and 700 Hz and 2.5 and 12 kHz. A programmable bass-cut filter concealed underneath the top cover allows the installer to set the bottom frequency limit for a speaker to protect it from being damaged by excessive low-bass signals. The factory-preset limit of the filter is 40 Hz. The AEQ-26 is rack-mountable; a standard front plate is also available. Price: \$249. AudioControl, Dept. SR, 22410 70th Ave. W., Mountlake Terrace, WA 98043. Phone, 425-775-8461.

### Ultimate

The SW-1212 powered subwoofer from Ultimate Sound has a 150-watt amplifier, a 10-inch driver, and a 10-inch passive radiator. It features an automatic power-on mode, and its level and crossover point can be adjusted with the supplied remote control.

Both line-level and speaker-level inputs and outputs are provided, as is a phase switch. The SW-1212 measures 19 x 15 x 17 inches and is finished in anthracite oak vinyl. Price: \$473. Ultimate Sound, Dept. SR, 138 University Pkwy., Pomona, CA 91768. Phone, 888-909-9988.



### Oracle

Oracle's Mentor Monitor two-way loudspeaker incorporates a 5 $\frac{3}{4}$ -inch woofer that crosses over to a  $\frac{3}{4}$ -inch tweeter at 3 kHz. The speaker's frequency response is given as 55 Hz to 20 kHz  $\pm 2$  dB and its sensitivity as 88 dB. It is recommended for use with amplifiers that can deliver between 25 and 200 watts per channel. Dimensions of the trapezoidal cabinet are 13 $\frac{3}{4}$  x 7 $\frac{3}{8}$  x 12 inches, and its weight is about 20 pounds. Available finishes are deep red (shown) and piano black. Price: \$2,100. Oracle, distributed by ACI, Dept. SR, 340 Bourque Blvd., Omerville, Quebec J1X 4G1. Phone, 819-868-0284.

### Rocktron

The HTD1 home-theater decoder is based on Rocktron's proprietary Circle Surround 5.2.5 matrix surround-sound technology. It accepts a stereo input and processes it to create left, center, and right front, left and right surround, and low-frequency-effects channels. It can also generate a phantom center channel. Separate decoding modes are provided for music and video. A Wide mode is provided to increase the surround-channel separation. Price: \$999. Rocktron, Dept. SR, 2870 Technology Dr., Rochester Hills, MI 48309. Phone, 248-853-3055.





SONY

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## PERIPHERALS

To test how well the latest CD species fulfills its promise, I asked two industry leaders, Hewlett-Packard and Ricoh, to send me their latest CD-RW wares for Windows/Intel PCs so that I could put them through their paces.

### HP SureStore

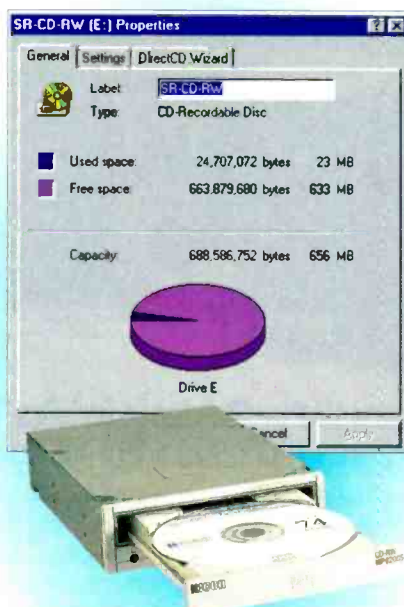
The Hewlett-Packard SureStore CD-Writer Plus 7110e is an external CD-RW drive (it is also available as an internal drive with a standard IDE disk-drive interface as the Model 7110i). It can write CDs at 2x speed and play them back at 6x speed. This translates into a write rate of 300 kilobytes per second (kB/s) and a read rate of 900 kB/s. The average access time is less than 350 milliseconds (ms). The drive contains a 1-MB buffer. The front panel is user-friendly. There is an audio headphone jack with volume control, a drawer open/close button, and two LEDs to indicate power/busy and writing. The drive's rear panel has two twenty-five-pin D connectors, an audio output jack, and a power input jack. Incidentally, Hewlett-Packard recommends that you use a PC with at least a 75-MHz Pentium, 16 MB of RAM, and Windows 95 or NT 4.0.

Physical installation of this external drive was a snap. I used the supplied cable to connect my PC's parallel printer port to the drive's data-input port; the second, pass-through connector let me reconnect my printer. (Hewlett-Packard warns that you may not be able to use the CD-Writer and the printer simultaneously.) I connected the external power supply to the drive and an AC outlet. There is no power switch; the power supply switches into standby mode when the drive is not in use. Finally, I connected the drive to my PC sound card's line input via a supplied stereo mini-jack audio cable.

The software portion of the installation was also uneventful. I loaded the supplied CD-ROM into my CD-ROM drive (not the still-to-be-installed CD-RW drive!) and followed the on-screen installation instructions. There was only one complication — the software assigned the E: drive address to the new drive, which disabled the CD-ROM that was already assigned to the E: drive. It was a simple matter, however, to resolve the conflict by reassigning the CD-RW to the F: drive. The CD-RW program

files themselves were written to the Program Files directory in my C: drive. If your PC does not have a CD-ROM drive, you can use the software supplied on a floppy disk to install the parallel-port driver files, then use the CD-RW drive (and CD-ROM) to complete the installation.

Following installation, I restarted my PC and clicked on the CD-Writer's file group, which revealed the variety of programs that accompanied the drive. Specifically, they include five Adaptec programs: Easy CD Audio to make Red Book discs, DirectCD to make data CDs (using the CD-UDF protocol), CD Copier to make duplicate or backup discs, CD-RW Eraser to erase discs, and Jewel Case Designer to create CD box



**Ricoh's MediaMaster MP 6200S is an internal drive that can be installed in a standard disk-drive bay. It is supplied with a SCSI interface card.**

and disc labels. The drive is also accompanied by LivePix Photo Collage software, which allows photos to be stored, enhanced, and manipulated on the PC.

Hewlett-Packard sportingly throws in a blank CD-RW (but no CD-R), and I lost no time in making my first CD-RW. I used Easy CD Audio to assemble a list of audio files residing on my hard drive and to write them to a CD-RW. Although the 2x writing speed isn't exactly lightning-fast, the process is quite painless, and the software even automatically inserts blank spaces between tracks and writes the table of contents on the finished disc. The result was a ten-track audio CD-RW that played

back through my sound card. Next I used the Erase program to erase the disc: it only took a minute or so to erase the table of contents, effectively making the disc blank again.

Then I tried CD Copier, which, as its name implies, is used to copy data from one CD to another. You can use the CD-RW drive as both the source and destination drive (by swapping discs) or use your CD-ROM drive as the source. When you are copying audio data, however, not all CD-ROM drives support digital audio extraction; you can use the program to test your drive to determine its exact capabilities. This release of CD Copier supports copying audio CDs only in the Track-at-Once mode, which means that it inserts a 2-second gap of silence between tracks. If you are making multiple copies it is best to copy your data to the PC's hard disk, then run copies from it; in addition, the software recommends that you use the program to test all data before copying it to check validity. CD Copier worked exactly as advertised, though reading from and writing to CD was painfully slow compared with hard-disk data manipulation.

Next I used DirectCD to format the blank disc; this is necessary if you want to drag and drop files from Windows Explorer or other programs. The process takes about an hour. That one-time chore aside, it was easy to move files to the CD-RW, use the "Save As" and "Send To" commands, and write, read, and erase files. In this application, the CD-RW really is as simple to use as a floppy disk or hard drive. However, there is a downside to this drag-and-drop convenience: after formatting, the disc's user capacity was reduced to under 500 megabytes. I also burned a CD-R disc with audio tracks and verified that it would play on a conventional CD audio player.

In addition, I formatted a CD-R disc (a 15-second process) so I could drag and drop computer files; after formatting, user capacity was about 611 megabytes. Finally, I verified the SureStore 7110e's playback abilities by playing an audio CD, a CD-R, my CD-RW, and a variety of CD-ROMs. In every case, the drive worked flawlessly. No matter which of its many features I was using, this was a terrific drive. The only drawback was that while the DirectCD software provided with the drive made creating CD-Rs a snap, it did not make it possible to create discs that were compatible with Windows 3.1 or



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"This is a true audiophile system for gamers who want PC speakers that sound as good (or better) than their home stereos." **-PC Gamer**

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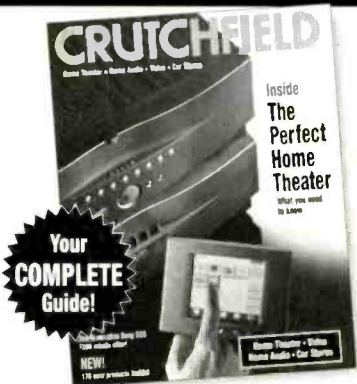
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## PERIPHERALS

other operating systems. For that I had to use Adaptec's EZ CD Pro, which was provided with the Ricoh MediaMaster drive. Hewlett-Packard's official single-unit blank-media prices are \$32 for CD-RWs and \$4.60 for CD-Rs, but street prices of both media are dropping fast. The Model 7110e retails for \$610 (the 7110i is \$495).

### Ricoh MediaMaster

The Ricoh MediaMaster MP 6200S is an internal CD-RW drive. Like the Hewlett-Packard CD-Writer, it reads at 6X speed and writes at 2x speed, and it incorporates a 1-MB buffer. Its average access time is 350 milliseconds. It reads all CDs, writes CD-Rs, and rewrites CD-RWs. It also supports the CD-UDF specification, allowing simple drag-and-drop operation. Its front panel is truly spartan, with only an audio headphone jack, up/down volume buttons, a drawer open/close button, and a power/busy LED indicator. The rear of the drive sports three connectors: a SCSI connector, an audio output connector, and a power connector. There is also a set of pins for setting the SCSI ID number and two SCSI terminators. Because it is an internal drive, the installation of the MP 6200S is slightly complex. In particular, I began by physically mounting the drive in an open PC bay, using the supplied screws. I set its SCSI number and termination, and plugged in power from my PC. I then plugged the supplied PE Logic SCSI-2 controller card into a 16-bit ISA slot in my motherboard and internally connected the drive and card with a supplied fifty-pin flat SCSI cable. The SCSI card, incidentally, also provides an external SCSI pass-through connector, which can be used to connect external SCSI devices.

The Ricoh drive comes with a variety of bundled software, configured for Windows 95 only. In particular, you'll find Adaptec's Easy CD Pro and DirectCD software, Seagate's Backup Exec software, and PE Logic's SCSI support drivers. As with the Hewlett-Packard CD-Writer, it was a fairly easy matter to install the software and start burning disks. The programs supplied with this Ricoh drive allow general-purpose data copying, with special provisions for audio files. Easy CD Pro lets you make audio CDs and data CDs as well as mixed-mode and CD Extra

discs. You can also make backup copies of CDs and jewel-case inserts. In other words, Easy CD Pro encompasses the same features as the Easy CD Audio program supplied with the Hewlett-Packard drive. DirectCD is the same program as bundled with the Hewlett-Packard drive. The Backup Exec program is handy for manually or automatically archiving large volumes of data; using its compression algorithm, you can fit up to 1.3 gigabytes (GB) of data onto a CD. I played with all of these programs and had no trouble executing any of the software features, and the Ricoh hardware drive worked without fault. For example, I used Easy CD Pro to copy tracks from various music CDs and burn them into a compilation CD-R. I used noncopyrighted titles for this test; as with any copying, it is important to observe all copyrights. Ricoh kindly supplies both a blank CD-RW and a blank CD-R. The Ricoh MP 6200S retails for \$699.

### driving away

In my opinion, CD-RW is a fabulous invention. PCs have always had erasable media, but they have been hindered by low capacity, high cost, or incompatibility. The CD-RW format instantly removes all these obstacles and, in fact, has a sporting chance at replacing the 1.44-MB floppy disk as the world's most ubiquitous data carrier. CD-RW can do everything a floppy can do, but with 400 times the capacity and at relatively fast speeds. In other words, it is like a gigantic floppy that bridges the gap between audio and computers. Moreover, the software provided with these drives lets you expertly assemble and store data, creating either erasable or permanent files: audiophiles who are also PC-savvy will absolutely love the audio possibilities.

So, should everyone rush out and buy a CD-RW for their PC? That depends. The DVD-RAM format is under development, and although different manufacturers have already announced incompatible implementations — which will impede universality — its still higher data capacity (2.6, 3.0, or 5.2 GB per side, depending on the version) will eclipse that of CD-RW. However, stand-alone CD-RW recorders like the Philips CDR870 could make CD-RW the next popular consumer audio-recording format. Clearly, CD-RW will fit into many diverse niches and engender further evolutionary developments — sure signs of a very fit species indeed. □



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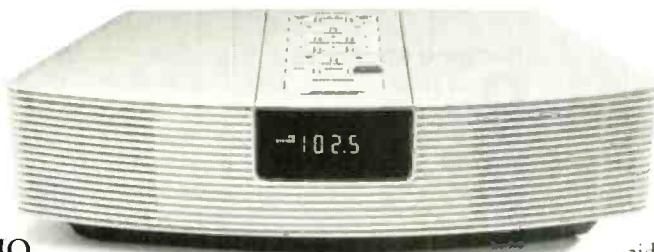
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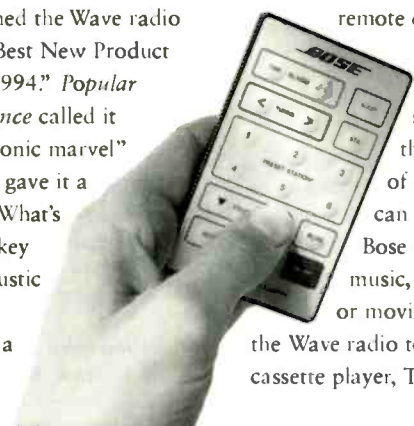
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# AUDIO Q&A

IAN G. MASTERS

## dipoles and dolby digital

**Q.** *I understand that the surround signal in Dolby Pro Logic is mono and designed so that you can't pinpoint the source of the sound, and that the best surround speakers spread the sound using bipolar or dipolar configurations, not aiming it directly at the listeners. On the other hand, in Dolby Digital you are supposed to be able to tell if a sound is coming from the left or the right, and hear it moving from one to the other. In that case, how do dipolar surrounds perform? Should I use regular front-firing speakers instead? And, cost aside, should they be identical to my front speakers?*

**Renato A. Mertens**  
Santiago, Chile

**A.** Not everyone would agree, but in my experience, the diffuse nature of the surround-channel sound in Pro Logic is largely a product of the time delay in that channel and its high-frequency rolloff. Using dipolar or bipolar speakers may enhance that effect a bit, but I've never heard a major difference between those and regular front-firing speakers. Similarly, I've used both types of surround speakers for Dolby Digital and have found that dipoles work just fine.

As for using identical speakers, that would be ideal if you can manage it. And it need not cost the earth: five small satellites together with a powered subwoofer can give you a high degree of tonal consistency without sacrificing anything in terms of spectral range.

## audio time-shifting

**Q.** *The radio stations in my area broadcast my favorite programs at odd hours, and I would like to record them so that I can listen at my own convenience. Does anyone make an audio recorder that can be programmed to record different stations at different times of the day?*

**Thomas J. Hilgen**  
Omaha, NE

**A.** Many early cassette decks had provisions for timer recording, and in Japan, where time-shifting audio was popular, there were many models of external timers to operate these machines. A few showed up on this side of the ocean, but they were all one-event devices, and none that I'm aware of had the capability of changing stations.

The timer functions have disappeared

from cassette decks, but it may be possible to program your VCR to record audio automatically if you can instruct it to tape from the line inputs rather than its internal tuner. This would allow multi-event recording but not, I'm afraid, changing stations.

Coupling the VCR together with a receiver with a programmable timer would allow you to record multiple events on different stations. Although timers have disappeared from today's receivers, some high-end separate tuners, such as Onkyo's Integra T-9090II, have timers. A clock radio with line-level outputs, such as the Bose Wave Radio, might also work for you.

Finally, if you can figure out how to program it, a universal remote control with "macro" capability and a built-in timer may be able to perform the tuner and VCR operations you need.

## hanging speakers

**Q.** *A lot of what I've read about speakers and their placement has to do with floor stands. Are there any negatives to hanging speakers from the ceiling using cables?*

**Lester Allen**  
Hollis, NY

**A.** The positioning of speakers is concerned with their relationship to neighboring surfaces and the main listening locations. Whether you prop them up on stands or hang them from wires makes little difference. The only drawback I can see to suspending them is that they would probably be quite difficult to move if you find that their position leaves something to be desired acoustically. Perhaps the best thing to do is to use makeshift stands to determine their optimal position — mere inches can make a difference — and suspend them only when you have determined exactly where they should go.

## cleaning overkill

**Q.** *I clean both my compact discs and vinyl LPs with isopropyl alcohol and bathroom tissue. I can see they're clean, but I worry that I might be doing some damage. Am I?*

**Kevin Kerr**  
Gastonia, NC

**A.** First, neither type of disc requires that drastic a cleaning regimen, although you're certainly far from the only person I've encountered who cleans with alcohol. The problem is that alcohol can

leach plasticizers out of a vinyl disc, rendering it brittle and subject to damage and noise. Most LPs need only a dry brushing before every play; liquids should be used sparingly, and nothing much stronger than distilled water is really necessary. And I'd be hesitant to use bathroom tissue, which can leave fibers behind. A clean dry cloth is better, or a dedicated record brush. And never put an LP away wet.

As for CDs, if you can see dust or fingerprints, I'd give them a wipe with whatever you use to clean your glasses. Otherwise, leave them alone unless they actually skip or cause your player to mute.

## tape typology

**Q.** *I recently purchased blank cassettes with normal, high-bias, and metal formulations (Types I, II, and IV). Is it really worth it to buy the premium formulations? Is there much improvement in the sound? Also, whatever happened to Type III?*

**Andrew Ludewig**  
Sewell, NJ

**A.** The advantages of the more expensive tape types depend on what you intend to do. Type II tapes offer better high-frequency performance and higher output than Type I varieties, and metal offers further improvements. But if you are making tapes to listen to in the car or on a boombox at the beach, save your money.

Tapes are generally good enough today that you can make high-quality recordings even on Type I tape, especially if the deck you're using has Dolby HX Pro headroom extension. The important thing is that the tape be closely matched to the recorder in terms of bias, equalization, and output level. Get that right — the easiest way is to buy a recorder with automatic circuits that optimize the settings for you — and use the highest level of noise reduction available, usually Dolby C or Dolby S, and you'll be surprised at the audio quality.

Type III tape was a dual-layer variety called "ferrichrome." It was expensive to make and offered very little advantage over the other formulations, so it quickly disappeared — but not before its number had been assigned.

**If you have a question about audio, send it to Q&A, Stereo Review, 1633 Broadway, New York, NY 10019. Sorry, only questions chosen for publication can be answered.**



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## Into the Darkness

A GUY IS WALKING down the street late one night, and he comes across another guy wandering around under a streetlight, hunched over. The first guy asks him, "Did you lose something?" And the second guy says, "I lost my car keys!" So the first guy starts looking too, but he can't find anything. Finally he says, "Don't you have any idea where you dropped them?" And the second guy waves his hand toward the shadows between the streetlights and says, "Somewhere up there." The first guy exclaims, "Well, then, why aren't you looking there?" The second guy says simply, "The light's better over here."

You might not think that's a particularly funny story, but, unfortunately, it explains a lot about the consumer audio industry. Many companies religiously use what I'll call Streetlight Thinking when developing new products. They push the envelope only where it's easy to push, and their so-called "new and improved" products might not be especially useful or welcome, but they persist in this approach anyway, precisely because it's an easy way to develop new products.

The audio industry is caught in a monumental example of classic Streetlight Thinking. Companies are scrambling to develop a new generation of digital audio technology. Although they will (I hope) add genuine improvements, such as multichannel surround sound, one of their principal "improvements" will undoubtedly be increasing the sampling rate and the word length. For example, many companies have proposed that any new digital audio format should use a sampling rate of 96 kHz and a word length of 24 bits. They are doing this not because it will make their products particularly better, but because it's easy to do.

A 96/24 format will theoretically provide a flat frequency response to 48 kHz and a dynamic range of 144 dB. For starters, however, no one has ever scientifically demonstrated that humans can perceive audio information at frequencies above 24 kHz, so half of the frequency response would be wasted. Moreover, as we understand the laws of physics, it is not feasible to design electrical equipment with a dynamic range of 144 dB.

Proponents of the "improved" specifi-

cations also seem to overlook the fact that neither microphones nor loudspeakers can linearly transduce audio signals spanning such huge frequency and dynamic ranges, nor can any known musical instrument operate over such ranges. These drawbacks have not prevented some enthusiastic individuals from proposing even mightier specifications, including a 192-kHz sampling rate and 36-bit words.

It is true that there have been a few lonely voices of reason. Bob Stuart of Meridian, one of the most thoughtful men in audio, has stated that for optimal transparency, a new consumer format should use a sampling rate of 58 kHz and a word length of 18 to 20 bits. Unfortunately, his scientific voice has been drowned out by the very loud babble of people driven by anecdotal "evidence" and intent on pushing the easy envelope.

**Let's agree on a 96-Hz/24-bit storage standard for DVD-Audio and then tackle the really tough problems.**

Perhaps they are still operating on the outdated notion that the audio storage element is the weakest link in the audio chain and thus requires the most improvement. In fact, that hasn't been the case since the advent of digital audio technology. Even some new *analog* technologies, such as cassette tapes coded with Dolby S, can exceed the performance of the signal chain that comes before and after the storage. But the marketing people, god love 'em, are champing at the bit to sell 96/24 products because they believe that consumers will buy them simply because those numbers are bigger than the CD standard of 44.1 kHz and 16 bits.

Now, don't get me wrong. I am, in fact, hesitantly in favor of a 96/24 format. It is my opinion that 44.1/16 is only marginally transparent, and because storage is, indeed, trivially cheap, there's no reason not to enjoy the luxury of obliterating this particular marginality. Most of all, I favor overkill like 96/24 because I hope that once and for all we can get past all the

nonproductive arguments about digital transparency and finally move on to address far more serious problems.

When you listen to audio playback, it isn't the 44.1/16 specification of the storage medium that limits your enjoyment. It isn't the 95-dB dynamic range or the 0.2-dB bump in your CD player's 0 Hz to 20 kHz frequency response that makes you unhappy. It is, instead, the choice and placement of the microphones, the recording and post-production equipment, and probably above all the interaction of your loudspeakers and listening room. Trust me, the acoustical nightmare created by that interaction, with its cavernous frequency notches and wacky phase relations, swamps the tiny imperfections introduced by the CD standard. Nevertheless, although I feel uncomfortable about proceeding without a clear scientific basis, I agree that the CD storage standard should be abandoned for an improved one.

I say this: Let's agree on a 96/24 storage standard, or something to that effect, and agree to slap people who make inane

comments about its sound quality. Then we can tackle the really tough problems of audio, problems like transducer technology, room acoustics, and the psychoacoustics of listening. Let's work to achieve transparency at 64 kilobits per second so that we can take full advantage of new wired and wireless communications channels for music distribution. Let's figure out how the human sensory systems really work and design virtual-reality technology that is both totally immersive and completely persuasive. Let's see, once and for all, which audio companies are the parasites who make profits from pseudo-improvements in technology, and which are the industry leaders who dare to invest the sums needed to make genuine breakthroughs. Meanwhile, don't be fooled by companies who shine the spotlights on themselves as they announce so-called revolutionary products. They know damn well that the truly exciting discoveries lie in the unexplored darkness that surrounds them. □





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only watching  
this much of its  
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## How I Got Started In Audio

FROM TIME TO TIME, I have been asked by readers how they can become hi-fi equipment reviewers. Frankly, I have always found this to be an unanswerable question, since in my case it came about through a unique series of events that are not likely to be repeated, although the story may be of some interest to today's readers.

For one thing, in my formative years (the mid-1930s) there was no audio (or video) industry as we now know it. Instead, we enjoyed acoustic phonographs and 78-rpm records of distinctly "lo-fi" quality (and with a typical 3- or 4-minute playing time), AM radios, and movie theaters (black-and-white only). These technological wonders were the ancestors of today's high-fidelity music and home-theater systems.

As a youngster, I was a voracious reader with an enthusiastic interest in science and technology. Purely by accident, I was introduced by a friend to the hobby of amateur ("ham") radio, and soon I was incurably hooked on electronics (a term that had not yet been coined). I became a licensed ham-radio operator at 14 and am still active as W2KFB today.

This interest logically led me to embark on an electrical-engineering program in college. During my junior year, the Pearl Harbor attack occurred. I enlisted in the Army Signal Corps reserve, completed my schooling, and two weeks after graduation went on active duty. In the following couple of years I received intensive training in radar technology at Harvard, MIT, and the Signal Corps Radar School. While I was en route to the Philippines, the atom bombs ended the war, and I spent the following year with my four-man radar maintenance team in the occupation of Japan.

Returning to civilian life. I joined the research and development staff of a large conglomerate that was involved with such diverse projects as medical electronics, motion-picture projectors, theater sound systems, and Doppler radar navigation systems, among many others.

During the late 1940s I noticed that some of my fellow engineers were spend-

ing their lunch hours in vigorous discussions of a subject that was totally unfamiliar to me. Intrigued, I soon became immersed in the arcane world of woofers, tweeters, and so on, and my life was irrevocably changed.

It started innocently enough. Our employer had no objections to our using its extensive laboratory facilities, outside of working hours, for measurements of our own amplifiers, tuners, and speakers. The theater section of the lab was equipped with loudspeakers (Altec Voice of the

**It all began innocently enough, with a group of engineers using our employer's laboratory facilities after hours to test our own amplifiers, tuners, speakers, and so on.**

Theater, Klipschorn, and others) as well as various amplifiers and appropriate test equipment.

As time passed, anyone who acquired or built a new piece of audio gear was invited to bring it to the lab for an objective evaluation. We soon developed a keen awareness of the "hype" that was then prevalent (and still is, to a greater or lesser degree) in promoting a new product.

Eventually, four of us decided to publish a newsletter — on a strictly part-time basis — to provide unbiased information about a variety of consumer audio components. *The Audio League Report* was probably the audiophile's equivalent (in microcosm) of the established consumer publications. It reached 5,000 readers, but unfortunately we were able to produce only seventeen issues over a three-year period! However, during its brief tenure the Audio League had established a reputation for unbiased and enthusiastic interest in the rapidly growing hobby of

high-fidelity music recording and reproduction.

My friend Gladden Houck and I went on to form a partnership, and in 1957 Hirsch-Houck Laboratories came into being. We had both left our original employer, but since we lived only a few miles apart we were able to continue our testing operations from our homes, still on a part-time basis. We outfitted ourselves with war-surplus test equipment and began to evaluate new audio components for various publications as well as manufacturers and dealers.

After a time, it became obvious to us that our testing activities had become too much for a reasonable part-time operation, yet the income was not enough to



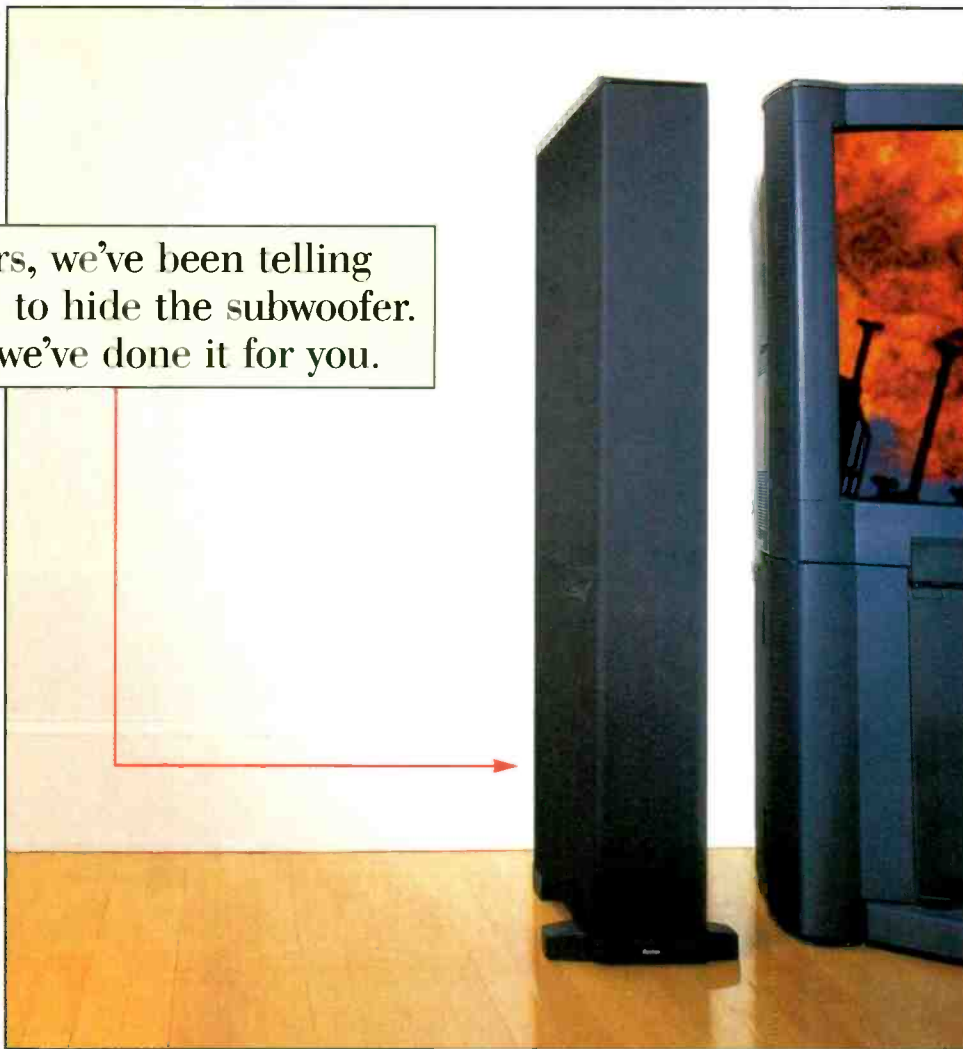
support both of us and our families on a full-time basis. Around this time, Ziff-Davis, then the publisher of *HiFi/Stereo Review* and *Electronics World*, made us an offer that could not be refused, compensating my partner for his share of our assets and securing my services, and the name of Hirsch-Houck Laboratories, for the exclusive use of Z-D publications.

My first *Stereo Review* test report appeared in the October 1961 issue and dealt with six stereo phono cartridges. The total number of my test reports for this magazine to date is close to 2,400, and combined with those done for other publications, the total is around 4,000!

This account may give the reader some insight as to why I have never been able to give a meaningful answer to those who ask me how they can become an equipment reviewer. The best I can do is to stress that you must be an enthusiast who is deeply interested and involved in the products and their application. □



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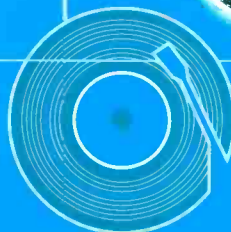
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# Onkyo TX-DS747 Dolby Digital Receiver

DANIEL KUMIN, START LABORATORIES

**T**hese days, just about as soon as I wave bye-bye to the latest low-cost, high-performance Dolby Digital A/V receiver, the UPS truck pulls up with a more recent example of the genre to take its place. The latest is the Onkyo TX-DS747, which has a few new twists but largely follows this manufacturer's familiar pattern for surround-sound receivers: solidly adequate power, flexible inputs and outputs (and plenty of them), powerful remote control, and a generally no-nonsense implementation and layout.

In its multichannel modes the receiver is rated to deliver 80 watts to each of the three front channels and 40 watts per channel to the surround outputs, all from 20 Hz to 20 kHz into 8 ohms at 0.08 percent total harmonic distortion (THD). The less-than-equal power to the surround channels is a bit unusual these days, at least in this price range. Then again, so is Onkyo's full-range, low-distortion spec for these outputs. On the whole, it's close to a wash, and our tests confirmed the spec. In stereo operation, the power ratings go up to 90 watts per channel, but in the real world

that is only 0.5 dB "louder" than the 40-watt surround rating.

The TX-DS747 looks very much like the standard Onkyo design of late. The faceplate is the usual boring black (or elegantly understated black, depending on your perspective), with the usual barely legible white lettering. The labels are actually gray-tinged rather than bright white, which certainly doesn't help them stand out from the black background. In compensation, the aqua-hued display window is encouragingly free of silliness, with easily readable primary data and mostly text-based secondary information, such as surround and tuning modes, though the text is far too small to read from a typical listen-

ing position. The front-panel readout is mirrored, mostly, by an equally simple and legible on-screen display, which also guides you through the receiver's setup routines.

At first glance the front panel appears conventional enough, with numerous pushbuttons, two small bass and treble knobs, and a large master volume knob. However, there is a third knob-like appliance, a round spinner with telephone-dial indentations (remember those?) that's labeled Smart Scan Controller. This is a "data wheel" that lets you riffle in both directions through displays, or through increments or decrements of adjustable parameters, depending on which of four adjacent keys you select. The first of these, Preset, lets the data wheel step through the memorized radio frequencies, and the second, Tuning, gives the wheel conventional manual or auto-seek tuning-knob action. The Surround button lets the data wheel step through the receiver's eight surround modes, four of them variants of Dolby Pro Logic (DPL), and Parameter lets you spin through all of the system and surround setup adjustments, which you select by way of the Enter key next door.

The Smart Scan Controller is a usefully integrated design that enables you to page through every one of the TX-DS747's modes and controls directly at the panel, without recourse to the remote control. For its part, the supplied remote handset is also unusual. Preprogrammed to control a full A/V system

## FAST FACTS

**DIMENSIONS** 17<sup>7</sup>/<sub>8</sub> inches wide, 6<sup>7</sup>/<sub>8</sub> inches high (including feet), 15<sup>3</sup>/<sub>8</sub> inches deep

**WEIGHT** 29 pounds

**PRICE** \$1,000

**MANUFACTURER** Onkyo, Dept. SR, 200 Williams Dr., Ramsey, NJ 07446; telephone 201-825-7950

(there is no "learning" option), it has a vaguely interstellar shape that permits it to rest vertically, rising above the usual coffee-table clutter. (You can't operate it that way, though: it falls right over.) Keys are logically grouped and effectively differentiated by shape, background color, and spacing. The handset's intelligent layout and tapered shape conspire to put most key functions under either thumb.

On the receiver's back is a fully equipped jack panel with inputs for four audio-only components (including phono and two full tape loops) and four sets of A/V inputs, unimaginatively but clearly labeled Video-1 through Video-4; their corresponding front-panel selector keys are marked VCR-1, VCR-2, DVD/TV, and VDP/CAM. Video-1 and Video-2 are full A/V input/output loops that allow recording, and the other pair is play only. The Video-4 jacks are duplicated on the front panel for camcorder/game-player convenience, with the front connection — including the optional S-video jack — automatically overriding the rear-panel set, a most handy arrangement.

Digital inputs responding both to Dolby Digital signals and to standard, two-channel PCM bitstreams are provided by three independent data ports, two coaxial (electrical) and one optical. Each can be assigned to any one digital source. You cannot have one digital source feed two input-selector positions, nor can two inputs be directed to the same source selection. There is no AC-3/RF input, so connecting a Dolby Digital laserdisc player requires an outboard demodulator. (The graphic and captions in the owner's manual accompanying my early production sample of the TX-DS747 clearly show and specify an AC-3/RF laserdisc hookup at the Coax-2 jack, but this dog don't hunt; I tried it.) The digital-input trio wins points nonetheless.

Speaker outputs use reasonably solid multiway binding posts all around. Although the spacing is designed to prevent use of dual banana plugs, if you're willing to jam them in they'll just barely fit. Onkyo provides every video connection in both S-video and composite-video formats, and the receiver even

converts S-video inputs to composite-video outputs if necessary. Preamp outputs are provided for all audio channels, including, of course, the low-frequency effects (LFE) or subwoofer channel. There's also a line-level Multi Source Pre-Out, which can extend two-channel playback to a remote room with independent source selection and volume using an optional IR-repeater system and another remote handset.

Inside, the TX-DS747 is arranged with its heat-sink assembly centered fore and aft. A fan in the left-rear corner is thermostatically operated to cool the power-transistor array under stressful conditions. On the test bench the fan proved moderately noisy, but you'd never hear it in normal use.

Following my usual practice, I initially set up the Onkyo receiver to drive all three front speakers, a pair of B&W Model 803 Series 2 speakers at left and right and a B&W HTM center speaker, full-range, thus demanding the maximum from its amplifiers. Later, I evaluated full-system and crossover performance with the B&W 800ASW powered subwoofer hooked up as well. The Citation 7.3 surrounds I used are moderately low-sensitivity, four-driver speakers with selectable dipolar or bipolar operation.

The Onkyo's bass-management options are just short of complete: the only surround-speaker options are Yes and No. In Pro Logic and DSP-surround modes these speakers run full-range when you set up without a subwoofer, but when a Dolby Digital signal is present they cross over at 80 Hz willy-nilly whether or not you're using a subwoofer. Generally, this modal change is immaterial since most Dolby Surround matrixed mixes have little or no surround content below 100 Hz anyway. The more thought-provoking point is that if you wanted to connect full-range surrounds for Dolby Digital playback, you'd be stymied.

I have no quibbles with the TX-DS747's power stocks, whatever its printed specs. The receiver drove my full-range setup comfortably and crisply in both stereo and surround playback, which sounded very transparent in my 16 x 20-foot studio. Despite their modest ratings, the surround channels did

not seem to run short of gas significantly before the front-stage trio. All together, the five channels achieved quite high levels before beginning to sound noticeably bright, which occurred a bit before the onset of discernible harshness. With the powered sub connected, headroom was ample. Unless you have a really big room or unusually low-sensitivity speakers, the TX-DS747 should provide enough surround power for almost any system with a powered sub.

The TX-DS747 was impressively quiet in all modes. Dolby Digital playback was as free of hum and buzz as with any 5.1-channel A/V receiver I've yet tried, and the noise remained almost as low in Pro Logic and DSP-surround programs. Pro Logic sound was outstanding, with a precision and freedom from surround-channel "pumping" that approached the theoretical limits of this matrixed mode. Dialogue leakage was almost nil, as were any obvious dynamic artifacts or distortions. If the "inner detail" and clarity of ultra-low-level filigree were not equal to that from the best stand-alone Pro Logic and Dolby Digital preamp/processors, they were still well above the average for A/V receivers.

The only lab-test result that calls for comment is the unusually high linearity error of the system's digital-to-analog (D/A) converters (see "Stereo Performance, Digital Inputs" in the "Measurements" box on page 42). While the linearity result virtually guarantees both low digital-input noise levels and without-signal EN16 numbers, it also insures that the with-signal EN16 and EN20 numbers will be worse (higher). With very critical material, like CD test tones and the rare well-made "20-bit" CD, the effect might be audible as noise and distortion.

In addition to "plain" Pro Logic or Dolby Digital for movie surround, the TX-DS747 permits you to dial in three variants labeled Action, Drama, and Musical. The differences were fairly subtle. Note that while this receiver is not THX-certified, it provides both main-channel re-equalization (treble-smoothing) and surround-channel timbre-matching, two of the salient THX processes, and the most valuable ones in my book.

The receiver's remaining DSP modes — Hall, Live, Arena, and Stadium — are all five-channel programs to enhance conventional two-channel music recordings, but each employs the center and surround channels a bit differently





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*- Corey Greenberg, Audio Magazine*

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in terms of both frequency contour and delay/reverb effects. Suffice to say that Onkyo's Hall mode is one of the more, well, *musical* available from a receiver. Suitably tweaked, it delivered a surprisingly subtle multipurpose surround presentation that enhanced the music more often than degrading it.

Speaking of tweaking, the TX-DS747 has a number of user-adjustable parameters for each mode, including venue size, effect and reverb levels, and reverb time. Each adjustment works

over a fairly narrow range, which discourages dialing in too outrageous an effect. While each surround mode remembers your settings for all these parameters, the relative channel levels are fixed globally. In fact, you cannot change center or surround levels even temporarily without passing through the receiver's circulating-noise setup-balance routine, which in turn requires a journey through several layers of on-screen (or Smart Scan) menus. While I consider this a drawback, I can appreci-

ate the design rationale: it makes it harder for casual users to trash your carefully calibrated settings.

Otherwise, using the Onkyo TX-DS747 was more than ordinarily pleasant. The Smart Scan Controller rotogizmo takes a bit of familiarization, but it does significantly increase flexibility. And I liked Onkyo's Buck Rogers-style remote a good deal. It proved very comfortable to hold and easy to use by feel for the more common functions. On the other hand, the lack of any

## MEASUREMENTS

### DOLBY DIGITAL (AC-3) PERFORMANCE

All data except frequency response obtained with Dolby Digital signals from Dolby Labs' AC-3 test DVD using "small" speaker settings. Except for maximum output-power and channel-imbalance measurements, the speaker-balance controls and volume control were set together to produce 2.83 volts into 8 ohms from a -20-dBFS\* signal from all channels. All input signals were dithered (which sets limits on measured noise and distortion).

**OUTPUT AT CLIPPING** (1 kHz, into 8/4 ohms)  
 one channel driven (front) ..... 121/186 watts  
 one channel driven (surround) ..... 48/80 watts  
 all channels driven ..... 79/146 watts

**DISTORTION AT 1 WATT** (THD+N, 1 kHz)  
 8 and 4 ohms ..... 0.04%

**NOISE** (A-wtd)  
 worst case (surrounds) ..... -71.0 dB

**EXCESS NOISE** (worst case, with signal)  
 16-bit ..... +4.45 dB  
 18-bit ..... +22.3 dB

**FREQUENCY RESPONSE**  
 (worst cases, see text)  
 left front ..... 20 Hz to 20 kHz +0.25, -0.62 dB  
 right surround ..... 80 Hz to 20 kHz +0.13, -3 dB

**CHANNEL IMBALANCE** (individual channels set at 0-dB gain) ..... 0.7-dB spread

**SUBWOOFER OUTPUT FREQUENCY RESPONSE**  
 24 dB/octave rolloff above -6-dB point at 80 Hz

**HIGH-PASS-FILTER FREQUENCY RESPONSES**  
 12 dB/octave rolloff below -3-dB point at 80 Hz

**MAXIMUM UNCLIPPED SUBWOOFER OUTPUT** (either master volume or subwoofer at -2-dB settings) ..... 6.5 volts

**SUBWOOFER DISTORTION** (master volumes and subwoofer at 0-dB settings)  
 worst-case signal ..... 4%

**THX RE-EQUALIZATION ERROR** ..... <1 dB

**THX SURROUND TIMBRE-MATCH ERROR**  
 <1 dB

### DOLBY PRO LOGIC PERFORMANCE, ANALOG INPUTS

Reference input signal levels for noise and distortion measurements are 141.4 mV for center

and surround channels, 200 mV for remaining speakers; subwoofer off.

**FREQUENCY RESPONSE**  
 front ..... 20 Hz to 20 kHz +0.3, -0.8 dB  
 center ..... 20 Hz to 20 kHz +0.3, -0.6 dB  
 surround ..... 20 Hz to 7.6 kHz +0.1, -3 dB

**NOISE** (A-wtd)  
 worst case (left front) ..... -71.9 dB

**DISTORTION** (THD+N, 1 kHz)  
 worst case (center) ..... 0.065%

**SURROUND-CHANNEL NOISE-REDUCTION CALIBRATION ERROR**  
 re THX level (141.4 mV) ..... 0 dB

**SURROUND-DECODER INPUT-OVERLOAD MARGINS** (analog inputs, at 1 kHz)  
 front (re 2-volt input) ..... +2.2 dB  
 center (re 1.4-volt input) ..... +2.3 dB  
 surround (re 1.4-volt input) ..... +5.2 dB

**CHANNEL SEPARATION**  
 worst case (left out, center driven) ..... >38 dB

**STEREO PERFORMANCE, DIGITAL INPUTS**  
 Reference volume setting for noise is the same as for Dolby Digital; subwoofer off.

**LINEARITY ERROR** (at -90 dBFS\*) ..... -7.8 dB

**NOISE**  
 (A-wtd, de-emphasis off/on) ..... -75.4/-77.3 dB

**EXCESS NOISE** (without/with signal)  
 16-bit ..... +0.65/+4.95 dB  
 quasi-20-bit ..... +18.7/+19.9 dB

**TONE-CONTROL RANGE**  
 100 Hz ..... ±8.3 dB  
 10 kHz ..... ±8.9 dB

**FREQUENCY RESPONSE**  
 (tone controls off, 20 Hz to 20 kHz)  
 de-emphasis off ..... +0.26, -0.86 dB  
 de-emphasis on ..... +0.26, -1.54 dB

### STEREO PERFORMANCE, ANALOG INPUTS

**OUTPUT AT CLIPPING** (at 1 kHz)  
 8 ohms ..... 104 watts  
 4 ohms ..... 167 watts

**CLIPPING HEADROOM**  
 (re 90-watt, 8-ohm rating)  
 8 ohms ..... +0.6 dB

**DYNAMIC POWER**  
 8 ohms ..... 121 watts  
 4 ohms ..... 200 watts

**DYNAMIC HEADROOM**  
 (re 90-watt, 8-ohm rating)  
 8 ohms ..... +1.3 dB

**DISTORTION AT RATED POWER**  
 (THD+N, 1 kHz)  
 90 watts (8 ohms) ..... 0.02%

**DISTORTION AT 1 WATT** (THD+N, 1 kHz)  
 8 and 4 ohms ..... 0.02%

**SENSITIVITY** (for 1 watt at max volume)  
 CD ..... 22.6 mV  
 phono ..... 0.366 mV

**INPUT-OVERLOAD LEVEL**  
 (re 2-volt input, surround off)  
 CD ..... +10.25 dB

**NOISE** (re 1-watt output, A-wtd)  
 CD (200-mV input) ..... -82.4 dB  
 phono (5-mV input) ..... -76.1 dB

**RIAA PHONO-EQUALIZATION ERROR**  
 (20 Hz to 20 kHz) ..... +0.2, -0.14 dB

**ANALOG-INPUT FREQUENCY RESPONSE**  
 20 Hz to 20 kHz +0.21, -0.23 dB

**TUNER SECTION**  
 All figures for FM except frequency response.

**SENSITIVITY** (50-dB quieting)  
 mono ..... 19.9 dBf  
 stereo ..... 44.1 dBf

**NOISE** (at 65 dBf)  
 mono ..... -78.2 dB  
 stereo ..... -69.3 dB

**DISTORTION** (THD+N at 65 dBf)  
 mono ..... 0.08%  
 stereo ..... 0.11%

**CAPTURE RATIO** (at 65 dBf) ..... 0.9 dB

**AM REJECTION** ..... 36.1 dB

**SELECTIVITY**  
 alternate-channel ..... 55.3 dB  
 adjacent-channel ..... 3 dB

**PILOT-CARRIER LEAKAGE**  
 19/38 kHz ..... -67.6/-70.2 dB

**CHANNEL SEPARATION** (1 kHz) ..... 47.1 dB

**FREQUENCY RESPONSE**  
 FM ..... 30 Hz to 15 kHz +0, -0.8 dB  
 AM ..... 68 Hz to 3.2 kHz +0.1, -6 dB

\* dBFS = decibels referred to digital full-scale



back-lighting is a surprise at this price level. Moreover, the seven-position slide switch mounted toward the bottom, which you have to use to select the source that the remote's preprogrammed keys will command at any given time, is none too positive in its click stops, too hard to view in dim home-theater lighting, and too fussy for easy real-world use. Though there are only sequential (up/down) keys for selecting surround modes, the remote provides direct-access buttons for the tape, tuner, and CD options and separate sequence keys to select the Video 1-4 inputs. But since the CD and tape keys are not programmable, unless you have Onkyo-brand CD and tape components, the remote's transport controls are useless with these sources.

Onkyo has for some years now produced a couple of very good FM tuners, so I had high hopes for the TX-DS747's radio section. Unfortunately, FM reception was standard-issue receiver-grade, 1998-style. That means I got solidly hi-fi (though very slightly squished-sounding) reproduction from strong local signals, okay but rather noisy and mono-ized sound from medium-strength stations, and essentially useless sound from even borderline "fringe" or low-power signals. However, and rather more unexpectedly, the AM section tuned more stations intelligibly than the norm: well over a dozen on the best session. (I checked on three different days to make sure that freak atmospheric weren't the reason; on the worst day I got eight stations.)

There's more that could be said about the TX-DS747, but much of it is familiar A/V-receiver fare: facilities for mixed audio/video source dubbing or simulcasts, Onkyo's Intelligent Power Management auto-turn-on/off routine, a "Midnight Theater" dynamic-range control for Dolby Digital programs, the usual bass-boost option ("3-D Bass"), and so on. The bottom line seems pretty clear-cut: this is a fine-performing, well-equipped Dolby Digital receiver from a maker with long experience in the high-end A/V receiver game. While there is now brisk 5.1-class competition priced a couple of C-notes less, if you care about having superior ambience enhancement for music, a wide array of inputs and outputs, and a powerful remote control — to name just three outstanding features of the TX-DS747 — more than you care about simple watts-per-dollar, you will not feel the least bit cheated.

# SUBWOOFER OF THE YEAR!



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System of the Year**

**"...A DOWNRIGHT AMAZING PERFORMER."**

- Tom Nussaine on the PS-1200, Video Magazine

**"...POWERFUL AND IMPRESSIVE."**

- Andrew Marshall on the PS-1200, Audio Ideas Guide

**"ROCK SOLID AND DEEP AS A CHASM, BASS NOTES CAME THROUGH AS I'D NEVER HEARD THEM BEFORE."**

- Wes Philips on the PS-1000, Stereophile Guide to Home Theater Vol. 2, Number 2

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# Paradigm®

THE ULTIMATE IN HIGH-PERFORMANCE SOUND™



# Technics SL-MC410 111-Disc CD Changer

KEN C. POHLMANN, HAMMER LABORATORIES

**M**any, many years ago, shortly after dinosaurs walked the earth, but before Bill Gates owned it, people listened to music that was stored on discs of black, warped plastic. Because of the system's inherent frailties, audiophiles made incredible sacrifices to coax listenable sound from LPs. For starters, changers were verboten. Purists (including me) would listen only to single-play turntables because dropping one disc on top of another could damage them and because the changer mechanism was intertwined with the motor that rotated discs, inevitably degrading playback performance.

Old habits are hard to break, and some people feel that single-play CD players are inherently superior to multiple-disc CD changers. In fact, the changer mechanism has no bearing on how a CD is played. It is relatively easy to build a mechanism that simply loads the appropriate disc onto the disc transport and then has no further effect (old-time record jukeboxes did this, in fact). Of course, there are good and not so good CD transports and, more impor-

tant, good and terrible digital-to-analog (D/A) converters, but there is no reason a CD changer can't sound as good as a single-play model — or better.

The Technics SL-MC410 is a good example of a contemporary jukebox. Instead of a loading drawer, the player's entire front panel can be manually swung open on bottom hinges to reveal a horizontal tray with slots. Up to 111 discs can be loaded vertically. The vertically mounted disc transport runs across the back of the tray, picking off discs for playback and returning them when they're finished. To expedite loading and unloading, you can slide a plastic carriage to any disc slot from 1 to 110 and use it to flip a disc into or out

of the tray. Slot No. 0 is designated as a single-play slot and has a separate play button. When the panel is back in its "locked and upright position," you can dimly see the discs through two large windows. Conveniently, you can open the front and swap discs without interrupting playback.

Although the SL-MC410's control panel looks somewhat formidable, the changer's operation is straightforward. Besides the usual power, stop, pause, and play buttons, there are Skip/Cursor and Search/Character buttons, which serve double-duty for disc-navigation and text-entry functions, and other buttons that are used to select discs or groups of discs. In fact, the changer offers several ways to play discs. Hit the play button, and it will play all of the loaded discs in sequence, starting with Disc 1. A pair of disc-skip buttons, labeled - and +, can be used to move from one disc to another. Alternatively, a row of ten numeric buttons can be used to select a specific disc. The same numeric buttons, along with a ≥ button, can be used to access specific tracks.

To help navigate the changer's disc collection, the front panel offers a Group Enter button and five Disc Grouping Play buttons labeled A to E. When a disc is loaded, you can assign it to one or more groups. Furthermore, you can assign one of fourteen preset names, such as Ballads, Classic, Hip Hop, or Rock, to each disc group regardless of the discs' physical position

## FAST FACTS

**DIMENSIONS** 17 inches wide, 6½ inches high, 15¼ inches deep

**WEIGHT** 15½ pounds

**PRICE** \$260

**MANUFACTURER** Technics, Dept. SR, One Panasonic Way, Secaucus, NJ 07094; telephone, 800-222-4213



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in the jukebox. Once discs are grouped by music category, you can step through a group to see which disc numbers it contains or simply hit the Disc Grouping Play button to initiate playback of the discs in that group.

As with most CD changers, the SL-MC410 lets you program a sequence of up to thirty-two tracks or discs (each disc counts as one entry). The Direct Programming button lets you add a currently playing track to the end of your programmed sequence.

One of the drawbacks of changers is the problem of remembering which disc is which. Technics provides three solutions. For starters, you get a plastic binder for storing the liner notes, and the back of the owner's manual has a disc-index table. Then there's CD-Text, which offers a decidedly higher-tech approach to keeping track of CDs.

CD-Text discs, which began trickling into the market about a year ago, contain alphanumeric information in their table of contents. When these discs are played, information scrolls across a CD-Text-capable player's display. You can use the Text Mode button to call up a disc's album title, artist, the title of the track currently playing, and timing information. A text-search feature also lets you search for discs by album title, artist name, or song title. When you

find the disc you're looking for, simply hit play.

Unfortunately, although they are increasingly common, CD-Text discs will be a small minority in most CD collections. Therefore, the SL-MC410 also allows you to create two text messages (album title and artist name) for each regular CD using the Search/Character and Skip/Cursor buttons. Each message can be up to thirty-two characters long. Any text information you key in for a particular disc is associated with the slot that disc occupies; if you move the disc to another slot, the message is automatically deleted. In addition to disc messages, the display provides helpful diagnostic messages.

The supplied remote control duplicates many of the front-panel features and adds a few twists of its own. When you press the ID Scan button, the changer searches from the beginning of the current track for a loud section and then plays 10 seconds centering around that point. This is useful both for identifying a song and for setting recording levels when you're making an analog copy of a disc. The remote also adds recall and clear buttons, to check or modify the contents of a programmed sequence, and a random-play button for tracks from one or all stored discs. Finally, the remote adds a repeat button that lets you replay a track, a disc, a programmed sequence, or a new random selection.

Given its \$260 price tag, the SL-MC410 performed pretty well on the test bench, with only very minor anomalies. Its normal-mode frequency response was outstandingly flat, but its de-emphasis-mode response was curiously lumpy, though never to the extent that it was particularly audible. And while the excess-noise results are average for a lower-cost CD player, they didn't reveal the very low-level (all inaudible) spurious tones the player generated on a spectrum plot of background noise. Perhaps these tones are related to its larger than normal linearity error.

The inside of the SL-MC410's metal chassis is devoted almost entirely to the multidisc mechanism. Most of the electronics are located on a densely packed circuit board mounted directly on the

disc transport. The power-supply transformer is located on another board connected directly to the AC-power input and audio-output jacks. Although it won't win any awards for looks, the overall design is a model of cost-conscious efficiency.

From a features standpoint, the SL-MC410 is well equipped, although I would have appreciated a digital audio output and a headphone output. Using an optical sensor, the changer automatically scans the jukebox when the power is turned on, or when the front panel has been opened, to determine which slots are loaded. This lets it bypass empty slots when changing discs, which shortens access time. Worst-case switching time was about 10 to 11 seconds, and closer discs were swapped in half that time. Entering text data was a chore, but once the information was in memory it was easy to locate discs.

Although the disc transport rides on rails and is vertically mounted, I could not find any flaws attributable to its data delivery. Moreover, it shrugged off typical shock and vibration. In short, I couldn't assign any sonic penalty to the mechanical design.

I auditioned a number of test discs, listening particularly for the Achilles heel of poor conversion — nonlinearity in the form of distortion or noise in low-level signals. While I could detect slight distortion in extremely low-level signals played back at very loud levels, I judged it to be inaudible under normal listening conditions. Next I kicked back and enjoyed a wide range of CDs, switching from rock to jazz to classical with the remote control. I would not swear on a stack of Bibles that this is the most transparent CD player I have ever heard, but its sound quality was certainly comparable to that of many single-disc players on the market, and it will sound just fine to most listeners.

The ability to browse among 111 discs is a real treat. If you stockpile enough food and drink, and the remote's batteries hold out, you can listen nonstop for a week without budging from your chair. And if you want to DJ a friend's party, this changer makes a great carrying case. Either way, the Technics SL-MC410 proves the merit of low-cost CD jukeboxes. □



## MEASUREMENTS

Tests performed by David Ranada; all but defect tracking, impact resistance, and disc-change time used *Stereo Review's* CD-player test disc.

**MAXIMUM OUTPUT** .....2 volts

### FREQUENCY RESPONSE

(20 Hz to 20 kHz)

normal .....+0.04, -0.05 dB

de-emphasis on (see text).....+0.38, -0.19 dB

### NOISE LEVEL (A-wtd)

normal.....-93.7 dB

de-emphasis on (see text).....-93.9 dB

### EXCESS NOISE (without/signal)

16-bit (EN16) .....+1.25/+1.95 dB

quasi-20-bit (EN20) .....+16.71/+17.01 dB

### DISTORTION (THD+N, 1 kHz)

at 0 dBFS\* .....0.005%

at -20 dBFS\* .....0.043%

**LINEARITY** (at -90 dBFS\*).....-3 dB

### DEFECT TRACKING

(Pierre Verany test disc).....1,250 µm

**IMPACT RESISTANCE** .....top, A; sides, A

### DISC-CHANGE TIME

worst case (Disc 1 to Disc 111) .....11 sec

\* dBFS = decibels re digital full-scale



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Winner of an *Audio Video Interiors* Excellence In Design award, the revolutionary SS-150THX Tripole is the ideal surround channel speaker for *any* system. Designed for 5.1 multichannel Dolby Digital and DTS, this THX surround speaker is also superb for Pro-Logic and surround music modes. Dozens of pro studios use it to mix multichannel sound.

Its groundbreaking Tripole mode combines the diffused, spacious sound of dipole speakers with the immediacy and imaging of the best direct radiators—for an unprecedented consistency of sound in the surround channels. It delivers good imaging and spatiality to *every* listener, regardless of room location.

How does it work? It operates as two separate speakers: one a point source direct radiator with a 5 1/4" woofer and 1" tweeter, and the other a dipole with two 3 1/4" poly mid-tweeters. It has two main user-selectable modes: THX dipole or Tripole, plus six custom modes to suit

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## Boston Acoustics Lynnfield VR960 Speaker

JULIAN HIRSCH, HIRSCH-HOUCK LABORATORIES

One of the more distinctive loudspeaker formats to appear in the last couple of years combines a relatively slender column enclosure with a built-in powered subwoofer. Building the bass module into the speaker enables the designer to match the mid/high-frequency part of the system to the subwoofer, eliminates the need for a separate subwoofer enclosure, and greatly simplifies system setup.

### FAST FACTS

**DIMENSIONS** 42¼ inches high, 6½ inches wide, 14 inches deep

**WEIGHT** 50 pounds

**FINISH** charcoal-gray cloth with glossy black top

**PRICE** \$1,000 a pair

**MANUFACTURER** Boston Acoustics, Dept. SR, 300 Jubilee Dr., Peabody, MA 01960; telephone, 508-538-5000

We have reviewed a few such systems, and about the only significant negative aspect we have found has been their relatively high prices, which have probably restricted the format's more widespread use. Fortunately, marketplace competition has followed its usual course, and one of the more striking results is the new Lynnfield VR960 speaker from Boston Acoustics, priced at only \$1,000 a pair.

The VR960 is a tall, slender column that's only 6½ inches wide. At the top of the enclosure is a 4½-inch midrange cone driver, operating in a sealed volume, that crosses over at 3 kHz to a 1-inch aluminum-dome tweeter.

In the middle of the cabinet is the bass section, with an 8-inch driver and its 75-watt amplifier in a sealed sub-enclosure. The driver radiates to the side of the cabinet, about 22 inches above the floor. The speakers are sold in pairs, with the subwoofers mounted on opposite sides of their cabinets. While there may be slight differences in the low-frequency performance depending on which way the subwoofers face (toward or away from each other), this is not a critical consideration. Experiment if you wish! Each speaker weighs only 50 pounds, making it relatively easy to move around.

One advantage of the side-firing subwoofer is the speaker's remarkably narrow front profile. This not only makes it fairly inconspicuous when viewed from the front but enhances the horizontal dispersion of its sound. Since the narrow cabinet might otherwise tend to be easily tipped over, small outriggers attached to the base minimize that risk.

The VR960 is covered by a charcoal-gray cloth-mesh "sock" and has a wooden top panel with a decorative glossy-black finish. The subwoofer's amplifier is built into the bottom rear of the cabinet with its heat sink facing down. The only other visible external feature is a small plate at the very bottom of the cabinet's rear panel, which has a pair of five-way binding-post terminals that accept wires, lugs, or single or dual banana plugs, a knob for varying the subwoofer level, and a single RCA jack labeled LFE, for low-frequency effects. The LFE jack is intended for use in a 5.1-channel Dolby Digital home-theater system, where the ".1" or LFE channel delivers special low-frequency program content (under 100 Hz) from Dolby Digital-encoded soundtracks.

The speaker's Active Bass Contour control differs in some important re-



# See Bob Rock.

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SUB REVIEWS



"The True Subwoofer is an achievement on par with the space shuttle and the twinkie."

—Al Griffin

Home Theater, Feb, 97



"Talk about floor shaking bass...turned up to maximum level, I don't think there was anything in the house that wasn't shaking, including the concrete foundation!"

"Don't, I repeat, don't even think about purchasing another subwoofer without giving the Astonishing True subwoofer a listen"

—Joseph M. Cierniak

The Sensible Sound, Issue # 60



"The lowest, flattest, deepest bass I have EVER heard or measured."

—Julian Hirsch

Stereo Review, Dec. 96



<http://www.sunfirelabs.com>

Bob Carver's  
**Sunfire**  
from his mind ... and soul

\*Strictly speaking: for 20 years or until patent expires.

spects from the usual subwoofer level control. Unlike conventional controls, which typically vary the woofer level over a relatively wide range of bass frequencies, the Boston Acoustics Active Bass Contour principally adjusts the level of the lower bass frequencies, with a proportionally reduced effect on the upper bass and lower midrange. In other words, you can increase deep-bass output without creating tubbiness in the upper-bass region, which is difficult to do with many stand-alone subwoofers.

We normally request that equipment manufacturers supply relevant test data for the review sample, as a check on possible shipping damage and (in the case of speakers) the inevitable differences in test environment and procedures. In speaker measurements, it is a rare event when our test results closely resemble the manufacturer's data, although the differences are rarely serious and are usually easily explained by the differences in test conditions.

The Boston Acoustics VR960 was a striking exception to this rule. The av-

eraged room response of the two speakers was by far the flattest over the major part of the audio range that we have ever measured, within  $\pm 2$  dB from 300 Hz to 20 kHz. In fact, the same response variation extended down to 20 Hz, but that was almost certainly an effect of the room characteristics. Our quasi-anechoic MLS response measurement (valid only above 300 Hz), though typically ragged, also confirmed the VR960's smooth response, varying only  $\pm 3$  dB from 300 Hz to 20 kHz.

We measured the subwoofer's fre-

## LYNNFIELD VR HOME THEATER SPEAKER SYSTEM

Adding center and surround speakers to a pair of Lynnfield VR960s will produce a full-fledged home-theater speaker system. The additional speakers supplied to us were a VR10 center (\$300) and a pair of VRS surrounds (\$350) for a total system price of \$1,650.

The VR10 center speaker is unusually complex for its size (17 x 6 $\frac{1}{2}$  x 6 $\frac{7}{8}$  inches). It contains a 5 $\frac{1}{4}$ -inch cone woofer as well as a 5 $\frac{1}{4}$ -inch passive radiator flanking a vertically stacked 3 $\frac{1}{2}$ -inch cone midrange driver and a 1-inch dome tweeter. The stacking of the midrange driver and tweeter is responsible for the lack of horizontal off-axis "lobing" in the VR10's response: in other words, its sound quality doesn't change much from one side of the listening area to the other. The crossover frequency between the woofer and the midrange driver takes place at 500 Hz and that between the midrange and tweeter at 3.5 kHz. Rated impedance is 8 ohms.

Both the drivers and the crossover frequencies of the VR10 are very different from those used in the VR960, and several laws of physics would have to be repealed to obtain a really close match of their sound qualities. In our tests, panned pink noise did become notably more colored as it passed through the VR10, but this effect was far less evident with surround-encoded music programs and movie soundtracks.

Each VRS surround is a two-way dipole speaker containing a single 4 $\frac{1}{2}$ -inch woofer crossing over at 350 Hz to a pair of 2 $\frac{1}{2}$ -inch tweeters. The enclosure measures 10 $\frac{3}{8}$  x 4 $\frac{1}{2}$  x 6 inches and weighs 6 pounds. Black or white finishes are available, but the metal grilles are removable for painting. You might want to take them off in any case since in our tests the grilles produced several nasty

mechanical resonances between 300 and 500 Hz.

Impedance of the VRS speaker is given as 8 ohms. Its rated sensitivity is 85 dB SPL with a 1-watt input, 5 dB lower than that of the VR960 and VR10 speakers. To produce the same sound levels, a VRS will have to be driven by more than three times as much input power.

Even though the VR960's woofer is touted as a "built-in subwoofer," it is in the same box as the other drivers, which makes the system a full-range speaker with all the traditional full-range placement problems. For example, with full-range speakers you usually cannot optimize bass performance and imaging simultaneously. Using the VR960's LFE inputs changes nothing, because the problem stems from having the subwoofers built in and not separately movable. (By the way, use a 100-Hz crossover frequency to drive the LFE inputs. That works better with the bass performance of the VR10 center and VRS surrounds than, say, an 80-Hz crossover, which is too low.)

You might have to perform a series of experiments to optimize the placement of the VR960s. In our room, I was never able to eliminate a deep (10-dB) midbass (150-Hz) dip at our usual listening position without the use of a graphic equalizer. The dip gave the VR960s a slightly "forward" sound quality. With the dip equalized out, they produced an impressively neutral-sounding balance between highs and lows.

Deep-bass performance was very good, with the speakers producing usable output to below 30 Hz (we used the finale of Christopher Rouse's *Symphony No. 2* on Telarc to exercise the system's lows). To get the best midbass performance, instead of using an equalizer you



might want to try pushing the speakers' backs up against the wall. But that would diminish their unusually good stereo imaging and outstanding sense of depth, as revealed by the superspectacular two-microphone recording of Richard Danielpour's *Concerto for Orchestra* on Sony Classical.

In multichannel use the full system was impressive. The DVD of the movie *Das Boot* was especially thrilling, with the storm sequence far more sonically effective than the music or the depth-charge explosions, which had limited dynamic range. Then again, a lifelike dynamic range for a depth-charge explosion would blow out the walls of your listening room. Not even the VR960s fed through their LFE inputs could do that!

— David Ranada



quency response using close microphone spacing and with its level control set at the midpoint, which we found to be optimum for our room with most program material. The response was within  $\pm 2.5$  dB from 30 to 120 Hz, which is quite impressive for a single driver whose effective cone diameter is only about 7 inches.

The VR960 is magnetically shielded to allow placement next to a TV set. We measured its external flux level at a typical (negligible) level of less than 0.2 gauss over most of the cabinet surface, and less than 0.5 gauss at 6 inches from the drivers. The system sensitivity, measured at the standard distance of 1 meter with an input of 1 watt, was right on spec at 90 dB.

Although the nominal system impedance is rated at 8 ohms, we measured minimum readings of just under 5 ohms at 300 Hz and 4.5 kHz. The maximum impedance readings were 27 ohms at 20 Hz, 23 ohms at 130 Hz, and 18 ohms at 1.1 kHz. In view of the system's high sensitivity, its low minimum impedance should not pose any problems in operation with any properly functioning amplifier.

Impressive as were the measurements of the Lynnfield VR960 system, they were also completely consistent with what we *heard* from the speakers with a variety of program material. It is relatively easy to convince oneself that a speaker's sound is very good even if its measurements are characteristically uneven (which can be a reasonable and valid conclusion in view of the unavoidable and uncertain interactions between the speaker and the room environment). However, it is *not* so easy to convince a dispassionate microphone of an acoustic property unless it actually exists, and judging from our printouts, the Audio Precision test system was just as impressed as we were!

For us, the final proof of performance for the VR960, as for any speaker with claims to deep-bass response, was the way it reproduced John Rutter's Requiem (Reference RR-57CD). This system handled the powerful low bass of that recording in a natural and believable fashion, something we have previously experienced only from much larger and costlier speakers or separate subwoofers. The Boston Acoustics Lynnfield VR960 is a relatively compact, attractive, and affordable loudspeaker that can do justice to the most demanding program material — a rare combination of qualities. □

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# Pioneer Elite CD-07D Digital-NR Cassette Deck

CRAIG STARK, HIRSCH-HOUCK LABORATORIES

**H**iss has been an affliction of the analog tape cassette since its invention. Various analog noise-reduction (NR) systems, such as dbx and several flavors of Dolby, have alleviated the problem, but none has conquered the disease. The new *digital* noise-reduction system used in the Pioneer Elite CT-07D cassette deck, while not a complete cure, does send tape hiss into a state of virtually total remission. And, best of all, it works both on tapes you make on the CT-07D and on tapes made elsewhere.

The CT-07D is really two autoreverse cassette decks in a single case. Each is a two-head, bidirectional machine with a belt drive. The head assemblies invert for reverse play (Side 2) and for recording. When you're dubbing, either deck can be the master and the other one the slave, with digital noise reduction being applied to the tape copy. Dubs can be made at normal or double speed, and a separate tape-duplication noise-suppression feature can be used to silence hiss between selections.

If desired, two parallel recordings of the same input can be made simultaneously. A REV(erse) mode pushbutton permits continuous ("relay") playback from both Deck 1 and Deck 2 in turn,

autoreverse playback of both sides of a tape, and up to sixteen unattended repetitions of the same tape. A blank-sensing feature lets you skip selections already recorded by pressing the fast-forward or reverse buttons an appropriate number of times during playback.

The microphone and headphone jacks have their own level controls, though the overall audio output level and channel balance are not adjustable. A direct digital input, surely an innovation on an analog recorder, bypasses the deck's 20-bit digital-to-analog (D/A) converter. It employs the standard 44.1-kHz sampling rate.

Both decks have switch-selected automatic optimizing circuits for bias, record level, and record equalization. Both offer Dolby B and Dolby C noise reduction in addition to their digital NR circuits. Both also incorporate Dolby

HX Pro headroom-extension circuitry to insure optimum high-frequency performance with high-level signals.

The two separate four-digit tape counters can be switched between elapsed time and tape-hub revolutions. By pressing the counter switches for both decks simultaneously, the digital NR system can be toggled on or off. The peak-reading vacuum-fluorescent level display shows seven discrete steps between -20 and +3 dB. There is no lighting in either cassette well, however, so it is nearly impossible to read the labels or to see how much tape remains on a side.

A digital Automatic Level Control and Analysis button bypasses the manual record-level control and lets the deck determine the optimum overall recording level from your own short test recording. This feature cannot be used during tape copying, however.

You can restore missing high frequencies to older tapes by pressing the FLEX (Frequency Level Expander) button. This applies a digitally determined treble boost of up to 10 dB to the frequency range from 1 to 10 kHz. If the deck senses a sufficient high-end level in the original tape, the boost is canceled.

We checked the playback frequency response of the CT-07D with our calibrated IEC ferric and (chrome) test cassettes (made by BASF). Response was quite smooth over the range from 31.5 Hz to 18 kHz, being down by about 2 to 3 dB at the ends of the spectrum with chrome tape.

For overall record-playback response we used recent samples of TDK AD

## FAST FACTS

**DIMENSIONS** 16½ inches wide, 5 inches high, 9⅞ inches deep

**WEIGHT** 10½ pounds

**PRICE** \$550

**MANUFACTURER** Pioneer Electronics, P.O. Box 1540, Dept. SR, Long Beach, CA 90810; telephone, 800-746-6337

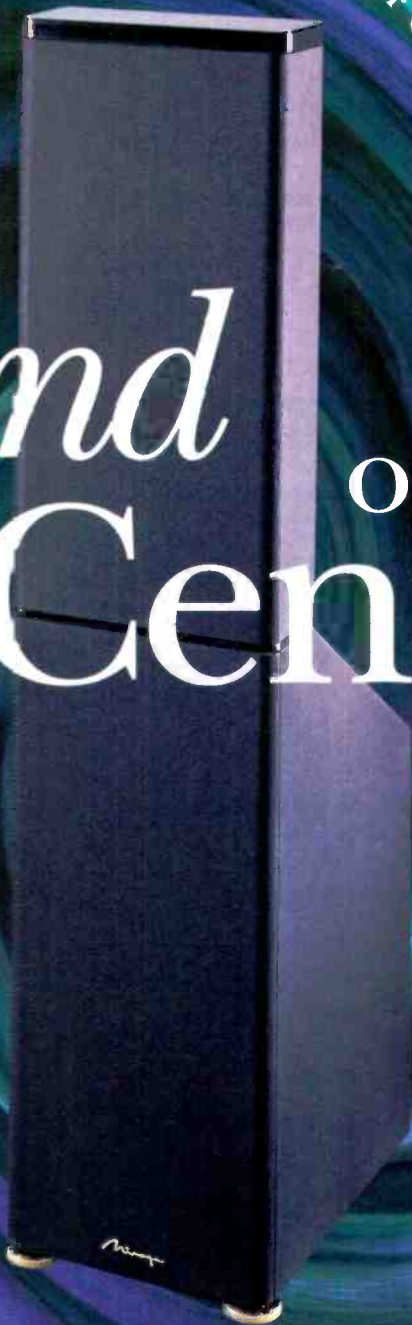


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(ferric), TDK SA (chrome), and TDK MA (metal). At a 0-dB record level the metal tape held up to 14 kHz. As usual, the ferric and chrome-equivalent tapes ran into tape saturation and dropped off below only 10 kHz. At the usual level of -20 dB, measured response was

within  $\pm 2.5$  dB throughout the 20 Hz to 20 kHz range.

We measured signal-to-noise ratio (S/N) on an unweighted, A-weighted, and CCIR-weighted basis both with and without the digital noise-reduction system. The effect of the CT-07D's dig-

ital NR was extraordinary, enabling the deck to achieve its rated 90-dB S/N with ferric tape and Dolby B or C and with chrome tape with Dolby C.

Wow-and-flutter figures were acceptable but not outstanding. Worst-case Dolby tracking error was only 1 dB with metal tape but reached 4 dB with chrome-equivalent and 2.5 dB with ferric, but these are not unusual values. Sensitivity was normal, but the high-speed winding times were slow.

Having fought with the problem of tape hiss for four decades of "This technique will finally cure it" claims, I've become somewhat skeptical. Yet it's hard not to be amazed at Pioneer's success with the CT-07D. Old Dolby B prerecorded cassettes sounded fifteen years younger, and the clearly audible master-tape hiss in the quiet intro section of the *Jazz at the Pawnshop* CD (Proprius) disappeared entirely in a tape copy. Though physics declares it impossible, I even made a dub of an old tape that seemed quieter than the original!

Though you can't make a direct A/B comparison between the source and the recorded playback on a two-head deck like this one, with careful rewinding you can come close. In this close inspection, some wow-and-flutter was detectable in a steel-guitar passage, and generally I detected a slightly "edgier" or "harsher" tonal quality on the dubbed versions. This did not seem to be a product of the digital noise reduction but rather of interactions between the digital system and the regular Dolby circuits. I hasten to add that the effect was very subtle and audible only under critical listening conditions.

With older recordings having normally audible tape hiss, the Pioneer NR system could at times be heard to misbehave. When a tenor sang a word with a heavy "s" sound, the tape hiss was sometimes insufficiently masked. It would come in and out, somewhat like the "pumping" sometimes heard with dbx NR systems. The Pioneer system cuts out whole bands of frequencies where it does not detect any musical tones, and these are reproduced entirely without hiss. But where music and substantial background hiss occur at the same instant, the hiss is detectable.

This is not to belittle Pioneer's really stunning accomplishment. If you're in the market for a cassette deck, the CT-07D is a "must hear" product. After hearing it, you may not want to buy anything else. □

## MEASUREMENTS

**FAST-FORWARD TIME (C-60)** ..100 seconds

**REWIND TIME (C-60)** .....100 seconds

**SPEED ERROR** .....+0.167%/+2.9 cents\*

**DOLBY TRACKING ERROR (worst cases)**

Dolby B .....+2.5, -0 dB

Dolby C .....+0, -2 dB

**WOW-AND-FLUTTER**

DIN peak-weighted .....0.12%

IEC wrms .....0.071%

**LINE INPUT FOR INDICATED 0-DB**

100 mV

**LINE OUTPUT AT INDICATED 0-DB**

0.54 volt

**METER INDICATION AT IEC-STANDARD**

**0-DB** .....+3 dB

**TDK AD (TYPE I, FERRIC)**

**IEC 0-DB DISTORTION** .....0.75%

**METER INDICATION AT 3% THD+N**

+3 dB

**SIGNAL-TO-NOISE RATIOS (in decibels, with/without digital NR)**

	Unwtd	A-wtd	CCIR/ARM
Dolby off	54.0/76.0	58.5/82.0	49.5/75.0
Dolby B	61.5/81.0	68.5/90.5	80.5/84.0
Dolby C	64.0/79.0	77.0/90.0	73.0/83.0

**TDK SA (TYPE II, CHROME-EQUIVALENT)**

**IEC 0-DB DISTORTION** .....1.5%

**METER INDICATION AT 3% THD+N**

+3 dB

**SIGNAL-TO-NOISE RATIOS (in decibels, with/without digital NR)**

	Unwtd	A-wtd	CCIR/ARM
Dolby off	50.5/75.0	59.0/79.0	50.5/78.5
Dolby B	59.0/79.0	67.5/89.0	60.0/81.5
Dolby C	65.5/80.0	77.5/90.0	75.5/82.0

**TDK MA (TYPE IV, METAL)**

**IEC 0-DB DISTORTION** .....2.1%

**METER INDICATION AT 3% THD+N**

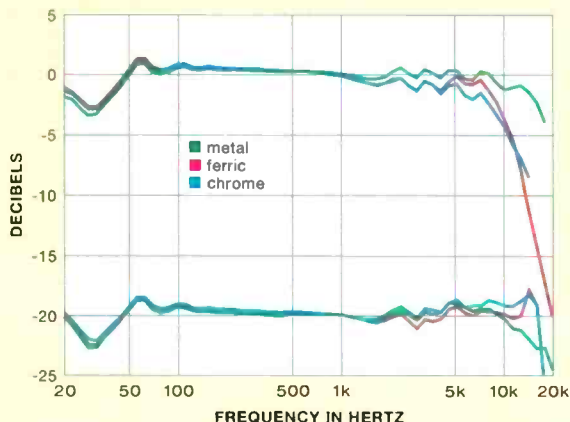
+3 dB

**SIGNAL-TO-NOISE RATIOS (in decibels, with/without digital NR)**

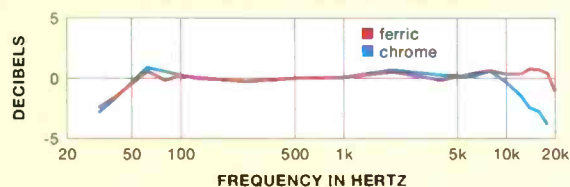
	Unwtd	A-wtd	CCIR/ARM
Dolby off	51.0/74.0	58.0/82.0	49.5/78.0
Dolby B	59.0/79.0	67.5/81.0	80.0/88.0
Dolby C	61.0/78.0	76.5/88.0	72.0/81.0

\* 1 cent = one hundredth of a musical semitone

## RECORD/PLAYBACK RESPONSES



## PLAYBACK RESPONSES





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**Anthony Chiarella  
Audio Video Shopper,  
May 1997**

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specialty audio dealer.”**

**Corey Greenberg,  
Stereo Review, September 1997**

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## DCM KX-7 Series Two Speaker

JULIAN HIRSCH, HIRSCH-HOUCK LABORATORIES

**T**he DCM loudspeaker line offers a broad range of models in a variety of designs, featuring both sealed and vented enclosures in several variations (including acoustic suspension) as well as transmission-line speakers and powered subwoofers. There are approximately thirty DCM models, most of them priced in the low to moderate range (between \$100 and \$400 per speaker). A distinguishing characteristic of DCM speakers is their relatively high efficiency, with sensitivity ratings typically well over 90 dB.

The KX-7 Series Two is a recent addition to the DCM line. It is a compact two-way speaker suitable for stand mounting; its bass vent opens at the rear, making wall mounting impractical. The nominally 8-inch woofer (the active cone is only 5½ inches in diame-

ter) is approximately centered on the front panel. The operating design is described as a "modified transmission line," with the specific features left unstated. Presumably there is some internal baffling that extends the path length of the lower frequencies on their way to the vent, which augments the direct bass output of the woofer cone. The

vent itself is a cylindrical duct, 3 inches in diameter. Above the opening are the input terminals, binding posts that accept wires, lugs, or single or dual banana plugs.

The higher frequencies are delivered by a small (¾-inch) horn-loaded tweeter located just above the woofer. The horn's mouth dimensions are approximately 3¼ x 2 inches. The crossover frequency between the woofer and tweeter, which is not specified, appears to be in the range of 2 to 3 kHz.

The DCM KX-7 Series Two's front panel is covered over most of its area by a removable black cloth grille on a wooden frame. A plastic label on the panel identifies some of the speaker's special features, including 125 watts maximum power handling, magnetically shielded drivers, and built-in overload protection (its specific nature is not described). The speaker's magnetic shielding permits it to be used adjacent to a TV set without picture degradation. Our gaussmeter confirmed this, indicating a negligible flux level (less than 0.5 gauss) at any point on the exterior of the cabinet.

Like other DCM speakers, the KX 7 Series Two is very efficient. We measured its sensitivity as 95 dB sound-pressure level (SPL) at 1 meter, the same as its rating. Such high insensitivity means that the driving amplifier is required to deliver only a few watts to the speaker to generate a volume level high enough to discourage conversation. Of course, it can be driven to far greater levels, if desired, without serious distortion or damage.

The KX-7 Series Two has a rated nominal impedance of 8 ohms. We measured considerably lower values at most frequencies, with readings as low as 3.5 ohms at 20 Hz and 250 Hz, and reaching or exceeding 8 ohms only in the vicinity of 100 Hz and 2 kHz. In practical terms, however, this apparent discrepancy is unlikely to cause any problems because of the speaker's high sensitivity.

With the speakers on 26-inch stands at the front of the room and about 8 feet apart, we measured the room response of the KX-7 Series Two from a microphone position 12 feet in front of the left speaker. The average of the response curves from the left and right speakers (the "room response") was within +3, -5 dB from 40 Hz to 10 kHz, sloping off at about 6 dB per octave above 10 kHz, which is fairly typical behavior for this measurement. The

### FAST FACTS

**DIMENSIONS** 18¾ inches high, 9¼ inches wide, 10¼ inches deep  
**WEIGHT** 16¾ pounds  
**FINISH** textured black  
**PRICE** \$199 each  
**MANUFACTURER** DCM Loudspeakers, Dept. SR, 670 Airport Blvd., Ann Arbor, MI 48108; telephone, 800-878-8463



tweeter's dispersion measured  $-5$  dB at  $\pm 45$  degrees off the forward axis above 4 kHz, with little further change up to 15 kHz.

The quasi-anechoic MLS response measurement, made with the Audio Precision System One, produced essentially similar response curves at distances of 1, 2, and 3 meters. The smoothed response variation was  $\pm 2$  dB from 300 Hz to 10 kHz. This measurement produces larger cyclic variations at the highest octaves, but the averaged readings were consistent with the lower-frequency values.

We measured the speaker's woofer response in its lower region by placing separate microphones at the cone and vent. Combining the two outputs, in proportion to the respective areas of their sources, produced the effective frequency response of the woofer/vent system. The bass response was flat within  $\pm 1$  dB from 40 to 100 Hz, with rolloffs of 6 dB per octave from 90 to 280 Hz and approximately 16 dB per octave from 40 to 20 Hz. The bass output was clean and usable down to the

vicinity of 35 Hz, a very creditable performance for a speaker in this size and price class.

These measurements suggest that the DCM KX-7 Series Two is an excellent value at its price. However, as always, the proof of a speaker's worth can be obtained only by listening. The essen-

were especially interested in its low-bass performance. The rated bass limit of the KX-7 Model Two is given as 45 Hz, which is quite adequate for most listening. As it turned out, however, its subjective bass limit proved to be at least 10 Hz lower. Listening to swept signals from test records, at a reason-

**We were especially interested in the DCM KX-7 Series Two speaker's low-bass performance. It's subjective limit proved to be at least 10 dB lower than its rating.**

tial sound character of this one was smooth and balanced, with no obvious emphasis or lack of any specific part of the frequency range. But the same can also apply to a number of similarly priced speakers.

In view of this speaker's low price and modest driver complement, we

able level, confirmed that response. In general, that sort of performance is only available from speakers that have much larger woofers, at correspondingly higher prices.

The bottom line is that the DCM KX-7 Series Two represents an exceptional value in today's speaker market. □

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— Walt Whitman

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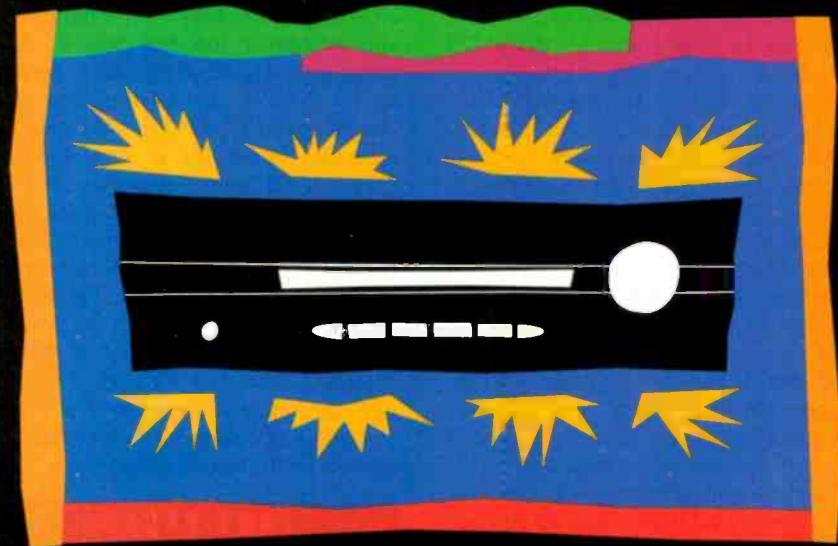


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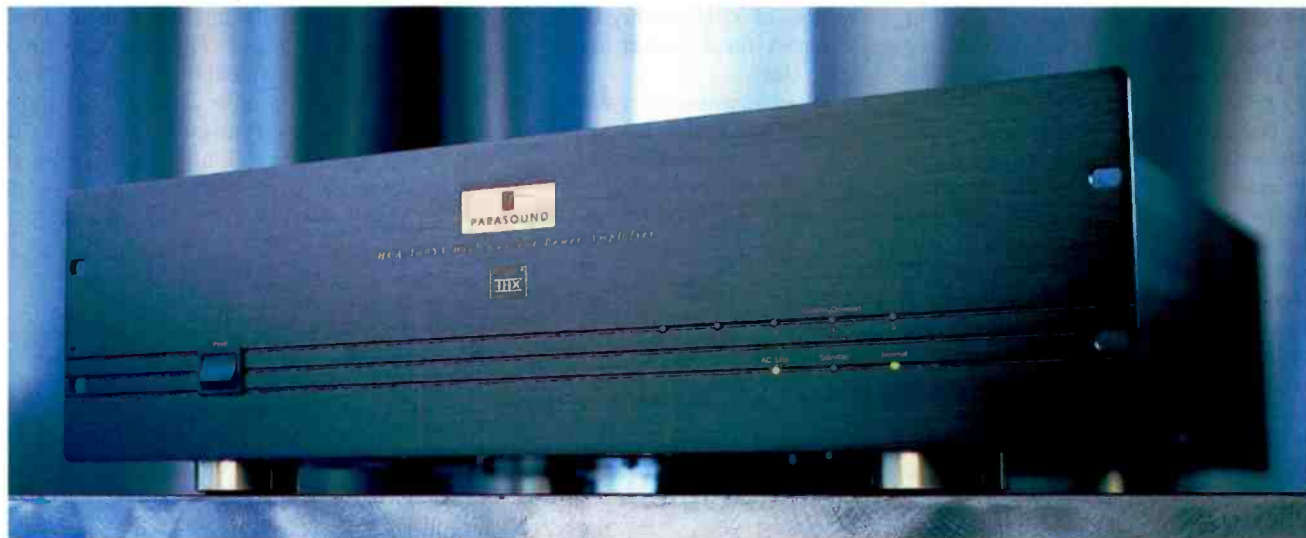
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# Parasound HCA-1205A Five-Channel Power Amp

DANIEL KUMIN, START LABORATORIES

If you're looking for a multichannel power amplifier that will add some real depth to your system, try Parasound's new \$1,650 HCA-1205A. Measuring nearly 21 inches from its front panel to the rack handles on its backside, the five-channel amp is about as deep as they come — and at 70 pounds it's a heavy player, too.

But seriously, folks, this talk of dimensionality just might be relevant. More than one audio pundit has suggested — only half in jest — evaluating power amps on a pounds-per-dollar basis, on the theory that size and weight arise from power-supply heft, which translates pretty reliably into electrical current capability. Which, in turn, may determine whether the amp will be able to handle transients with grace. And the more channels on board, the more power-supply meat and potatoes you need to feed all those output stages.

So it's not surprising that the five-channel HCA-1205A wears an athletic-cut suit. It's rated to deliver 140 watts continuously into each of five 8-ohm loads, or 200 watts into a quintet of 4-ohm loads — all at less than 0.03 percent distortion. Designed by John Curl, one of the forefathers of low transient-intermodulation distortion (TIM) audio design, the HCA-1205A is a very wide-band design. Parasound specifies its

frequency response at 5 Hz to 100 kHz  $\pm 0$ . -3 dB at 1 watt.

The amp incorporates some classic "high-end" circuit elements, including Class A J-FET input stages, hand-matched output-transistor pairs, and DC-coupled topology with a protective anti-meltdown low-end rolloff way down at 0.8 Hz. Each channel is served by six 50-MHz output transistors in complementary pairs, and the amp is described as running in a "high-bias" Class A/AB mode, meaning that it spends a higher percentage of its time in full-swing, Class A operation. As expected, this causes the Parasound to idle a bit on the warm side. The HCA-1205A is also THX-certified by Lucasfilm, which means it meets some fairly stringent parameters for current output into low-impedance and reactive loads, noise/hum rejection, distortion, and input sensitivity, among other things.

## FAST FACTS

**DIMENSIONS** 19 inches wide, 6 inches high (including feet), 16 inches deep

**WEIGHT** 70 pounds

**PRICE** \$1,650

**MANUFACTURER** Parasound, Dept. SR, 950 Battery St., San Francisco, CA 94111; telephone, 415-397-7100

Construction is on a familiar Parasound pattern. The rack-mount front panel is unadorned save for a big power-switch rocker and eight tiny LEDs — current-overload indicators for each channel and three AC-power status lights (line, standby, and normal). The amp is fully enclosed by a wraparound top/side cover, a nice feature that eliminates the skinned knuckles that exposed heat sinks tend to produce. On the rear panel, each channel gets a gold-plated RCA-jack input, a heavy-duty multi-way binding-post output, and a nice big input-level trim knob.

The only remaining rear-panel features are the rack-mount handles mentioned earlier, which are very useful when it comes time to lift the amp, an IEC power-cord socket (Parasound supplies a three-prong AC cord it describes as "custom-designed audiophile grade," whatever that means), a 15-ampere (!) fuse holder, and a terminal strip to hook up a 12-volt DC turn-on trigger; Parasound's preamps, among others, supply this activating voltage.

Inside, the HCA-1205A is tidily assembled. Heavy-gauge, hand-installed wire connects each channel's sub-assembly to the output terminals, and "audiophile-type" cabling carries input signals to each output module. The five circuit-board/heat-sink channel assemblies are arranged asymmetrically, with three surrounding the single massive toroidal power transformer and the remaining two back to back on the right side. Each channel is bolted to the floor pan, which is louvered for cooling (there is no fan) through the heavily slotted top and sides. Mechanically, the amp is quite solid, with a heavy-gauge,



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— *Stereo Review*

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folded-steel pan and bolted-on front-and-rear-panel assemblies. The top/side cover is thinner but still a heavier-gauge steel than that used in many power amps. Though not particularly fancy, the HCA-1205A's finish is neat and contributes to its good looks.

On the test bench the HCA-1205A easily surpassed all of Parasound's specs except for frequency response, where I saw a -3-dB point of 83 kHz rather than 100 kHz — as if that matters to anyone. The amp's response was also very linear in the ultrasonic band, with low-power total harmonic distortion plus noise (THD+N) remaining well below 0.1 percent out to 100 kHz. Within the audio band, THD+N remained below 0.035 percent at any level below rated power. Noise was not a factor, remaining some 85 dB below 1 watt on Channel 1, the worst of the lot; the remaining channels were all 3 to 5 dB better still.

Power output was generous to a fault. The HCA-1205A clipped at around 200 watts on all channels into an 8-ohm load with one channel driven and at well over 300 watts with a 4-ohm load. With all five of its channels pumping simultaneously into 8-ohm loads, it still yielded more than 150 watts per channel after 10 seconds — even though my AC line voltage sagged to 110 volts (from 117 volts). Dynamic headroom with one channel driven (in-

to 8 ohms) was good at 1.7 dB, but note that this essentially duplicates clipping headroom, since the amp exceeds its steady-state power spec so easily. When all five channels were driven into 8 ohms simultaneously, the HCA-1205A still had dynamic headroom of about 1 dB, a small but potentially useful reserve.

I used the Parasound HCA-1205A to power the usual five-speaker home-theater suite in my 16 x 20-foot studio: a pair of B&W Model 803 Series 2 speakers and a B&W HTM Center speaker up front, two Citation 7.3 dipole/bipole surround speakers in the rear. I did all my critical listening with the 803/2s running full-range in order to stress the Parasound amp to the max.

The results leave me almost nothing to say except that the HCA-1205A performed admirably under all conditions, answering the call of everything I could throw at it. This included the two best multichannel recordings I know: the 5.1-channel Dolby Digital recording of the *1812 Overture* (Dallas Symphony and chorus) on Delos's *DVD Spectacular* (DV7001) and "String of Pearls" and other tracks from DMP's DTS-encoded, 5.1-channel *Glenn Miller Project* (MAS CD-802). These stunningly dynamic recordings sounded lively, quick, and preternaturally rich in ambience, with a level of effortlessness to big, snappy transients that I simply do not hear from matrixed surround encoding or ambience-enhanced playback using digital signal processing — or from less capable amplifiers, for that matter. I fed the Parasound a steady diet of effects-heavy movie scenes as well, from Dolby Digital laserdiscs and DVDs to DTS laserdiscs, which sounded almost as good. And the 5.1-channel DTS-encoded CD version of the Allman Brothers Band's classic *Live at Fillmore East* (HDS 4410) *rocked*, three-dimensionally.

I was unable to induce any audible signs of clipping at any sane level, even while playing organ music in my surround preamp's front/rear stereo mode (all channels driven equally), the sternest test I know. Nor was I able to ascribe any particular sonic character to the HCA-1205A — precisely what you want in an amplifier (or almost any other audio component, for that matter). In short, this is a one-box power block that is able-bodied enough to serve virtually any home theater. And where a powered sub is also part of the setup, you can delete the "virtually." □

## MEASUREMENTS

All data reflect worst-case one-channel operation into 8 ohms except as noted.

### OUTPUT AT CLIPPING (1 kHz)

8 ohms.....	203 watts
4 ohms.....	326 watts
all channels driven, 8 ohms.....	157 watts

### CLIPPING HEADROOM

(re 140-watt rated output) ..... 1.6 dB

### DYNAMIC HEADROOM

(re rated output, one channel driven)	
8 ohms (re 140 watts).....	1.7 dB
4 ohms (re 200 watts).....	2.2 dB

**DYNAMIC HEADROOM** (re 140-watt rated output, all channels driven) ... 1.2 dB

**DISTORTION** (THD+N, 1 kHz, 8 or 4 ohms) at rated power (140 watts)..... 0.02%  
at 1 watt..... 0.025%

**SENSITIVITY** (for 1 watt output) ... 100 mV

### FREQUENCY RESPONSE

10 Hz to 83 kHz +0, -3 dB

**NOISE** (re 1-watt output)..... -85 dB

### CHANNEL BALANCE

(Channel 3 re any other)..... +0.3 dB

## Authorized Dealers

AK- Alaska Audio; Juneau; Pyramid; Anchorage.  
AL- Cohen's Electronics; Montgomery; Kincaid's TV; Tuscaloosa;  
Lillis Audio; Birmingham; Homewood; Palm Audio Video; Huntsville.  
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Beach; Videotek; Westminster; Wilson Home Theater; Woodland Hills.  
CO- Listen Up; Denver; Boulder, Colorado Springs;  
Soundtrack; Denver & Suburbs; Boulder, Ft. Collins, Colorado Springs;  
CT- Al Franklin's; Greenwich; Audio Etc.; Orange; Carsons Stereo Video;  
Danbury; Roberts Audio Video; New London; The Sound Room;  
Westport; Stereo Shop; Hartford.  
DC & Washington Suburbs; Myer-Emco.  
DE- Sound Studio; Wilmington.  
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Stereotypes; Daytona Beach; Stuart AV; Stuart.  
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Stereo Connections; Valdosta; Stereo Festival; Atlanta.  
HI- Honolulu Home Theater; Honolulu.  
IA- Audio King; Cedar Rapids; Des Moines; Archer Audio Video;  
FL Dodge; Audio Video Logic; Des Moines; Audio Visions; Sioux City;  
Hawkeye Audio; Iowa City; Cedar Falls.  
ID- Ultimate Electronics; Boise; Wise Buy; Idaho Falls.  
IL- Absolute Audio; Rockford; United Audio Centers; Chicago &  
Suburbs; Good Vibes; Champaign; Jon's Home Ctr.; Quincy;  
Sound Forum; Crystal Lake; Sundown AV; Springfield.  
IN- Classic Stereo; Ft. Wayne; Mishawaka; Kings Great Buys;  
Evansville; Ovation Audio; Clarksville; Indianapolis; Lafayette.  
KS- Accent Sound; Overland Park; Advance Audio; Wichita;  
Audio Junction; Junction City; Manhattan.  
KY- Ovation Audio; Lexington; Louisville.  
LA- Alterman Audio; Metairie; Mike's Audio; Baton Rouge;  
Wright's Sound Gallery; Shreveport.  
MA- Cookin'; Chestnut Hill; Saugus; Goodwins Audio; Boston;  
Shrewsbury; Nantucket Sound; Hyannis; Northampton Audio;  
Northampton; Pittsfield Radio; Pittsfield.  
MD- Gramophone; Baltimore; Ellicott City; Myer-Emco; Gaithersburg;  
Beltsville; Rockville; Sight & Sounds; Easton; Soundscape; Baltimore.  
ME- Cookin'; Portland.  
MI- Pecar's Troy Classical Jazz Holland; Sound North; Iron Min.;  
Stereo Center FRAV; Flint; Court St. Listening Room; Saginaw.  
MN- Audio King; Minneapolis & Suburbs; Rochester, St. Cloud;  
Audio Designs; Winona.  
MO- Independence AV; Independence; Sound Central; St. Louis.  
MS- Ideal Acoustics; Starkville; McLelland TV; Hattiesburg;  
Players AV; Ridgeland.  
MT- Avitel; Bozeman; Rocky Mt. HI FI; Great Falls.  
NC- Audio Video Systems; Charlotte; Audio Visions; Wilmington;  
Audio Lab; Wilmington; Now Audio Video; Durham, Greensboro,  
Raleigh, Winston Salem; Tri City Electronics; Conover.  
NE- Custom Electronics; Omaha; Lincoln.  
NH- Cookin'; Nashua; Manchester; Newington, Salem, S. Nashua.  
NJ- Hal's Stereo; Trenton; Monmouth Stereo; Shrewsbury;  
Woodbridge Stereo; West Caldwell; Woodbridge.  
NM- Ultimate Elect.; Albuquerque; Sound Ideas; Albuquerque.  
NV- Ultimate Elect.; Las Vegas; Upper Ear; Las Vegas.  
NY- Audio Breakthroughs; Manhasset; Audio Den; Lake Grove;  
Clark Music; Albany, Syracuse; Stereo Exchange; Manhattan;  
Hart Elect.; Vestal; Innovative Audio; Brooklyn; Listening Room;  
Scarsdale; Rowe Camera; Rochester; Speaker Shop; Amherst.  
OH- Audio Craft; Akron, Cleveland, Mayfield Hts., Westlake; Audio Etc.;  
Dayton; Classic Stereo; Lima; Ohio Valley Audio; Cincinnati;  
Paragon Sound; Toledo; Stereo Visions; Columbus;  
Threshold Audio; Heath; Unique Home System; Cincinnati.  
OK- Audio Dimensions; Oklahoma City; Photo World; Stillwater,  
Shawnee; Ultimate Electronics; Tulsa.  
OR- Bradford's HiFi; Eugene; Chelsea A/V; Portland, Beaverton;  
Kelly's Home Ctr.; Salem; Magnolia HiFi; (Portland), Beaverton,  
Clackamas; Stereo Plant; Bend.  
PA- Audio Junction; Pittsburgh; Gary's Elect.; State College;  
GNT Stereo; Lancaster; Hart Elect.; Blakey; HI FI House; Abington,  
Broomall, Camp Hill, Harrisburg; Listening Post; Pittsburgh;  
Palmer Audio; Allentown; Stereo Shoppe; Sellersville, Williamsport;  
StereoLand; Natrona Heights; The Stereoshop; Greensburg.  
RI- Stereo Discount Ctr.; Providence.  
SC- A/V Design; Charleston; Custom Theater & Audio; Myrtle Beach;  
Upstairs Audio; Columbia.  
SD- Audio King; Sioux Falls; Sound Pro; Rapid City.  
TN- College HiFi; Chattanooga; HI FI Buys; Nashville; Now Audio Video;  
Knoxville; Modern Music; Memphis; Sound Room; Johnson City.  
TX- Home Entertainment; Dallas, Houston, Plano; Audio Tech; Temple;  
Audio Video; College Station; Bunkley's Sound Systems; Abilene;  
Bjorn's; San Antonio; High Fidelity; Austin; Krystal Clear; Dallas;  
Marvin Electronics; Ft. Worth; Sound Quest; El Paso; Sound Systems;  
Amarillo; Sound Towne; Texarkana.  
UT- AudioWorks; Salt Lake City; Crazy Bob's; St. George; Stokes  
Bros.; Logan; Ultimate Elect.; Layton, Murray, Orem, Salt Lake City.  
VA- Myer-Emco; Falls Church; Tyson's Corner; Fairfax; Audio Connection;  
Virginia Beach; Audiobronics; Roanoke; Home Media Store; Richmond.  
WA- Magnolia HiFi; Seattle & Suburbs; Tacoma, Silverdale, Spokane;  
Pacific Sight & Sound; Wenatchee; Tin Ear; Kennewick.  
WI- Absolute Sound & Vision; Sheboygan; Flanner's A/V; Milwaukee;  
HI-FI Heaven; Appleton, Green Bay; Sound World; Wausau.  
Puerto Rico- Precision Audio; Rio Piedras.  
Canada- A & B Sound; Calgary, Edmonton, Kelowna, Vancouver &  
Suburbs, Victoria; Advance Electronics; Winnipeg; Bay Bloor Radio;  
Toronto; Canadian Sound; Brampton, Ont.; Digital Dynamics;  
Clearbrook; Harrington Audio; Peterborough, Ont.; Kebeeson;  
Montreal; Lipton's; New Market, Ont.; Sound Decisions; Duncan, B.C.;  
Sound Room; Vancouver; StereoLand; Windsor; Treble Clef; Ottawa.  
Mexico- Contact Grupo Volumen; Mexico City.



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# BLOCK BUSTERS

Five potent subs for a thousand dollars or less **by Tom Nousaine**

Although a small subwoofer can be a mighty satisfying part of your home theater, a larger, more expensive sub generally goes lower and plays louder. Why is that so important? Because recordings that actually have deep loud bass will sound more realistic and have more impact. If you never watch action/adventure movies or listen to music with deep bass (such as organ music), you might find that a small sub is really all you need. On the other hand, if you want the thrill of being able to play anything with big bass just as the composer wrote it, the musicians played it and the recording engineer laid it down, then a bigger subwoofer is probably what you'll want.

Can you get adequate bass from large full-range stereo speakers? If you're lucky, yes. However, speaker placement is critical for good bass performance — and the location that provides the best performance at frequencies above 100 Hz is not the same one that delivers the goods at subwoofer

DIGITAL IMAGING BY CHRIS GOULD

**LEFT TO RIGHT** B&W ASW2000, Velodyne VA1012-XII, PSB Stratus SubSonic 3i, Energy ES-12XL, and Klipsch KSW300





frequencies. A subwoofer can solve the dilemma of speaker positioning — whether to favor deep bass or the upper part of the spectrum — for both two- and five-channel playback systems.

The subwoofers tested here are priced between \$700 and \$1,000 and have drivers that measure 10, 12, or 15 inches. They have powerful amplifiers, variable electronic low-pass crossovers, and adjustable level and phase controls, and they automatically power up when they sense a signal input. They all have both line- and speaker-level inputs, and they include feed-through outputs with high-pass filtering for satellite speakers. Some also have bonus features such as special equalization settings, magnetic shielding, and crossover bypasses for use with receivers and surround processors that have their own subwoofer crossovers.

In a previous article last spring (“Supercubes,” April 1997), I compared six small subwoofers. Later, I explained the pros and cons of moving up in size

(“How Big Is Big Enough?” in September 1997). Now it’s time for an in-depth investigation of several current subwoofers larger than our initial sextet. These five subs are bigger and badder, cost more, and take up more floor space than those small subs, but in return they go lower and play louder.

### REAL-WORLD PERFORMANCE TESTS

What performance aspects are important for subwoofers? Basically we want to know whether these subs go low enough and play loud enough to reproduce the bass in modern movie soundtracks and music recordings with realism and authority. I used the same basic test method as in the small-sub comparison, placing the subwoofers, one at a time, in the right rear corner of the room — the location that I’ve found delivers the best performance at my listening seat.

To start, I placed a microphone to measure sound-pressure level (SPL) and frequency response right in the listening seat, which just happens to be 2 meters from the subwoofer location. Thus, you can compare my SPL measurements with others made at the usual 1-meter distance by subtracting 6 dB from those numbers.

I used a maximum-length-sequences system analyzer (MLSSA) and an Audio Control 3050a sound-level meter for all the measurements. The frequency response was measured at 85 dB SPL using an MLS signal. Maximum SPL was measured using both actual program material and a sequence of tone bursts of increasing frequency. We set a 10-percent distortion limit for the tone-burst measurements, and distortion was measured using a separate microphone placed in the direct field of the subwoofer. The average maximum tone-burst SPL produced by each sub in the range from 25 to 62 Hz was noted, and that number — translated to a



smaller room so that the results can be compared directly to measurements given in previous articles — is given in the measurements section of the individual photo boxes.

Why did we set the maximum allowable distortion at 10 percent? When a driver is leaving its linear-excursion range or an amplifier is going into clipping, it will be producing about 10 percent distortion. Any further increase, and audible distortion rises explosively.

I also measured the maximum SPL attainable without obvious overload with real video and music programs. I used the explosion scene from Chapter 14 of the *Clear and Present Danger* laserdisc, "It's Live" from Bass Erotica's *Bass Ecstasy* (Neurodisc), the recreation of the *Jurassic Park* lawyer-eating scene, entitled "Jurassic Lunch," on *The Great Fantasy and Adventure Album* (Telarc), and the black-powder cannon blasts from Tchaikovsky's *1812 Overture* (Telarc). These sources all have very low and very loud bass content. The maximum SPL measured during the *Clear and Present Danger* track and the average of the maximum SPLs measured for the three music tracks also appear in the measurement data.

Unlike most loudspeaker measurements, these represent real-world performance. They were taken in a real room at a realistic listening position and distance, and they predict what someone in a real room can expect to hear. By contrast, most speaker measurements are made under quasi-anechoic conditions precisely to remove the effects of the room in which the measurements are taken. At higher frequencies this is important, because the purpose of the measurements is to compare speakers and not the rooms they're in. But a speaker will never be used anechoically, so such tests do not necessarily represent the actual sound any listener will hear.

At subwoofer frequencies, however, things are simpler with respect to in-room performance. Performance maps that I made of eight different rooms show that a corner location nearly always delivers the best possible (lowest, loudest, and smoothest) in-room performance. At low frequencies the bass reinforcement from the room is very helpful and needs to be included — as it is in our measurements — to give a true picture of a speaker's real-world performance.

One difference from our April 1997 report is that the new measurements

were made in a room that is considerably larger. My old room was a 12 x 22-foot shoebox with a standard 8-foot ceiling. The new room has a 13 x 23-foot floor plan, but it also opens to a staircase and a foyer. It has three open doorways altogether and an 18-foot cathedral ceiling. It is a much larger space in every way.

You may have been told that a big room supports bass better than a small one. This is utter nonsense. My new room has less extension and a lower SPL at low frequencies than the smaller one. I measured the transfer functions of the same subwoofer in both rooms, and from this data I calculated the performance you can expect from each tested sub in both a medium-size room and a large one.

I also installed each subwoofer in a 7.1-channel playback system built around a Lexicon DC-1 processor and Paradigm powered loudspeakers. All of the subs tested here were easily installed and balanced to the reference system. They're discussed below in ascending order of rated amplifier power.

## HOW THEY MEASURED UP

**Velodyne VA1012-XII** Velodyne is best known for its line of servo-controlled, low-distortion subwoofers. However, the VA1012-XII is part of the company's lower-price series of subs using passive radiators instead of servomechanisms. A passive radiator, often called a vent substitute, is just a cone without a magnet or voice coil. It works just like a very large, long port, simulating a large air mass. In the case of the VA1012-XII, the passive radiator allows a bass-reflex box to be tuned in a way that might not be possible otherwise given the enclosure's dimensions.

The VA1012-XII has a 10-inch paper-cone woofer driven by an amplifier rated at 100 watts continuous or 250 watts peak. The 12-inch passive radiator faces downward on the bottom of the cabinet. The sub packs a full set of features into the relatively small enclosure. It's the smallest model tested here and, at 56 pounds, the lightest, too.

Operating features include a variable 40- to 120-Hz "dual staggered" low-pass crossover. Its slope begins at 12 dB per octave and ends at 24 dB per octave. Selectable 80- or 100-Hz high-pass filters with slopes of 6 dB per octave are available for both the line-level



**VELODYNE VA1012-XII**

### HIGHLIGHTS

- Woofer size: 10 inches
- Passive radiator: 12 inches
- Enclosure: bass-reflex
- I/O: line-level and speaker-level
- Variable low-pass crossover (40 to 120 Hz)
- Phase-reverse switch
- Auto-on
- Finish: black vinyl woodgrain with granite vinyl trim legs
- Magnetically shielded

### DIMENSIONS

17½ x 17¼ x 17½ inches (W x H x D)  
**Footprint** 2 square feet  
**Gross volume** 3¼ cubic feet

**WEIGHT** 56 pounds

### MANUFACTURER'S RATINGS

**Amplifier power** 100 watts continuous  
**Frequency response** 28 to 120 Hz  
 ±3 dB

**WARRANTY** 2 years

**PRICE** \$699

### MANUFACTURER

Velodyne Acoustics, Dept. SR, 1070 Commercial St., Suite 101, San Jose, CA 95112; telephone, 408-436-7270

### MEASUREMENTS

**Frequency response** 29 to 80 Hz  
 ±2.5 dB  
**Low-end extension** (at 10% distortion): 29 Hz  
**Tone-burst sequence SPL** (25 to 62 Hz, 10% distortion limit): 102 dB  
**Maximum average music SPL** (with no obvious distortion): 105 dB  
**Maximum soundtrack SPL** (*Clear and Present Danger* explosion): 107 dB

and speaker-level outputs. Other features include a phase switch, a crossover bypass option, a detachable line cord, input-overload protection, and a special gain-compression circuit that prevents overexcursion of the woofer.

The performance of the VA1012-XII was very good. Frequency response was flat — 29 to 80 Hz ±2.5 dB — in my large room; expect extension to 27 Hz in a smaller room. The crossover



had a slope of 24 dB per octave at all settings, but the actual crossover points did not vary much even at full spin of the frequency control. At the spot marked 40 Hz, the actual crossover point was about 70 Hz, and at 120 Hz it was really about 105 Hz.

Because subwoofers must accommodate a wide range of input voltage from line to speaker level, they often have a fair degree of hum at higher volume-control settings. The Velodyne VA1012-XII, however, was dead quiet at *all* volume settings. Impressive.

As with all the subs tested here, 25 Hz is the lowest frequency you can expect to get from the Velodyne with healthy output in a real room. With the tone-burst test, it averaged 99 dB SPL from 25 to 62 Hz and 100 dB from 25 to 80 Hz with no more than 10 percent distortion. In a smaller room you can expect 102 and 103 dB, respectively.

With real program material and with the distortion limits removed, the Velodyne whacked out 107 dB SPL on the *Clear and Present Danger* explosion and averaged 105 dB on the music tracks. While these are not Olympian numbers, they should be quite adequate for most systems. The main limit of this subwoofer is its relatively restricted upper-range bandwidth. It may not be the best choice for use with ultra-tiny, limited-range satellites.

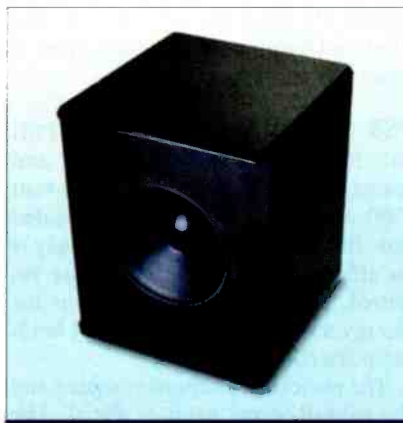
**Energy ES-12XL** The Energy ES-12XL is the most stylish of the subwoofers in this group. The enclosure is fabric-wrapped with a glossy black top. A recessed control panel is located on the rear of the cabinet. The recessed panel offers no particular functional advantage, but when it is combined with the subwoofer's slick finish and striking dimensions, the Energy ES-12XL has a style quotient that surpasses any other sub I've met at any price.

This 70-pounder brims with features as well, including an 80-Hz high-pass crossover for both the line-level outputs (18 dB per octave) and the speaker-level outputs (6 dB per octave). The ES-12XL includes all the standard features except a crossover bypass, but it supplies a bass-equalization circuit and a rotary phase control. Specifications include a frequency response of 22 to 100 Hz +0, -3 dB and amplifier power of 150 watts continuous, 600 watts peak. The crossover is variable from 50 to 100 Hz at 18 dB per octave.

In operation, the ES-12XL's response extended to 28 Hz in my large room.

You can expect to get extension to 26 Hz in a smaller room. The crossover was unusually precise. Slopes started out at 12 dB per octave but sharpened to 24 dB as the frequency increased. The subwoofer had plenty of hum at high volume-control settings.

The bass-equalization circuit has a



ENERGY ES-12XL

#### HIGHLIGHTS

- Woofer size: 12 inches
- Enclosure: acoustic-suspension
- I/O: line-level and speaker-level
- Variable low-pass crossover (50 to 100 Hz)
- Variable phase control (0 to 180 degrees)
- Auto-on
- Finish: high-gloss black lacquer top, fabric-wrapped cabinet

#### DIMENSIONS

17¼ x 21 x 18 inches (W x H x D)

Footprint 2¼ square feet

Gross volume 3¾ cubic feet

WEIGHT 70 pounds

#### MANUFACTURER'S RATINGS

Amplifier power 150 watts continuous

Frequency response 21 to 100 Hz  
+0, -3 dB

WARRANTY 1 year

PRICE \$800

#### MANUFACTURER

Energy Loudspeakers, Dept. SR, 3641  
McNicol Ave., Scarborough, Ontario  
M1X 1G5; telephone, 416-321-1800

#### MEASUREMENTS

Frequency response 28 to 110 Hz  
±4 dB

Low-end extension (at 10%  
distortion): 28 Hz

Tone-burst sequence SPL (25 to 62  
Hz, 10% distortion limit): 101 dB

Maximum average music SPL (with  
no obvious distortion): 107 dB

Maximum soundtrack SPL (*Clear  
and Present Danger* explosion): 109 dB

setting that is continuously variable from -3 to +3. At the -3 setting, response was trimmed by 1 dB between 30 and 50 Hz. At the +3 setting, response was boosted by 5 dB from 40 to 70 Hz and cut by 7 dB below 35 Hz. Energy suggests that the control reduces boominess at the bottom of its rotation and adds "oomph" for movies at the plus settings.

With a 10-percent distortion threshold, the sub kicked out an average of 98 dB SPL over the range from 25 to 62 Hz, and 99 dB when the range was expanded to 80 Hz; expect 101 dB or more in a smaller room. With program material, it pounded out an average 107 dB SPL on my music selections and 109 dB on the *Clear and Present Danger* explosion. Again, those aren't new world records, but it was pretty darn loud and should be perfectly adequate for most applications.

**B&W ASW2000** Now here is a real high-tech piece if I ever saw one. The rear panel of the B&W ASW2000 sports a pair of heat sinks and a large round cover for the toroidal transformer used in the power amplifier. It reminded me of an oil filter you'd see on a race car — really. The bass-reflex enclosure houses a 12-inch woofer and has a 4-inch port with a huge flared mouth on its bottom side, which is raised above the floor on feet.

Flaring the ends of a port reduces turbulence and noise and the tendency to grunt and blat at high output levels. The B&W's port is flared at both ends, but the exit mouth has the most graceful flare I've seen, with both a functional taper and a stylish dimpled surface. It's impressive and good-looking, even if it is hidden in normal use.

The amplifier is rated at 175 watts continuous, and the ASW2000 has all the trimmings except a crossover bypass and special bass-EQ settings. But don't assume that the lack of a knob or switch implies that there is no equalization. Indeed, the hallmark of good powered speakers is clever and functional electronic equalization included as a design element. That's one reason powered subwoofers offer so much performance for the money.

The crossover range is 40 to 140 Hz at 24 dB per octave. The 80-Hz high-pass filtering slopes off at 18 dB per octave for the line-level outputs, 6 dB per octave for the speaker-level outputs.

The ASW2000 was big in performance. The electronics were dead quiet



**B & W ASW2000**

#### HIGHLIGHTS

- Woofer size: 12 inches
- Enclosure bass-reflex;
- I/O: line-level and speaker-level
- Variable low-pass crossover (40 to 140 Hz)
- Phase-reverse switch
- Auto-on
- Finish: black ash vinyl with black cloth grille
- Magnetically shielded

#### DIMENSIONS

21 $\frac{3}{4}$  x 19 $\frac{3}{4}$  x 21 inches (W x H x D)

Footprint 3 $\frac{1}{4}$  square feet

Gross volume 5 $\frac{1}{4}$  cubic feet

**WEIGHT** 77 pounds

#### MANUFACTURER'S RATINGS

**Amplifier power** 175 watts continuous

**Frequency response** 22 to 140 Hz  $\pm 3$  dB

**WARRANTY** 5 years

**PRICE** \$1,000

#### MANUFACTURER

B&W Loudspeakers, Dept. SR, 54 Concord St., North Reading, MA 01864; telephone, 800-370-3740

#### MEASUREMENTS

**Frequency response** 29 to 115 Hz  $\pm 3$  dB

**Low-end extension** (at 10% distortion): 29 Hz

**Tone-burst sequence SPL** (25 to 62 Hz, 10% distortion limit): 107 dB

**Maximum average music SPL** (with no obvious distortion): 114 dB

**Maximum soundtrack SPL** (*Clear and Present Danger* explosion): 114 dB

no matter what the volume setting, and it kicked butt in the SPL department. At 85 dB SPL the response extended from 29 to 115 Hz ( $\pm 3$  dB) in my large room. Expect 26 Hz in a smaller room. The ASW2000 radiates class in the operating department. The crossover slope measured 24 dB per octave, as rated, and the turnover frequencies closely matched the actual acoustic response.

Output with a 10-percent distortion limit was 103 dB SPL from 25 to 62 Hz. In a smaller room the number would be 107 dB SPL. On program material the subwoofer played very large as well. Maximum SPL was 115 dB on the Bass Erotica disc, with an average 114 dB on music. The explosion on *Clear and Present Danger* delivered 114 dB at the key listening seat. That is Olympic-level output from a first-class performer.

**PSB Stratus SubSonic 3i** This PSB sub follows the high-tech path and sports a 15-inch driver and a 300-watt (700-watt peak) amplifier in a sealed box. Its switched-mode power supply is so efficient that no heat sinks are required. The back panel is as flat as the Energy sub's except that the dual binding posts stick out slightly.

The enclosure footprint is square and the overall shape nearly cubical. The 64-pound cabinet, only slightly larger than the Velodyne sub's, is completely wrapped with a black fabric sock and capped with a snap-on top available in roughcast or high-gloss black finishes. Unlike the other subs, the PSB has no removable grille, so the front-mounted driver is never visible.

A full set of input and output facilities is provided, but there is no crossover bypass. The variable (50- to 150-Hz) low-pass crossover uses fourth-order filters (24 dB per octave). There is an 80-Hz line-level high-pass filter with a slope of 12 dB per octave and a 100-Hz speaker-level high-pass filter. Frequency response is specified as 24 to 150 Hz  $\pm 3$  dB, with a -10-dB point of 20 Hz.

The Stratus SubSonic 3i makes serious bass. I measured its frequency response as 28 Hz to 132 Hz  $\pm 3$  dB. In a smaller room expect a low end of 26 Hz. At 10 dB down, the response bandwidth was 25 Hz in the big room, which would translate to 23 Hz in the smaller space. In a *very* small room, 20 Hz may be attainable.

Operationally the PSB sub was wonderful. The electronic protection made it difficult to overdrive the woofer even when I ran it hard enough to melt the 12-ampere fuse. When the crossover said 50 Hz the actual turnover point was 50 Hz. At a marked 80 Hz it measured 75 Hz. At 100 Hz it was about 85 Hz, and at an indicated 150 Hz it was 132 Hz. Slopes were a minimum of 24 dB per octave. There was a little hum at the maximum volume setting.

The SubSonic 3i averaged 100 dB

SPL from 25 to 62 Hz and 101 dB from 25 to 80 Hz in the large room, which would translate to 104 dB for both ranges in a smaller room. With program material, the sub whacked out an amazing 115 dB SPL on the *Clear and Present Danger* bomb and on the Bass Erotica CD, and it also averaged 115 dB over the three music tracks. This, too, is Olympic-level performance.



**PSB STRATUS SUBSONIC 3i**

#### HIGHLIGHTS

- Woofer size: 15 inches
- Enclosure: acoustic-suspension
- I/O: line-level and speaker-level
- Variable low-pass crossover (50 to 150 Hz)
- Phase-reverse switch
- Auto-on
- Finish: black roughcast or high-gloss black

#### DIMENSIONS

17 $\frac{1}{2}$  x 19 $\frac{1}{4}$  x 17 $\frac{1}{2}$  inches (W x H x D)

Footprint 2 square feet

Gross volume 3 $\frac{1}{2}$  cubic feet

**WEIGHT** 64 pounds

#### MANUFACTURER'S RATINGS

**Amplifier power** 300 watts continuous

**Frequency response** 24 to 150 Hz  $\pm 3$  dB

**WARRANTY** 1 year

**PRICE** \$899; \$999 in high-gloss finish

**MANUFACTURER** PSB, Dept. SR, 633 Granite Ct., Pickering, Ontario L1W 3K1; telephone, 800-263-4641

#### MEASUREMENTS

**Frequency response** 28 to 132 Hz  $\pm 3$  dB

**Low-end extension** (at 10% distortion): 28 dB

**Tone-burst sequence SPL** (25 to 62 Hz, 10% distortion limit): 104 dB

**Maximum average music SPL** (with no obvious distortion): 115 dB

**Maximum soundtrack SPL** (*Clear and Present Danger* explosion): 115 dB



**Klipsch KSW300** The Klipsch KSW 300 sub has the biggest woofer (15 inches) and shares the highest amplifier rating (300 watts continuous) in this group. It weighs 76 pounds.

The 15-inch paper-cone woofer faces downward on the bottom of the cabinet. Visually the box shows only rounded top edges, the control/amplifier panel on the rear, and a 4-inch flared port located near the top front edge of the right side wall. It looks like a squashed 2001 monolith with a hole in one side. That's either terrific or strange depending on your taste. Personally, I like it.

Special features include a video-compensation setting plus a line-level LFE (low-frequency effects) input. High-pass filtering (6 dB per octave) is switchable between 40 and 80 Hz at line level, and the speaker-level high-pass filter is fixed at 100 Hz. The crossover is variable from 40 to 120 Hz and has a slope of 24 dB per octave. Frequency response is rated as 25 to 120 Hz  $\pm 3$  dB and maximum output as 112 dB SPL.

There was only a rough correspondence between the crossover markings on the Klipsch sub and its actual acoustic performance at the lower end of the crossover range. When the crossover was set to 40 Hz, for example, the actual crossover measured about 75 Hz. However, the level and crossover controls have convenient click stops that make finding (or refinding) a particular setting much easier. There was also a fair amount of hum at higher volume settings, which could be a problem in ultraquiet listening rooms.

The output of the KSW300 was remarkable. Response extended from 30 to 160 Hz in my large room, with somewhat more ripple than usual ( $\pm 4$  dB). You can expect extension to 26 Hz in a smaller room.

It got really loud. Indeed, the Klipsch sub produced 92 dB SPL at 25 Hz with less than 10 percent distortion, and it put out more than 107 dB from 32 to 50 Hz, and 112 dB from 50 Hz upward. This performance yielded an average SPL of 106 dB from 25 to 62 Hz in my large room (expect 109 dB in a smaller room). At lower frequencies the port grunted loudly when I passed its maximum output capability.

Because most programs also contain a good deal of energy above 40 Hz, the Klipsch produced the most output on the music tracks of any subwoofer I have used. Its average output was 116 dB SPL on the music and 118 dB on



**KLIPSCH KSW300**

#### HIGHLIGHTS

- Woofer size: 15 inches
- Enclosure: bass-reflex
- I/O: line-level and speaker-level
- Variable low-pass crossover (40 to 120 Hz)
- Phase-reverse switch
- Auto-on
- Finish: matte black vinyl

#### DIMENSIONS

19 x 19½ x 20 inches (W x H x D)

Footprint 2¾ square feet

Gross volume 4¼ cubic feet

**WEIGHT** 76 pounds

#### MANUFACTURER'S RATINGS

**Amplifier power** 300 watts continuous

**Frequency response** 25 to 120 Hz  $\pm 3$  dB

**WARRANTY** 5 years on speaker. 2 years on electronics

**PRICE** \$999

#### MANUFACTURER

Klipsch, Dept. SR, 8900 Keystone Crossing, Suite 1220, Indianapolis, IN 46240; telephone, 800-554-7724

#### MEASUREMENTS

**Frequency response** 30 to 160 Hz  $\pm 4$  dB

**Low-end extension** (at 10% distortion): 30 Hz

**Tone-burst sequence SPL** (25 to 62 Hz, 10% distortion limit): 109 dB

**Maximum average music SPL** (with no obvious distortion): 116 dB

**Maximum soundtrack SPL** (*Clear and Present Danger* explosion): 118 dB

the explosion from *Clear and Present Danger*. That is Herculean output.

Of course, the Klipsch sub's response falls at 24 dB per octave at very low frequencies, so it couldn't match the best of the 20-Hz-extension subwoofers in the world. But it kicks everybody's butt from 40 Hz upward. For a videophile who never plays organ music, the Klipsch KSW300 has to be among the top choices on the market today, especially at its price.

## THE LOWDOWN

As a class, these five subwoofers show evolutionary improvements in overall operating character. It used to be common to find considerable interaction between level and crossover controls; if you reset one, the other was sure to be affected. Not anymore. All these subs had remarkable independence between the two primary controls.

Listening revealed that all five, once properly set up, sounded identical with programs that had limited bandwidth and dynamic bass. If you listen to jazz, blues, pop, light classical, or MOR, any of these subwoofers will provide a proper foundation. For example, with the string-bass sound on the Oscar Peterson Trio's *We Get Requests* CD (Verve), which I used to test the subwoofers' ability to reproduce bowed and plucked bass with spatial accuracy and without overload, all five subs sounded fantastic — and virtually indistinguishable from each other.

Sonic differences come with the big-bass stuff. Lower and louder gives more thrill, a greater tactile sensation, and generally a bigger sound field that is more realistic spatially and dynamically. Since these subwoofers had practically identical extension, the main sound-quality distinctions concern their maximum-output capabilities with bass-heavy recordings.

The B&W, PSB, and Klipsch subs are capable of producing substantial maximum output levels. It is only reasonable that they cost 30 to 40 percent more than the least expensive model tested. Among our test group, the Velocity offers the best value, the Energy captures the style award hands down as far as I'm concerned, the Klipsch offers the most output but with diamond-in-the-rough demeanor, and the PSB and B&W are killer high-tech, high-output subwoofers.

Manufacturers, it seems fair to say, have been doing their homework. Prices are remaining stable, output has moved up a step, and operating characteristics are improving. The typical subwoofer in this price range still fails to do justice to the very lowest and loudest program material available, such as organ music. But for pop, rock, jazz, and most movie soundtracks, they fill all the basic requirements and remain the single easiest, least expensive, and most effective upgrade path to improve the performance of a music or home-theater system. □



The first cover (1958) of *HiFi & Music Review*, which became *HiFi/Stereo Review* in 1960 and *Stereo Review* in 1968.

Audio Fidelity's "Stereodiscs" were hailed in a May 1958 ad as the "first major development in phonograph records since the transition from cylinder to disc."



This early stereo tuner from Harman Kardon (1958) received one channel of stereo broadcasts on AM and the other on FM.

The arrival of stereo LPs sparked a proliferation of two-channel gear. In the August 1958 issue, Warren DeMotte evaluated the first integrated stereo amplifiers, including the Madison Fielding Model 320, which sold for \$169.95.



# Flashback

Story by Julian Hirsch and David Ranada



The year was 1958. Eisenhower was President, and the space age had arrived with the birth of NASA and the launch of the first U.S. satellite a couple of months after the Russians put up Sputnik. Hula hoops were the rage, and novelty songs like "Yakety Yak" and "The Purple People Eater" were common on the radio (thanks to all those baby boomers). Eight of the Top 10 TV shows were westerns, and the first Dick Clark Saturday Night Show featured Jerry Lee Lewis singing "Great Balls of Fire."

Of course, 1958 was also the year that the first stereo LPs trickled onto store shelves and the maiden issue of *HiFi & Music Review* rolled off the press. Hi-fi hobbyists weighed the move from mono to two-channel sound, which required a second (usually large) speaker and an electronics upgrade. Not

everyone was convinced stereo was all that it was cracked up to be, but in an article titled "The Straight Steer on Stereo," Robert Cobb examined the new format: "What we have been lacking . . . is the means for adding depth and perspective to reproduced sound. This void is now filled by stereo."

We asked Julian Hirsch to reminisce about the early days of audio and David Ranada to look back on the technological milestones of the past twenty or so years. Brian Fenton and I scoured back issues in search of intriguing images from audio's colorful past. We could have filled the whole magazine with what we found, but finally we settled on a few dozen snapshots that remind us of just how far we've come. Enjoy!

— Bob Ankosko

## The First 20 Years Julian Hirsch

Although my audio testing (and later, writing) activities began on a part-time basis in the early 1950s, they became a full-time career when I became associated with *HiFi/Stereo Review* (as this

## 1961

The FCC authorized multiplex stereo FM broadcasting in 1961, enabling listeners to tune in stereo from a single FM station.



Shure's classic V-15 phono cartridge cost \$62.50 in 1964. A recently revived version, the V15xMR, lists for \$300.

The open-reel tape recorder was an audiophile staple in the 1950s and 1960s. The Ampex Model 1070 (1964) cost \$399.

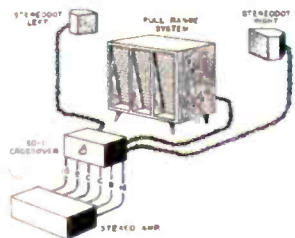


Garrard was a popular brand of turntable in the 1960s. The Model 60 MkII cost \$74.50 in 1967.



The ADC Model 1000 "pushbutton" receiver from 1968 was one of the first to offer electronic tuning and radio presets.





Early sub/sat (1958): the Stephens Stereodot system converted a full-range mono speaker (middle) into a three-speaker stereo rig in which the big box reproduced only bass frequencies.

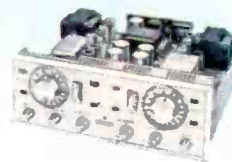


Do-it-yourself kits were popular in the 1950s and 1960s. The Heathkit WA-P2 preamp (1958) sold for \$19.75.



Six "jumbo bookshelf speakers" from 1959, including the classic Acoustic Research AR-3 (top right).

AlphaSonic's "Surround-Sound" speaker (1959) had an 8-inch woofer and an upward-firing tweeter said to radiate sound a full 360 degrees.



In a 1960 ad, H. H. Scott touted its Model 399 as the first "all-in-one amp/tuner combination... with separate-component quality."



magazine was then known) in 1961. My early test reports included the Harman Kardon Citation III power amplifier and the KLH 10 speaker, both very good even by today's standards.

Thirty-seven years and thousands of tests later, I am looking back on what has been the most enjoyable and rewarding career that I could ever have imagined. For the 40th birthday celebration of the magazine, I was asked to reflect on products that I consider to have been particularly noteworthy. Of course, it would take far more pages than we have to cover *everything*, but here are a few highlights.

The LP record was the dominant program source in the early 1960s, and the January and March issues in 1963 presented reports on two superb record players from Weathers and Acoustic Research. In contrast to previous conventional designs, with their heavy platters and motors, these low-mass turntables were driven by miniature clock-like motors, and they provided superior performance at low prices.

In those days, it was still technically (and economically) feasible to assemble

most audio components from kits. Many of my early test instruments, as well as my Heath, Dynaco, and Eico components, were assembled from kits. Our reviews in the 1960s regularly dealt with kit-assembled components.

In July 1964 we reported on the Shure V-15 stereo phono cartridge, one of the most refined record transducers of that or any other time. Its latest version is still available, a sign that the LP remains a viable source of recorded music for serious listeners.

In December 1965, the long-awaited Marantz 10B FM stereo tuner finally made its appearance after years of development. Though one of the finest FM tuners ever made, it was too late in arriving, and the asking price of \$600 proved too costly for it to be a success.

In September 1968, we reported on an unconventional loudspeaker from a new company. The unique appearance and distinctive sonic qualities of the Bose Model 901 were controversial — and still are thirty years later in its current version — but Bose has been highly successful with its numerous innovative product designs and today is among

the largest manufacturers of high-fidelity speaker systems.

The Dynaco A-25 speaker we reviewed in June 1969 became one of David Hafler's most popular models thanks to its rare combination of excellent sound, compact size, and an affordable price. Dynaco, originally noted for producing high-quality output transformers, also earned an enviable reputation for its excellent power amplifiers and tuners, offered in both kit and assembled forms.

In November 1969, I tested the McIntosh MC-3500 power amplifier, with its conservatively rated 350-watt output, and in the process tested my weight-lifting abilities as well as my collection of 250-watt load resistors! This huge mono tube amp was too large and heavy to be lifted or placed on the test bench, but somehow I got the job done and even got a chance to listen to it. Of course, it sounded excellent, though it was expensive at \$1,100 (far more in 1998 dollars).

In October 1970, we reported on a new product that, as it eventually turned out, heralded a revolution in recorded-



Advent's \$250 Model 100 noise-reduction system introduced the world to Dolby B in 1969.

Bose introduced its now-famous Model 901 speaker system in 1968. For \$476 you got two speakers and an outboard equalizer.



Philips introduced the cassette in 1964, but it didn't take off as a music format until Dolby B noise reduction hit the scene years later. Of the *seventeen* cassette decks Julian Hirsch tested for *this 1970* article, only three had Dolby NR.

Our groovy November 1970 cover



The digital readout on Sherwood's SEL-300 FM tuner was a rare feature in 1971.



The short-lived quad era began in 1970 with Fisher's Model 701 receiver (top), which cost \$700 and had 40 watts per channel. Also shown: Sansul's QR-500 quad receiver (reviewed in 1972).

Bet you'd forgotten all about the "world's first" (and last?) eight-track changer, which Telex introduced in the early 1970s.



The Phase Linear Model 700 could crank out 420 watts per channel into 8 ohms, making it the "super amp" of 1972.

Sony introduced the Betamax videocassette recorder in 1975. Dolby Stereo made its theatrical debut the next year, and in 1977 *Star Wars* wowed moviegoers with its special surround-sound effects.

The Audio Pulse Model One time-delay system we reviewed in 1977 was an early attempt to restore ambience in music recordings.



JVC introduced the VHS VCR in 1977. Ultimately, of course, the longer-running VHS format trounced Sony's Betamax in the marketplace.

music reproduction. The Advent Model 100 noise-reduction unit introduced the consumer audio world to the Dolby B system, which was instrumental in making the Compact Cassette introduced by Philips several years earlier a listenable medium for high-quality music.

In the early 1970s "quadrasonic" sound burst upon us, and several matrixed four-channel systems vied for a share of the spoils. The major contenders were CBS with its SQ system and Sansui with the QS format, and we tested a number of components using those systems, among others. The one characteristic shared by all of them was their mutual incompatibility. The lack of a unified format, combined with the gimmicky character of many four-channel recordings, eventually killed quad. Only with the advent of the digital era, years later, did discrete multichannel systems become practical.

In 1972 a new name appeared on the hi-fi scene. Phase Linear was the creation of Bob Carver, a young physicist and audio enthusiast with an unconventional approach to product design. In September of that year, we tested one

of the most powerful stereo amplifiers of the day, the Phase Linear Model 400, which sold for \$499 and delivered 250 watts per channel into 8 ohms or 400 watts into 4 ohms with less than 0.25 percent distortion. Eventually Carver founded the Carver Corporation and, most recently, the Sunfire Corporation, whose powered subwoofer (tested in December 1996) and power amplifier (April 1995) continue to demonstrate his innovative talents.

In August 1972, we reported on a new audio product that *measured* sound instead of generating it. Radio Shack's Realistic sound-level meter, still available for about \$40 in an improved version, allows any audiophile to make meaningful acoustic-level measurements for a small fraction of the cost of a precision laboratory-grade instrument. I have several and use them for speaker measurements that do not require a precision microphone costing almost a hundred times the modest price of the Radio Shack meter.

The Audio Pulse Model One that we reviewed in April 1977 was an early attempt to restore a more lifelike ambi-

ence to recorded programs. It was a time-delay device, and in my recollection it actually imparted a believable sense of space to the playback of otherwise "dead" recordings. Although it was not particularly successful as a product, it was a precursor of today's surround-sound systems and deserves to be remembered.

In recent years most of my work has been with loudspeakers. The speaker is by far the most important component, since it is the only one that actually generates a sound, yet it is inherently the furthest from "perfect" in its operation. Nevertheless, I continue to be impressed by the qualities of so many speakers, of all types and prices.

As the hi-fi world has expanded in recent years, the number of new products and technical features has proliferated, and the current emphasis favors video and home theater rather than music reproduction. While this is fine as an expansion of our home-entertainment options, I do see a disturbing tendency toward excessive operating complexity, which could limit the appeal of the more sophisticated systems.

## 1983



In July 1983 Julian Hirsch and David Ranada evaluated eleven of the first-generation CD players, including Magnavox's \$800 FD 1000SL and Yamaha's \$1,395 CD-1.



An early "A/V receiver," Jensen's AVS-1500 (1983) was one of the first to include facilities for video switching.

The introduction of Beta Hi-Fi in 1983 and VHS Hi-Fi in 1984 was the key to bringing home-theater sound to a broad public. Shown here is the JVC HR-D725U VHS Hi-Fi VCR.



In his April 1983 test report, Craig Stark called the Nakamichi Dragon "simply the finest cassette deck we have tested."

Music Television (MTV) went on the air in 1981, but TV shows weren't broadcast in stereo until 1984.







An early 1980s laserdisc player, the Pioneer LD-1100 was a 21 x 6 x 16-inch behemoth.



Personal stereo was born in 1979 with the arrival of Sony's Walkman.



The advent of Dolby Surround processing for videotapes in 1982 made it possible to enjoy multichannel movie soundtracks at home. SSI offered the first decoder.



Our December 1982 cover trumpeted the revolutionary arrival of the Compact Disc, then known as the Digital Audio Disc.

One of the first CD players offered to the public, and the first model we tested in December 1982, was the \$900 Sony CDP-101.



### The Second 20 Years David Ranada

When I joined *Stereo Review* in the fall of 1979, the LP was going through what my audio mentor, the late Peter Mitchell, called its baroque era. Turntable designs became ever more bizarre in efforts to eke the last decibel of performance out of the aging stylus-in-groove system, which only two years before celebrated its 100th anniversary.

In an effort to duplicate the geometry of disc cutting during playback, linear-tracking turntables appeared, none producing a sound quality markedly superior to that of a well-aligned cartridge in a pivoting tonearm. To reduce background rumble some designers built turntables that floated on air bearings with their platters connected to air pumps. To reduce mechanical vibrations in the disc itself, turntable mats were made from exotic materials and numerous disc-clamping devices were developed. There were also various recommendations on damping materials that users could stuff into the base of a turntable or underneath the platter. Cartridges and tonearms were the recipients of weird, occasionally success-

ful shock-absorbing mechanisms. And one Nakamichi turntable could even offset a disc's center of rotation to compensate for the wow produced by an off-center pressing.

Circuit designers started paying long-overdue attention to phono-preamp design in an effort to reduce interaction between the circuitry and the attached cartridge and to achieve the theoretical minimum of noise from the preamp-cartridge combination. They also sought to perfect the RIAA de-emphasis circuitry, which was often incorrectly specified in circuit-design "cookbooks." Moving-coil cartridges, despite their low output levels and unreplacable styli, became objects of sonic obsession, probably because their typically non-flat frequency responses interacted euphophonously with the numerous faults of the LP medium.

The editorial controversy surrounding these technologies put bread on my table for several years. But as someone trained in computer programming and digital circuit design, I welcomed with open arms the advent of digital audio technology. This appeared first in LPs

mastered from digitally recorded session tapes and then in the Compact Disc, which made its U.S. debut in 1983.

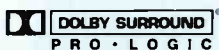
But it has taken some time for CDs and CD players to fulfill the mathematical promise of the medium. Many don't even come close, discs especially. Early CDs suffered from all sorts of sonic woes, some attributable to incomprehension of such fine points of digital recording as "dither." Digital playback quality was always ahead of recording quality (electronically speaking, playback is much easier), but we had to wait until the advent of "1-bit" digital-to-analog (D/A) converter technology in 1989 before performance was reliably close to theoretical limits. A good 1-bit portable CD player today costs less than a good "baroque-era" phono cartridge and turntable did in 1987. And a well-made "20-bit" CD played on such a portable can reproduce all the fine sonic details that a typical adult human — even an audiophile — is able to hear from a two-channel medium.

Substantial progress can still occur in two-channel audio, however. Consumers can now judge for themselves how



In 1986 the Yamaha DSP-1 Digital Sound Field Processor showed that it was possible to mimic the acoustic properties of real concert halls at home.

Home-theater sound was considerably refined in 1987 with the arrival of Dolby Pro Logic processing, featuring a discrete center channel.

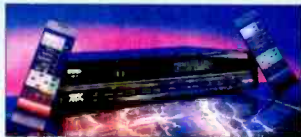


The tiny cube satellites and hideaway bass module of the AM-5 system Bose introduced in 1987 started a revolution in three-piece "subwoofer/satellite" speaker systems.



A promising recording format known as Digital Audio Tape (DAT) was introduced in 1987 but became mired in political wrangling over copyright issues. The first-generation Sony DTC-1000ES deck is shown.

## 1992



Ambience/surround processing reached bold new heights with the arrival of Lexicon's CP-3 digital surround processor in 1992.

**Format wars:** In 1992 Sony introduced the magneto-optical MiniDisc (MD) digital recording format and Philips the competing and incompatible Digital Compact Cassette (DCC) format, confusing consumers and hobbling the acceptance of both formats.



Left, Sony's MZ-1 portable MD recorder (reviewed in March 1993); above, the Philips DCC900 DCC deck (reviewed in November 1992).

The Marantz CDR-1 CD recorder hit store shelves in 1992 with a \$7,000 price tag. Interest was high among enthusiasts, but its steep \$7,000 price tag kept sales low.

well made a commercial CD is by making their own live digital recordings at home, whether on digital audio tape (DAT), MiniDisc (a struggling format that's still alive, unlike the still-born DCC), or, most recently, rewritable CD (CD-RW). And coming up are new DVD-based home-recording systems.

Aside from the introduction of new digital media and the development of advanced control/convenience features (infrared remotes, on-screen menus), the area of audio in which digital technology has had the greatest impact has been extension beyond two channels. It began with the pioneering all-digital surround-sound processors from Yamaha and Lexicon, which generated ambience signals from normal stereo recordings. But multichannel audio, which was in its unsuccessful quadraphonic phase while I was in college, never really died. It lived on in movie theaters and reappeared with a vengeance at home with the Dolby Surround and later Dolby Pro Logic systems, whose patents show direct descent from matrixed quadraphony. Before long, digital processing took over the functions

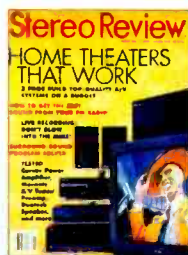
of analog Dolby Pro Logic circuits. And digital Pro Logic decoding was itself dethroned by the spectacular Dolby Digital discrete multichannel system (originally known as AC-3), which first appeared at home in laserdisc soundtracks.

Dolby Digital is thriving on DVD, a "convergence" product if ever there was one. It represents a digital melding of audio and video with roots both in the elitist analog laserdisc system, with its high picture quality, and in the populist stereo-TV and analog VCR systems (first Beta Hi-Fi, then VHS Hi-Fi). All these media, together with such influential movies as *Star Wars*, have awakened in the public an awareness of the dramatic potential of accompanying a video program with high-quality sound. That is the major source of the interest in home theater products like multichannel receivers, surround decoding systems, center and surround speakers, and powered subwoofers. And, by the way, DVD and satellite TV are what first introduced quality digital video playback to the most consumers, not the stuff available on desktop computers.

There's lots coming up in the next few years. Most important is digital TV, coming later this year, in which high-definition programming should play a major role. Next is digital radio with its promise of substantial freedom from interference and multipath effects. Third is the still undecided DVD-Audio system, a potential successor to the CD that holds the promise of a vastly improved listening experience *if* the format's immense data capacity is wisely used — remember what happened to quad!

Product convergence will continue, with home computers and the Internet becoming ever more integrated into both audio and video. Our listening experience will undoubtedly be enhanced by virtual-reality processing that can produce solid "3-D" sonic imaging from as few as two speakers. And maybe, just maybe, there will be a good, low-cost computer-based room-correction system for jumping over the last great hurdle in home sound reproduction. Then even the most rabid audiophile will be able to relax, forget about the equipment, and just enjoy the music. □

## 1995



Our August 1995 cover

Dolby Digital, which hit movie theaters in 1992, redefined the state of the art in home theater in 1995 Pioneer's VSX-D3S was the first A/V receiver to incorporate Dolby Digital decoding.



Pioneer's \$2,000 PDR-99 (reviewed December 1995) was the first reasonably priced home CD-R (write-once) recorder.

DVD players began trickling into stores in February 1997 after a year-long delay.

Shown: Toshiba's SD-3006 (reviewed July 1997).



The Philips CDR870 (reviewed January 1998) is the first home CD recorder to use rewritable/erasable CD-RW discs.



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# REMEMBRANCE OF THINGS PAST AND FUTURE

BY KEN C. POHLMANN

MUCH HAS BEEN WRITTEN about the "digital revolution," perhaps too much. But, in fact, it is proceeding faster than words can describe. Every aspect of our lives has been touched by digital technology, and if it is true that the greatest changes are the ones we most take for granted, then "revolution" is no exaggeration. Exploratory spacecraft beam digital data back to us from distant planets. Our own earth is ringed by orbiting satellites relaying billions of bytes across continents and oceans. The trillions of dollars in our financial markets are measured down to the last bit. Industry, academia, transportation, medicine, entertainment — all have gone digital. Our cars are filled with chips, our desktops and laptops hold multimedia computers, and even our dishwashers have operating systems. Of course, our audio and video systems have not escaped the revolution. CD, DAT, MD, DVD, DBS, and other formats are proof that the best sights and sounds are stored and delivered in binary form. The future is here today, so subtly shifted into our lives that few of us truly understand just how much things have changed.

An average consumer who traveled forward in time from 1958 would be shocked by the magnitude of the change: As she steps down from the time machine and onto your front lawn, she hardly glances at your house: it has not changed much in forty years. Her attention is immediately drawn to the automobile parked in your driveway. Clearly, it appears to be a futuristic vehicle to her, and a short test drive soon confirms that impression. The sound system is absolutely sensational — the ability to call up a large library of recorded music from an unseen source and pick any musical selection at random seems almost like magic. You explain to her that the music library is stored on digital optical discs called CDs. They were introduced in 1983 and immediately displaced the LP, introduced in 1948, a mere thirty-five years earlier. Unlike LPs, a CD can be played countless times without wear

and tear, and its pickup is largely immune to shock and vibration.

All of those ideas are completely novel to the woman; she can't imagine driving around in a car with a jukebox full of records. Moreover, the lifelike fidelity of the music startles her. Its full frequency range, dynamic power, full ambience, and loud volume are somewhat unsettling and perhaps seem a little unsafe. You explain to her that modern transistor amplifiers are far more efficient than the vacuum-tube amplifiers familiar to her. Moreover, you are using digital signal processing to recreate the sound of Carnegie Hall in your car. A small computer takes the audio input signal and computes new data to add the correct time delays, equalization, and reverberation. She looks at you as if you're crazy. Still, hearing is believing. She is a little nervous about your propensity to make phone calls while driving,

perhaps even ignoring the larger question of how you can wirelessly and quickly connect to any other phone in the world and communicate with great clarity. And as the drive draws to an end, her attention is drawn to an old invention — AM radio. She is aghast at the incivility of this thing that we call "talk radio."

Arriving back at your home and stepping into your living room, she immediately identifies your television set, but its large screen size and high resolution are a revelation to her — a far cry from her small-screen, grainy black-and-white model. She is even more surprised when you apologize for the picture quality and explain that you are waiting to buy a much better digital television this fall. The number of channels positively shocks her. Whereas her TV picks up three channels from a roof-mounted dipole antenna pointed toward the city, yours picks up hundreds of channels from a pizza-size dish pointed to the sky. You explain how the dish collects digital signals from a trio of geostationary satellites located over the equator.

She is even more amazed when you note that you paid \$200 for your satellite TV system. You hand her the satellite receiver's remote, and she looks at it quizzically. You explain that it sends control commands to your home-theater system via infrared light beams. As she flips through the channels, she is amazed to see films on television — the idea of watching a movie at home is foreign to her. Also foreign are the violence and sexual content of the programs. She is upset to see that even in the middle of the afternoon, images of murder and sexual brutality are beamed across America.

You show her a DVD, and she identifies it as a distant cousin of her familiar LP record. You explain that it is essentially a second-generation CD, but instead of stereo music, a DVD contains hours of multichannel digital audio and video. The idea of video is unknown to her (TV was mostly live in 1958), but you explain that digital video can be







used to store motion pictures. This is even more puzzling to her because the disc looks nothing like a strip of photographic film, and the player is certainly not a movie projector. As she settles into your sofa, you load the disc and select a chapter from *Jumanji*.

The sight and sounds of the jungle stampede leave her speechless. You explain that although the actors are real, the lions and rhinos exist only in a computer. The two are merged during postproduction. The enveloping sounds, you explain, come from small speakers around the room, and the room-shaking low frequencies come from an effects channel played through a subwoofer tucked behind the sofa. She explains in turn that although stereo LPs were introduced in 1958, she has never heard sound from so many speakers, or played at such a loud volume. Moreover, she is surprised to see that the speakers are so tiny. She is more accustomed to large wood cabinets with horns.

You switch off your DVD player, and she watches intently as you boot up your PC. She has never heard of companies like Gateway 2000 or Microsoft; they certainly did not exist in 1958. You balance your wireless typewriter keyboard on your knees — its QWERTY layout is all too familiar to her. Although your keyboard is physically disconnected, when you hit a key, the character somehow appears on your television set, as if it were coming from some strange TV station. She is even more surprised by your word-processing program. Typing without paper, scrolling through a document, cutting and pasting, inserting graphs and photos, spell-checking — it all fascinates her. She remembers how long it took her to type (and correct) her term papers on an Underwood.

When you've finished typing, you log onto your Internet service provider to check your e-mail and quickly answer a letter from a friend in Hong Kong. Then you log onto the Web and briefly listen to a radio station in Seattle (from your home in Miami) and download a software program. Finally, you use an Internet videophone program to call a friend in Berlin. She observes all this carefully, and finally simply declares that you must be both an important and wealthy person to control such resources. You reply that you write software for a living, and the services are available to anyone for \$20 a month. She asks, "What is software?"

You load in a few CD-ROMs and show her multimedia encyclopedias, textbooks, and children's educational programs. She is very impressed. Then you load in *Quake*, and she watches as you casually move through the dark corridors, shooting down monsters, your shotgun booming in your surround speakers, their bloody corpses piling up around you.

As she bids you farewell and returns to the vehicle that brought her here, she comments that in her day, a writer said that future technology would bring about a spiritual awakening. After seeing this future, she isn't so sure. She shakes your hand with a firm grip — a bold move on her part, to show

that she is indeed a progressive woman, but her grasp lingers in yours. She asks, "Would you like to see what the world will be like in another forty years?" You hesitate, then nod. The 1958 woman vanishes before your eyes, and you step into the vehicle. You hear the sound of your heartbeat, growing louder and louder until it seems deafening, and there is a flash of white light.

The year is 2038. Your house is standing there — aside from a few coats of paint, not changed one bit. A woman steps forward to greet you. She is wearing blue jeans. You feel confident that, as a sophisticated technology user, this future world will hold few surprises for you. Then you notice her car. It is pathetically tiny, looking much like a golf cart. You correctly guess that it is electric, but you are surprised by its fast acceleration. You are even more surprised to see that the woman driving the car is taking a nap. The car guides itself through dense traffic to a highway entry ramp, then accelerates powerfully, quickly joining into a flying wedge of interlocked cars moving at terrific speed.

Without opening her eyes, the woman mutters the word "Zermatt," and the car's windows turn opaque and then show a vivid image of the Swiss Alps, the Matterhorn towering before you in the cloudless blue sky. Gradually the air grows cold, and the only sound is the wind blowing through the craggy rocks. The tranquil images fade to black, and the car's windows again grow transparent. You are surprised to see that you are again parked in front of your house.

The front door swings open as you approach, and you enter the living room. It is empty except for a prayer mat in the center of the room. The woman in blue jeans leads you upstairs and into your walk-in closet. You are surprised to see that a sofa has been placed in the small, bare room. As the door closes, the walls disappear in blackness. Then the room lights up with a multitude of images placed panoramically around you, making its interior space seem vast. It is as if you are surrounded by thousands of tiny TVs in an amphitheater.

As you look across the images, your gaze lingers on one in particular. That image grows in size, quickly enveloping the entire room around you. Simultaneously sound wells up from all sides and above and below. You are in a holographic monster movie, and the beasts are all around you in a vast Gothic space. They pull out their weapons and begin firing at you, the laser blasts resounding from all around. You feel your skin pulse with heat each

time a blast hits you. The experience is devastatingly real, and unnerving. Reacting involuntarily, you shut your eyes.

**W**hen you open your eyes, you are sitting in a quiet classroom surrounded by high-school students. The professor walks casually through the room, explaining software-programming techniques as flow charts flash on a screen behind him. Although you are a software expert, his comments are incomprehensibly complex to you. You start to say something, and the professor turns to look at you, smiling. He asks, "Do you have a question?" You shake your head, and he turns away, continuing his lecture. The girl sitting next to you laughs softly. Then a moment later a handwritten note appears on the screen. You turn red as you read it, and she smiles at you again. You close your eyes.

You open your eyes, and you are on stage at a music concert — the high-school girl is standing beside you. The performers are standing around you, playing furiously and deafeningly, the sound of each instrument coming specifically from that instrument. The clarity of the music is incredible. You can hear every note and see every detail. The sound of the crowd, and the hall itself, is absolutely realistic. In fact, it is as if you are really there, but whether it is a live concert or a recording, you cannot tell.

The image of the girl beside you is live, that's for sure, and she dances to the frenzied music. You shout something to her, and she shouts something back. You try to adjust to the sound and its fury, but you cannot; you feel as if you are being physically assaulted. The woman in blue jeans is sitting beside you, smiling placidly. At last the concert ends, and the picture fades to black. As credits roll, you realize that you were experiencing a music recording. An index appears, and you further realize that over a million recordings are online and available to you.

You turn to the woman in blue jeans and ask if she enjoyed the concert. She looks slightly surprised and says that she wasn't at the concert — she was touring the Egyptian exhibit at the Louvre with some friends. You ask her about the concert, wondering where she stores all her discs. The woman smiles and explains that local storage of privately owned copies of programs is an antiquated distribution method. Instead, people simply use remote terminals to access any program they want from a network of centrally stored data.

You ask, "Don't people want to collect their favorite titles?" She smiles — the lawyers put an end to that a decade ago.

The only physical copies left are illegal bootlegs and obsolete curiosities like DVD. "And the hardware," you ask, "is it purchased or leased?" She shrugs. "It came with the house along with all the other appliances." Then you ask about the high-school girl. The woman smiles and says, "Ask her yourself." The girl appears beside you. As you converse with the girl, you learn that she is a kind of tour guide, that she handles a number of household chores, keeps tracks of billing and finances, does the taxes, reminds you when your favorite shows are on and where your favorite artists are playing . . . . It suddenly dawns on you that the girl is a software program that runs on the home-theater system. "How much does she cost?" you ask the woman incredulously. The woman shrugs and says, "She's shareware."

You look at the girl intently, and then ask her to show you an example of violent content. The girl turns away indignantly. The woman explains that a youngster would never go to such places. She lets you choose another guide, a rough-looking man. You repeat your request, and the man smiles. Even before the images are fully formed, you gasp in shock and repulsion and close your eyes tight. You realize that although technology itself is amoral, its applications certainly are not. In some ways, the challenge is not inventing new technology, it's determining how society should use it.

The woman in blue jeans escorts you back outside, and the time machine materializes in the driveway. The woman asks, "Where would you like to go?" You think of all the past and future times, and answer simply, "1998, please." Your heart pounds and there is a flash of white light.

**A**s profound as recent technological changes have been, it is likely that they are mere prolegomena to what is ahead. The pace of the digital revolution is accelerating, and the rapidly developing sophistication of our digital tools only magnifies our ability to devise still more sophisticated digital tools. Clearly, the inventions of the past forty years will be totally eclipsed by the inventions of the next forty years. It seems that there is no limit to what technology can do. Some modern physicists are even talking seriously about the possibility of time travel. Certainly music lovers would relish such an invention. Instead of listening to a recording of Beethoven's "Waldstein" Sonata, you could simply attend a concert where Beethoven plays the sonata himself. The last word in high fidelity? □



# Top 40

Popular and classical albums that mattered — and still do

BY KEN RICHARDSON AND ROBERT RIPPS



First, we'll tell you what these records are by telling you what they *aren't*. They aren't necessarily (ahem!) The Best Albums of the Past 40 Years, nor even (sniff!) our sentimental favorites. And they aren't necessarily the biggest sellers. Instead, the titles listed here are records that, in one way or another, made a difference. They were important when they were released; they have staying power today. We went back through the four decades of *Stereo Review's* history to pick one popular and one classical album from each year. The resulting Top 40 is a vivid chart of where we all have been — and it goes a long way toward explaining why we fell in love with stereo in the first place.

1958

**FRANK SINATRA**  
Come Fly with Me (*Capitol*)

**BARTOK**  
Concerto for Orchestra  
Chicago Symphony. Fritz Reiner conducting (*RCA Victor*)

1959

**MILES DAVIS**  
Kind of Blue (*Columbia*)

**WAGNER** Das Rheingold  
Flagstad. London. others: Vienna Philharmonic Chorus and Orchestra. Georg Solti conducting (*London*)

1960

**THE DAVE BRUBECK QUARTET** Time Out (*Columbia*)

**SCHUBERT** Symphony No. 9  
Cleveland Orchestra. George Szell conducting (*Columbia*)

1961

**ORNETTE COLEMAN**  
Free Jazz (*Atlantic*)

**LEONTYNE PRICE**  
Verdi and Puccini Arias  
Rome Opera House Orchestra. Arturo Basile and Oliviero Fabritius conducting (*RCA Victor*)

1962

**JOHN COLTRANE** Live at the Village Vanguard (*Impulse!*)

**STRAVINSKY**  
The Rite of Spring  
Columbia Symphony. Igor Stravinsky conducting (*Columbia*)

1963

**JAMES BROWN**  
Live at the Apollo (*King*)

**BEETHOVEN**  
The Nine Symphonies  
Berlin Philharmonic. Herbert von Karajan conducting (*Deutsche Grammophon*)

1964

**THE BEATLES**  
Meet the Beatles! (*Capitol*)

**MAHLER** Symphony No. 2 ("Resurrection")  
Tourel. Venora: Collegiate Chorale: New York Philharmonic. Leonard Bernstein conducting (*Columbia*)

1965

**BOB DYLAN** Bringing It All Back Home (*Columbia*)

**HANDEL**  
Concerti Grossi, Op. 3  
Academy of St. Martin in the Fields, Neville Marriner conducting (*Argo*)

1966

**BOB DYLAN**  
Blonde on Blonde (*Columbia*)

**SCHUBERT** Die Winterreise  
Dietrich Fischer-Dieskau, baritone: Jörg Demus, piano (*Deutsche Grammophon*)

1967

**THE BEATLES**  
Sgt. Pepper's Lonely Hearts Club Band (*Capitol*)

**HANDEL** Messiah  
Harwood, Baker. Esswood. Tear. Herinx: Ambrosian Singers: English Chamber Orchestra. Charles Mackerras conducting (*Angel*)

1968

**THE ROLLING STONES**  
Beggars Banquet (*London*)

**ORFF** Carmina Burana  
Janowitz. Stolze. Fischer-Dieskau: Berlin German Opera Chorus and Orchestra. Eugen Jochum conducting (*Deutsche Grammophon*)



1969

**THE WHO** *Tommy* (Decca)

**BERLIOZ** *Te Deum*

Tagliavini; Wandsworth School Boys' Chorus; London Symphony Chorus and Orchestra, Colin Davis conducting (Philips)

1970

**MILES DAVIS**

*Bitches Brew* (Columbia)

**DEBUSSY**

*Images for Orchestra; Sacred and Profane Dances*  
Cleveland Orchestra, Pierre Boulez conducting (Columbia)

1971

**LED ZEPPELIN**

*Four Symbols* (Atlantic)

**SATIE** *Piano Music, Vol. 1*

Aldo Ciccolini (Angel)

1972

**THE ROLLING STONES**

*Exile on Main St.*  
(Rolling Stones/Atlantic)

**MAHLER** *Symphony No. 8*

Auger, Harper, Popp, Minton, Watts, Kollo, Shirley-Quirk, Talvela; Vienna State Opera Chorus; Vienna Boys' Choir; Chicago Symphony, Georg Solti conducting (London)

1973

**PINK FLOYD** *The Dark Side of the Moon* (Harvest/Capitol)

**PUCCINI** *Turandot*

Sutherland, Caballé, Pavarotti, Ghiaurov, others; John Alldis Choir; London Philharmonic, Zubin Mehta conducting (London)

1974

**JONI MITCHELL**

*Court and Spark* (Asylum)

**SHOSTAKOVICH**

*Symphony No. 8*  
London Symphony, André Previn conducting (Angel)

1975

**BRUCE SPRINGSTEEN**

*Born to Run* (Columbia)

**BEETHOVEN**

*Symphony No. 5*  
Vienna Philharmonic, Carlos Kleiber conducting (Deutsche Grammophon)

1976

**RAMONES** (Sire)

**MESSIAEN**

*Quartet for the End of Time*  
Tashi (RCA Victor)

1977

**FLEETWOOD MAC**

*Rumours* (Warner Bros.)

**GRANADOS** *Goyescas*

Alicia de Larrocha, piano (London)

1978

**ELVIS COSTELLO**

*This Year's Model* (Columbia)

**DEBUSSY**

*Preludes, Books 1 and 2*  
Paul Jacobs, piano (Nonesuch)

1979

**NEIL YOUNG AND CRAZY HORSE**

*Rust Never Sleeps* (Reprise)

**BRITTEN** *Peter Grimes*

Vickers, Harper, Summers, others; Chorus and Orchestra of the Royal Opera House, Covent Garden, Colin Davis conducting (Philips)

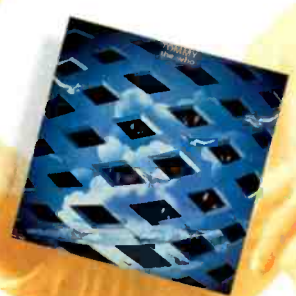
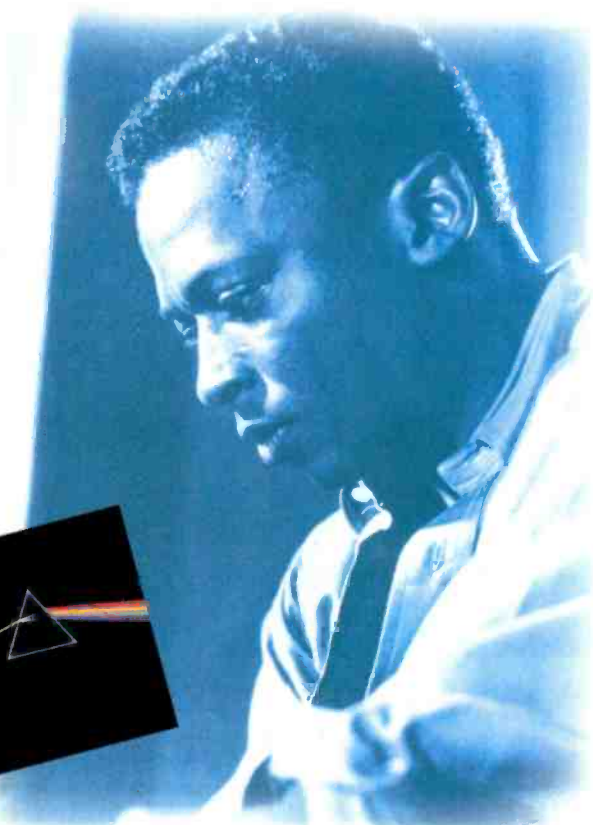
1980

**THE CLASH**

*London Calling* (Epic)

**MOZART**

*Symphonies Nos. 18-27*  
Academy of Ancient Music, Christopher Hogwood conducting (L'Oiseau-Lyre)





## 1981

**SQUEEZE**  
East Side Story (A&M)

**J. S. BACH**  
Goldberg Variations  
Glenn Gould, piano (CBS)

## 1982

**MICHAEL JACKSON**  
Thriller (Epic)

**TERESA STRATAS**  
The Unknown Kurt Weill  
Teresa Stratas, soprano; Richard  
Voitach, piano (Nonesuch)

## 1983

**R.E.M.** Murmur (I.R.S.)

**MOZART** Piano Concertos  
Nos. 15 and 21  
Alfred Brendel; Academy of  
St. Martin in the Fields, Neville  
Marriner conducting (Philips)

## 1984

**PRINCE AND  
THE REVOLUTION**  
Purple Rain (Warner Bros.)

**MAHLER** Symphony No. 9  
Berlin Philharmonic, Herbert  
von Karajan conducting (Deutsche  
Grammophon)

## 1985

**THE REPLACEMENTS**  
Tim (Sire)

**BERNSTEIN** West Side Story  
Te Kanawa, Carreras, Troyanos,  
Horne; Orchestra and Chorus  
conducted by Leonard Bernstein  
(Deutsche Grammophon)

## 1986

**PAUL SIMON**  
Graceland (Warner Bros.)

**BEETHOVEN** Piano  
Concertos Nos. 3 and 4  
Murray Perahia; Concertgebouw  
Orchestra, Bernard Haitink  
conducting (CBS)

## 1987

**U2** The Joshua Tree (Island)

**FALLA** The Three-Cornered  
Hat; Homenajes;  
La Vida Breve (excerpts)  
Cincinnati Symphony, Jesús López-  
Cobos conducting (Telarc)

## 1988

**PUBLIC ENEMY** It Takes a  
Nation of Millions to Hold Us  
Back (Def Jam/Columbia)

**ADAMS** Nixon in China  
Sylvan, Maddalena, others: chorus;  
Orchestra of St. Luke's, Edo  
de Waart conducting (Nonesuch)

## 1989

**MADONNA**  
Like a Prayer (Sire)

**HANSON** Symphony No. 1  
("Nordic"); Symphony No. 2  
("Romantic"); Elegy  
Seattle Symphony, Gerard Schwarz  
conducting (Delos)

## 1990

**GARTH BROOKS**  
No Fences (Capitol)

**VLADIMIR HOROWITZ**  
The Last Recording  
Vladimir Horowitz, piano (Sony)

## 1991

**NIRVANA**  
Nevermind (Sub Pop/DGC)

**SMETANA** Ma Vlast  
Czech Philharmonic, Rafael  
Kubelik conducting (Supraphon)

## 1992

**LYLE LOVETT** Joshua  
Judges Ruth (Curb/MCA)

**GORECKI** Symphony No. 3  
Dawn Upshaw; London Sinfonieta,  
David Zinman conducting  
(Nonesuch)

## 1993

**LIZ PHAIR**  
Exile in Guyville (Matador)

**BRAHMS**  
Piano Concerto No. 1  
Stephen Kovacevich; London  
Philharmonic, Wolfgang Sawallisch  
conducting (EMI)

## 1994

**SOUNDGARDEN**  
Superunknown (A&M)

**RAVEL** Boléro; Alborada del  
Gracioso; Une Barque  
sur l'Océan; Ma Mère l'Oye  
Berlin Philharmonic, Pierre Boulez  
conducting (Deutsche Grammophon)

## 1995

**P J HARVEY**  
To Bring You My Love (Island)

**RACHMANINOFF**  
Piano Concerto No. 3  
Martha Argerich; Berlin Radio  
Symphony, Riccardo Chailly  
conducting (Philips)

## 1996

**BECK** Odelay (DGC)

**PROKOFIEV**  
Romeo and Juliet (selections)  
San Francisco Symphony,  
Michael Tilson Thomas conducting  
(RCA Victor)

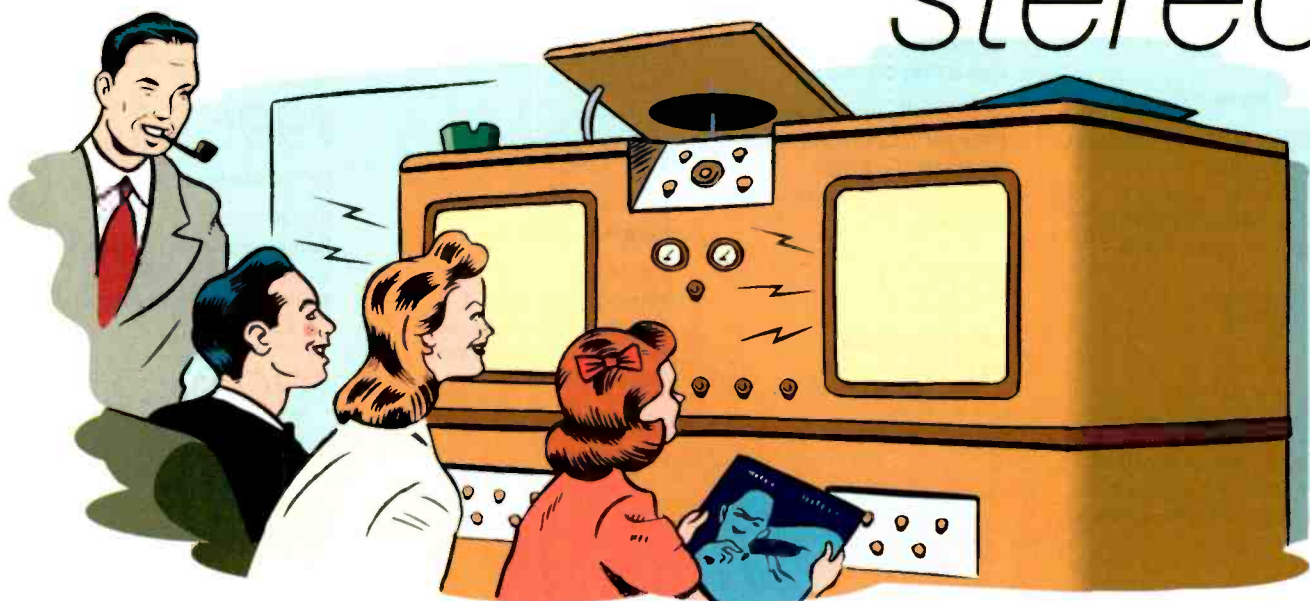
## 1997

**RADIOHEAD**  
OK Computer (Capitol)

**KRONOS QUARTET**  
Early Music (Nonesuch)



# my first stereo



**40**  
ANNIVERSARY  
1958 1998

Remember your first stereo components? Or is it the music — or the company — that comes to mind rather than the gear? As part of our 40th-anniversary celebration, we asked past and present editors and contributors to reminisce about their beginnings

in stereo, however humble. From David Hall's 1940 (!) preview of surround sound at the New York first run of Walt Disney's *Fantasia* to Corey Greenberg's fond memories of the Quad Era, here's the first installment of audio autobiographies from this crowd of sound lovers. More next month!

## DAVID HALL

Classical music reviewer; formerly a record producer for Mercury and this magazine's first managing editor and music editor

My first inkling of stereophonic sound was in April 1933, when — as a teenager with primitive components from Lafayette Radio — I read with total fascination the *New York Times* reports about “three-dimensional sound” dem-

onstrations at Washington's Constitution Hall. The Philadelphia Orchestra was being piped into a huge three-speaker array over phone lines from the Academy of Music in Philadelphia. But my first *listening* experience on the way to stereo came in November 1940, when I saw Walt Disney's *Fantasia* in a New York theater. The sequences featuring Bach's Toccata and Fugue in D Minor and Mussorgsky's *Night on Bald Mountain*, as arranged and conducted by Leopold Stokowski, were just plain

dumbfounding, visually *and* sonically, with *surround sound* based on Bell Lab experiments rather than the stereo that was commercially developed some fifteen years later.

Cut to Orchestra Hall, Chicago, December 1952. The legendary C. Robert (“Bob”) Fine and yours truly, as classical music director and producer, respectively, for Mercury Records, were busy recording Rafael Kubelik's fiery reading of Smetana's symphonic cycle *Ma Vlast* (*My Fatherland*) with the



Chicago Symphony. A guest brought along a Magnecord staggered-head tape recorder. He was Bert Whyte, later to become a topnotch producer and audio writer himself. He recorded a fair portion of the Smetana sessions at 7½ ips, and these experimental takes were my first one-on-one encounter with stereo sound. Frankly, I found it more thought-provoking than mind-boggling. Hearing guitar transients on early FM radio (Major Armstrong's pre-World War II W2XER in New Jersey, later WQXR) made a greater impression.

A few years later came the first commercially issued stereo tapes from RCA, Columbia, and Mercury, among others. By that time I had departed Mercury for a Fulbright year in Denmark, where I experienced some of the Danish work in electroacoustics and stereo illusion, and a few weeks after my return in the fall of 1958 I found myself on the staff of a brand-new magazine, *HiFi & Music Review*, subsequently *HiFi/Stereo Review* (1960-68) and *Stereo Review* (1968 to date). At that time I had stereo tape playback equipment at my house in Wilton, Connecticut — a fine four-track, three-speed Tandberg machine — along with a pair of very high-efficiency Tandberg speakers.

When the redoubtable Sid Frye of Audio Fidelity turned the record industry on its ear in November 1957 with the first stereo disc to be cut with the Westrex 45/45 system (stereo LPs weren't yet available to the public), there was fortunately no destructive battle over standards like the 1949-50 Battle of the Speeds (33⅓ vs. 45 rpm) that almost destroyed the U.S. recording industry. By May 1958, with a universally accepted cutting system in place, stereo LPs became a fact of life. I added an H. H. Scott stereo amplifier to my Wilton playback setup along with a decent quality turntable.

After *HiFi & Music Review* became *HiFi/Stereo Review* in 1960, I upgraded my playback setup again, with help from Bert Whyte, and by 1963 I had a pair of 10-cubic-foot boxes with twin Wharfedale bass drivers topped by Pickering electrostatics for the upper end of the spectrum. Harman Kardon amplification supplied the electronic muscle, and I used Shure cartridges and styli for disc playback. With various outboard modifications this setup stood me in good stead until the summer of 1985, when a move to smaller quarters dictated drastic downsizing.

## JULIAN HIRSCH

Director of Hirsch-Houck Laboratories and "Technical Talk" columnist

My first "stereo"? Actually, it was a "mono"! Circa 1950, stereo as we know it was still a few years away, although several mutually incompatible systems for supplying two independent sound channels were under consideration. By that time, however, a fledgling "hi-fi" industry had already made its appearance, largely in the form of loudspeakers and amplifiers derived from public-address applications. Like many others in those days, my first music system was home constructed, although its basic program sources (tuner and record player) were commercially manufactured.

I still have the Williamson amplifier that powered my first system, although it is no longer in operating condition. Except for its massive Partridge output transformer, which weighed more than 20 pounds and had to be ordered and shipped from England, the power supply was made with surplus World War II components.

The amplifier's pair of 807 output tubes, operating at 450 volts, delivered about 12 watts of clean audio at well under 0.1 percent distortion — remarkable for that time and easily enough power to drive the relatively efficient speakers of the period.

## LOUISE BOUNDAS

Editor in Chief

My parents owned one of those ubiquitous living-room consoles, and that's how I listened to records when I was growing up. (Well, okay, I did listen to the jukeboxes at the drugstore soda fountain and the bowling alley, and my boy friend kept his car radio tuned to the local hit station.) When I went to college, my roommate had a little portable phonograph with a built-in speaker, which both of us used to play the very scratched-up records we checked out of the college library. Not exactly state of the art.

After graduation I came to New York, where I joined thousands and thousands of English majors trying to make a living in the publishing industry. I spent lunch hours in the record store across the street from the offices

The loudspeaker systems of those days tended to be large and expensive and were often poorly suited to the requirements of a high-fidelity music system. Many audiophiles preferred to assemble their own speakers. In my case, this consisted of building a corner enclosure containing a GE 1201D (a popular, reasonably good 12-inch driver) and a small University horn tweeter. There were few available FM tuners, and stereo broadcasting was still a few years in the future. I chose a tuner marketed by Sun Radio, which served me well for a number of years.

Aside from radio, phonograph records were the principal source of listening material. Tape recordings were of limited quality in the early years, and I never became a tape enthusiast. LP records and FM radio were of sufficiently good quality to satisfy my musical tastes. A Webcor record changer and a GE Variable Reluctance phono cartridge met my recorded-music needs. In later years they were replaced by numerous more refined components.

The only component of my constantly evolving music system that has remained relatively constant over the years is the pleasure it provides, and that is probably as it should be.

where I worked, and if I skipped lunch I could afford to buy records every now and then, but I never did manage to accumulate enough money to buy my own equipment to play them on. So I listened to records in the record store and at the apartment of a college friend who had gotten a record player for graduation. I even kept my records in her apartment. Still not state of the art.

Then I met George, who took me to jazz concerts, the New York Hi-Fi Show, and the Acoustic Research demo room in Grand Central Station. I listened to Duke Ellington and Sarah Vaughan and Ruby Braff and Ben Webster in stereo. I was hooked. I was in love. I moved my Mozart and Fauré and Baez to his apartment. When we got married, I became the proud co-owner of Acoustic Research AR-2a speakers, an AR integrated amplifier (which had replaced an H. H. Scott Model 299 tube amp), and an AR turntable with a Shure M7-D cartridge. Finally, state of the art!

# BOB ANKOSKO

Executive Editor

I can't swear that it was the first stereo record I ever heard, but the chug-along bass riff in Henry Mancini's classic *Peter Gunn* theme playing on the family's first hi-fi system is what sticks in my mind. Actually, the system was one of those huge all-in-one consoles — from TV-maker Zenith, no less — that any self-respecting hobbyist would have shrugged off. But the skin-tingling bass it produced was an exciting new sensation for a 7-year-old kid whose only source of music had been a portable radio in the kitchen and the Fifties-era 45-rpm record player his mom had used in high school a decade earlier. The console's components were housed in a gorgeous, solid-walnut cabinet that immediately became the centerpiece of our small living room, threatening to dethrone the almighty RCA color TV (except in the evening when shows like *Bonanza* and *Batman* were on).

With six drivers in all, including a couple of good-size woofers, I remember the old console as a formidable presence that could play remarkably

loud without distorting. I'm sure the speakers were too close together and too near to the floor to project a good stereo image, but who knew better? You had to lift a lid in the middle of the cabinet to get at the system's semiautomatic turntable and AM/FM radio with its big tuning dial and stereo button; there was also a cubbyhole with space for twenty or so LPs. As my brother and I got a little older, my folks very graciously allowed us to use the system — at least until we started collecting records in earnest.

When I was 11 or 12, I bought my first album — *Abbey Road*, which made me a Beatles fan for life. I can't begin to count how many times I played "Come Together" with the volume cranked up and the windows open (to impress the girl next door). Come to think of it, my folks must have felt it was a pretty good record, too, considering how many times they let me get away with blasting it!

By the time I was 13, my record collection had mushroomed to the point

where I was spending way too much time in the living room, so mom and dad bought me a neat little component system at Radio Shack as a Christmas present that year. I was in heaven. Perched on a shelf above my desk was my very own 20-watt Realistic receiver, one of those cheap turntables with the smoked-plastic dust cover, and a pair of bookshelf speakers, each with a lone 3-inch driver. The bass output of the tiny drivers was no match for the console system, but at least the speakers' acoustic-suspension design did a decent job of faking it.

In those days, I fed the turntable a steady diet of Beatles, Stones, and Led Zeppelin, slipping in the occasional James Taylor or Joni Mitchell LP for variety. Around that time I developed an interest in playing music myself, which led to the discovery that many of my beloved stereo LPs — particularly the Beatles albums — were mixed in a way that made it easy to isolate specific parts. I'd turn the balance control one way to zero in on the guitar, the other way to figure out what the drums, bass, and vocals were doing. And that's how I learned to play countless drum solos and guitar licks.

# DANIEL KUMIN

Contributor and equipment reviewer

The first "real" stereo of my very own that I can recall began with a pair of exponential-horn cabinets I built in my college dorm room with the help of my strange but industrious freshman roommate. (I was, and am, singularly unhandy; he was more than a little like the character Orr in the novel *Catch-22*.) These were made of unfinished, construction-grade plywood, knots and all, and if memory serves they contained a pair of whizzer-cone Utah drivers. This audiophile transducer pair was driven by a Dynaco Stereo 120 solid-state power amp fed by the front end of a Rotel integrated amp and a Dual 1015 turntable.

I'm not too proud to reveal that in those days I would frequently lean the speakers together in a sort of teepee, turn out the lights, and lie on my back with my head between them playing Jimi Hendrix's *Axis: Bold as Love* from start to finish; this was the Sixties, after all. (Actually it was the Seventies, but, as is well known, the Sixties mostly happened in the Seventies.) In my de-

fense, I would sometimes do the same thing — at only slightly lower volume — with Carl Ruggles's *Sun-Treader* or Charles Ives's *Three Places in New England*.

An interesting sidelight: that same Dynaco amplifier served as PA power for the band in which I played at the time. It drove a bizarre concoction of home-brew speakers and Shure Vocalmaster columns, probably all connected in parallel — I don't think we had a clue about impedance loads and solid-state amps in those days. I remember that the poor Dynaco amp was so unstable that the bass player (Prent — where are you now?) kept a bag of extra Motorola output transistors in the wings with a soldering iron; he was so good with the iron that he could pop in a replacement or two between sets, when one channel or the other inevitably went down. And then there was the night, during a 5-hour gig at a singles' weekend at one of those Lake George holiday camps, that my Twin Reverb literally burst into flames on-

stage . . . but that's a whole other story.

The first system I owned after receiving "the knowledge" — that is, when I began to have a faint inkling of what good sound was — resided in Cambridge, Massachusetts, around 1978. It consisted of my beloved Apt/Holman preamp, serial number 6 (still cheerfully in service on my lab bench today), a pair of Dynaco Stereo 70 tube power amps (generously lent for over a year by my boss at the time) bridged to mono and modified with solid-state rectifiers, and Braun 710 three-way speakers, the gorgeous, white-lacquer ones with the cool Teutonic perforated-aluminum grilles. I *loved* those speakers — in retrospect, they probably sounded pretty tubby, but boy did they look cool. I wish I still had them. (Around then, Peter Snell offered me the third or fourth pair of Snell Acoustics Type A's for \$500; I could as easily have bought a Ferrari.) The sole program source was an AR turntable mounted with a Rabco tangential-tracking tonearm and a Stanton 681EEE cartridge. I used to spend *hours* fiddling with that bloody setup to get it to work right. Memory fails, but I may even have listened to a record on it once in a while.



## IAN G. MASTERS

Contributor and  
"Audio Q&A" columnist

Like most people who grew up in the 1950s, my first exposure to stereo sound was in a movie theater. It was one of the technological innovations Hollywood adopted to keep a step ahead of its arch-rival, television (the others were widescreen images and nearly universal color).

Movie stereo in those days was mostly unsatisfactory. For one thing, the soundtracks themselves were very gimmicky, with things flying overhead or stuff happening behind you. Also, the acoustics of the theaters — the ones near me, anyway — were dreadful.

Home stereo first showed up in the form of prerecorded open-reel tapes, and kits were available that let you add an extra head to an existing tape deck. I don't believe I ever heard one of those tapes directly, but a couple of local radio stations got together to broadcast some samples, the left channel on one frequency, the right channel on the other. There was some sense of space, but I don't imagine that they were able to control the phase relationship of the two broadcast signals very well. One station even tried using its AM frequency for one channel and its TV frequency for the other, with similar results.

Stereo sound didn't become a practical reality until the stereo LP appeared in 1958, and it wasn't long after that that I had my first taste of reasonable two-channel sound. A friend's father ran a music store that also carried audio gear, and he brought home one of the first stereo music consoles, along with a handful of records. The console was impressive enough, but its built-in speakers were so close together that I had to sit on the floor right in front of it to get any spatial effect. From 3 feet away, it was mono.

These minor brushes with two-channel sound did little to make me want to abandon my already considerable pile of mono gear. That changed when another friend's father unveiled *his* new system: Marantz electronic separates, AR speakers, a Fairchild turntable, a Weathers tonearm — the works. The sound was a revelation, even though many of the records still tended to favor ping-pong effects. Rather like those gimmicky early stereo movies.

## COREY GREENBERG

Contributor, equipment reviewer, and "The High End" columnist

Would, gentle reader, that I could spin you a heartwarming tale of a two-headed immigrant urchin sitting rapt around the kitchen table with his mama and papa as the soft green glowing dial of an Atwater-Kent radio brings the whole wide world into their tiny Hell's Kitchen tenement. Or perhaps the story of a Fifties high-school hellcat, a greasy dollop of Royal Crown pomade in one hand and a burning soldering iron in the other, hovering over the abandoned Rock-Ola jukebox that would one day blast Link Wray's "Rumble" as his roaring Indian motorcycle plunged in slo-mo off Stag's Leap because he refused to yell "Chicken!" Or the gut-wrenching saga of an idealistic young man thrust into the eye of a storm called the Sixties, plunging headfirst into a hedonistic world of free love, beaded vests, and Dynaco tube amps.

I'd love to be able to blow the dust off of any of those yarns, but I can't. Because I grew up during the height of the most low-down, wretched period the hobby of hi-fi has ever known — the Quadraphonic Seventies. It was a tragic time for many people, but for none more than the thousands of audiophiles who bought second speaker pairs for the back of their rooms, fitted their turntables with extended-response phono cartridges, and tried to wring the first baby breaths of surround sound from warped vinyl records.

My first real stereo system consisted mostly of hand-me-

down components from my dad — a midprice Lafayette quad rig missing the rear speakers that originally came with it. The 35-watt quadraphonic receiver was one of those cold, nasty Seventies solid-state jobs that took sound quality to an all-time low, but to me it was the finest piece of audio gear I could ever hope to call my own. The bookshelf speakers, with their torn foam woofer surrounds and ripped paper-cone tweeters, sounded so much better than the cheap chipboard speakers attached to my old record player that I felt like I was hearing my records for the first time. Soon Hanukkah came, and with it a new Technics turntable and a bigger pair of speakers — Cerwin-Vega rock-and-roll thunderboxes with the big red-rimmed woofers. Dy-no-mite!

My attempts at rigging up my system for successful quadraphony were about as good as the next guy's, which is to say I never got four-channel sound to work even half right, but I sure had fun sitting in the dark of my bedroom as the scrambled-phase wackiness of the few quad-encoded LPs I got filled the room with crazy, swirling, totally random surround sound. And to think that all of this interest in hi-fi began when I discovered a magazine called *Stereo Review* in my friend's older brother's room (and if you don't believe me, you can ask my mom, who's still trying to get me to clean out the boxes of back issues I've been saving in her attic).







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# BEST OF THE MONTH

REVIEWS

OUR CRITICS CHOOSE THE OUTSTANDING CURRENT RELEASES



JOHN PATRICK SALSBURY/RYKODISC

## Kristin Hersh's *Strange Angels*

**F**or those of us who braved the storm of debut albums by sensitive, tortured female artists over the past year, it didn't take long to realize that Throwing Muses and their frontwoman, Kristin Hersh, did it all better a decade ago. Hersh's new album, *Strange Angels*, comes after her previous solo disc, 1994's *Hips and Makers*, but in some ways it feels like a follow-up to the Muses' 1986 self-titled debut record, which ranks with any alternative-rock classic you'd care to name. Still unreleased in America, *Throwing Muses* was a beautiful mess of mangled guitars and

tangled feelings, with darkness and depth in the songs by Hersh (and, in one case, by her stepsister, Tanya Donelly). The band never transcended its cult-hero status before breaking up last year, but you can still hear its influence today, most obviously on one of the best records of 1997, Sleater-Kinney's *Dig Me Out*.

On the surface, *Strange Angels* is very different from that first Muses disc, since the screaming and the loud guitars have been replaced by lush pop leanings. In fact, the tunes here are among Hersh's loveliest, and although the program is mostly solo acoustic, she adds enough

subtle overdubs (bass, cello, piano, organ) to warm up and fill out the sound. Her vocals have also gotten more seductive, as when she shows her playful/romantic side in "Like You." More often, however, there's a creepy beauty that harks back to "Delicate Cutters," the acoustic finale of *Throwing Muses*. The new album's lead-off track, "Home," sets up the record's otherworldly feel and makes the most of Hersh's Appalachian twang. Even when the subject matter is more wholesome, her imagery gets unusually vivid. How many writers would think to express motherly love with the line, "When he drools, it's like he's spitting jewels"?

Kristin Hersh has always insisted that she doesn't write songs in the conventional sense; she merely channels them from inner voices that wake her in the middle of the night. Judging from the material on *Strange Angels*, it's time to give those voices a raise.

Brett Milano

### KRISTIN HERSH *Strange Angels*

*Home; Like You; Aching for You; Cold Water Coming; Some Catch Flies; Stained; Shake; Hope; Pale; Baseball Field; Heaven; Gazebo Tree; Gut Pageant; Rock Candy Brains; Cartoons* (Throwing Music/Rykodisc, 46 min)

## Vivaldi with Style, Vigor, And Charm

**B**ack in the dimly remembered days when we seldom heard Vivaldi at all, his Op. 12 violin concertos had a certain currency — at least the first of them, in G Minor, which was usually heard in a nineteenth-century arrangement. The new recording of these concertos on *L'Oiseau-Lyre* by the Academy of Ancient Music under Christopher Hogwood, with the Academy violinist Pavlo Beznosiuk as soloist, appears to be only the third "integral" recording of Op. 12, which was Vivaldi's last published set of concertos and comprises only six works rather than the dozen that constitute the better-known collections to which he gave such titles as *L'Estro Armonico*, *La Stravaganza*, and *La Cetra*. Neither the sound nor, to an even greater degree, the performance in the 1974 Philips recording by Salvatore Accardo with *I Musici* or the more recent one by the *Solisti Italiani* on Denon compares with the robust new offering from *L'Oiseau-Lyre*, which would have swept a field of any size.

A curiosity in Op. 12 is the shortest of the six concertos, No. 3, in D Major,



Conductor Christopher Hogwood

LORENZO AGUISTI, OISEAU-LYRE

which is not a violin concerto at all but one of Vivaldi's dozens of miniature concertos for strings *without* a solo instrument — the only one, in fact, to be published in his lifetime. It's a more than attractive piece in its own right and a fetching little intermezzo amid some of the most distinguished and utterly captivating performances of *any* of the actual violin concertos to come our way to date from any source. As soloist, Beznosiuk definitely does not take a "one size fits all" approach but celebrates the individuality of each of the five solo concertos, and he gets exceptional support from Hogwood and his splendid players. The performances display a dazzling abundance of vigor and charm, a thorough understanding of the style, and obvious affection for the music on the part of both soloist and conductor; a similarly apparent joy in performing it together illuminates every

phrase. Articulation is consistently crisp — whether in the marvelously animated outer movements or the downright melting loveliness of the tiny slow movement of No. 6, in B-flat Major, with its pizzicato accompaniment under the hearty yet caressing solo — and yet the expressive effect is of unrestricted and unfeigned warmth. The continuo does not rely on a harpsichord exclusively but involves an organ and an archlute as appropriate.

The recorded sound could hardly be more effectively tailored to this music and

these richly enlivening performances, and H. C. Robbins Landon's annotation is yet another facet of the overall excellence of the production. Now, if the same team will kindly oblige with similar attention to Vivaldi's other neglected demi-dozens, the Op. 6 and Op. 11 violin concertos . . .

Richard Freed

#### VIVALDI Violin Concertos, Op. 12

Pavlo Beznosiuk, violin; Academy of Ancient Music, Christopher Hogwood cond. (L'Oiseau-Lyre 443 556, 53 min)

## Lauderdale: State of the Heart

**A**s a writer, Jim Lauderdale has never had any trouble getting noticed. His songs have graced enough albums by artists like George Strait and Patty Loveless to keep him squarely in the chips. But as a performer, he has tended to fall through the cracks between country's more traditional and more rock-oriented territories. In 1996 he released a pop album, *Persimmons*, that was good enough to make most neo-rockers gasp for breath. Now he has used a change in record companies to launch his country album ever, *Whisper*.

Lauderdale still fuels many of his lyrics with a rocking beat. But in co-writing with such bankable dinosaurs as Harlan Howard and Frank Dycus, he takes advantage of old-style melodic and vocal forms to punch up his emotion to nearly palpable levels. "She Used to Say That to Me," a killer tune about a faithless woman, neatly captures the searing pain of romantic deception. And when Glen Duncan enters with his mocking bluegrass fiddle, the song turns into nothing short of a country masterpiece.

Throughout, Lauderdale thrills again and again in his use of language ("Like that old Titanic running full steam ahead /

You fogged up my mind with love words you said"), his mournful melodic turns, his ability to convey bone-deep ache, and his hard-core, Owens-meets-Jones vocals. He reaches his zenith in the closer, "I'll Lead You Home," where he's joined by bluegrass master Ralph Stanley and the Clinch Mountain Boys for a quasi-spiritual experience. Listening to this cut and to so many others on Jim Lauderdale's *Whisper*, you'll tell yourself the same thing: country, modern or otherwise, doesn't get much better than this.

Alanna Nash

#### JIM LAUDERDALE *Whisper*

*Goodbye Song; Whisper; Sometimes; Take Me Down a Path (My Heart Won't Know); She Used to Say That to Me; In Harm's Way; Without You Here It's Not the Same; It's Hard to Keep a Secret Anymore; We're Gone; What Do You Say to That; You're Tempting Me; Hole in My Head; I'll Lead You Home* (BNA, 38 min)

## East Meets West in *Marco Polo*

**T**an Dun was born in Hunan, China, in 1957, studied in China and at Columbia University, and currently lives in New York City. His instrumental works have been widely performed, and his *Ghost Opera* was performed and recorded by the Kronos Quartet. The opera *Marco Polo*, his most ambitious work to date, can now be heard on a new Sony recording conducted by the composer. It was commissioned by the Edinburgh Festival and also performed at the Munich Biennale, the Holland Festival (where this recording was made), and the Hong Kong Festival as well as at the New York City Opera.

*Marco Polo's* libretto, by the English critic and writer Paul Griffiths, is all



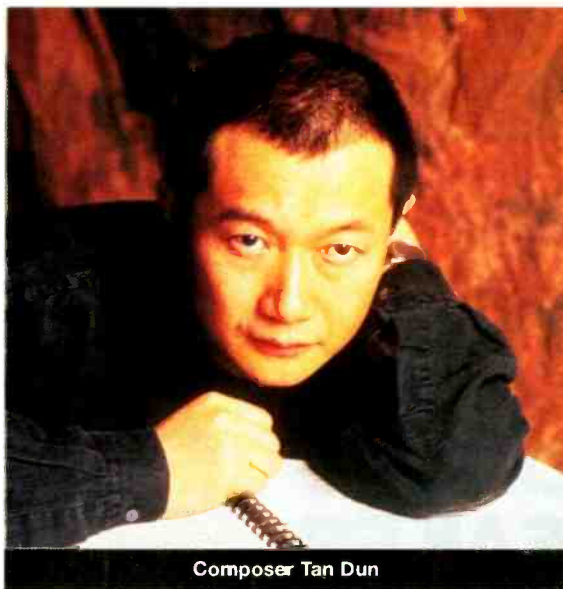
Jim Lauderdale

BNA/RCA LABEL GROUP



metaphor: East vs. West, action vs. reflection, physical vs. spiritual, past vs. present, action vs. memory, European music vs. Chinese music, and romanticism vs. modernism. The title character himself is divided in two: an unreal Polo, sung by a dramatic tenor, and the historical Marco, sung by a mezzo-soprano (!). The Chinese emperor Kublai Khan is sung by a Chinese bass, Dong-Jian Gong, while a real Beijing Opera singer, Shi-Zheng Chen, portrays an Italian "shadow" and the Chinese poet Li Po, both with a painted face like a Beijing opera star.

It goes on from there. A soprano portrays Water, and another portrays both Sheherazade and Gustav Mahler, whose influence is very noticeable (Mahler's settings of Li Po in *Das Lied* are actually quoted). Even Dante and Shakespeare make their appearances. A Western-style vocal choir and orchestra is complemented by a Chinese pipa and an Indian tabla and sitar, suggesting an amalgamation or, at least, juxtaposition of Eastern and Western musics from across Eurasia. The range is also temporal — early music, Romanticism, and extreme modernism are all present, and there is a huge range of Eastern and Western vocal techniques, from the most traditional to Tibetan overtone singing to the most advanced extend-



WARING ABBOTT/SONY

Composer Tan Dun

ed vocalism. The large sections of the work carry the names of the four seasons under the overall title "The Book of Timespace," and the smaller divisions are entitled "Piazza," "Sea," "Bazaar," "Desert," "Himalaya," and "The Wall" — about as close as *Marco Polo* gets to an understandable synopsis.

As a dramatic or philosophical conception, the work is constantly at the edge of incomprehensibility. Its musical range is so huge and its artistic identity so polymorphous — everything seems to be

played and sung in masks and shifting identities — that I could never seem to grasp the whole. And yet, in another way, this is an unfailingly brilliant work whose scope, ingenuity, and immense skill made a deep impression on me. Like the subject, the work is an immense journey through time and space, and the dissonant, shrieking terrors of the journey are counterbalanced by passages of exquisite beauty.

Is there any way to sort out all of these contradictions? Probably not; they are built into the piece and into the extraordinary nature of what the composer has attempted here. What remains is the tremendous contribution made by the first-class performers as well as the powerful impression of a gigantic set of contradictions that contains multitudes. *Eric Salzman*

**TAN DUN** *Marco Polo: An Opera Within an Opera*

Thomas Young (Polo), Alexandra Montano (Marco), Dong-Jian Gong (Kublai Khan), Susan Botti (Water), Shi-Zheng Chen (Rustichello, Li Po), Nina Warren (Sheherazade), Mahler, Queen, Stephen Bryant (Dante, Shakespeare); Ya Dong, pipa; Wolfram Winkel, tabla; Al Gromer Khan, sitar; Cappella Amsterdam; Netherlands Radio Chamber Orchestra, Tan Dun cond. (Sony 62912, two CDs, 100 min)

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(Amsterdanned; P.O. Box 862558, Los Angeles, CA 90086)

**Eternally Yours**

(Amsterdanned) The first two albums, from 1977 and 1978, by the pioneering Australian punks, led by Chris Bailey (who has revived the band name for a new album, *Howling*, also on Amsterdanned).

**STEPPENWOLF**

(Mobile Fidelity Sound Lab) The 1968 debut record comes to gold CD, featuring "Sookie Sookie," "The Pusher," and "Born to Be Wild."

**DWIGHT TWILLEY BAND**

**Sincerely** (The Right Stuff; 1750 N. Vine St., Hollywood, CA 90028)

**Twilley Don't Mind**

(The Right Stuff) Twilley and cohort Phil Seymour, both from Tulsa, released these popabilly records in 1976 and 1977. The first, with the hit "I'm on Fire," now offers four bonus tracks, and the second has three extras.

**VAN CLIBURN**

**My Favorite Chopin** Van Cliburn, piano (RCA Victor 68813). His debut solo-piano recording, from 1961, three years after his Moscow Competition triumph, remastered with 20-bit technology.

**MAHLER** *Symphony No. 9*

London Symphony, Leopold Ludwig cond. (Vanguard EVC 9059). The Moravian-born conductor studied at the Vienna Conservatory, where Mahler had

been a student. Recorded in 1960 on 35-mm tape and remastered with 20-bit technology.

**RACHMANINOFF**

**Symphony No. 2**  
**PROKOFIEV**  
**Classical Symphony**  
**R. STRAUSS**

**Till Eulenspiegel** Pittsburgh Symphony, William Steinberg cond. (EMI 66554). Classic "Full Dimensional Sound" mono recordings on Capitol from 1953-54.

**TCHAIKOVSKY**

**Piano Concerto No. 1;**  
**The Nutcracker (excerpts)**

Emil Gilels, piano; Chicago Symphony, Fritz Reiner cond. (RCA Victor 68530). One of the great performances of the concerto in a stunning "Living Stereo" recording from 1955, originally released in mono before the advent of stereo LPs, with *Nutcracker* excerpts from 1959.

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# AUDIO

September 1997



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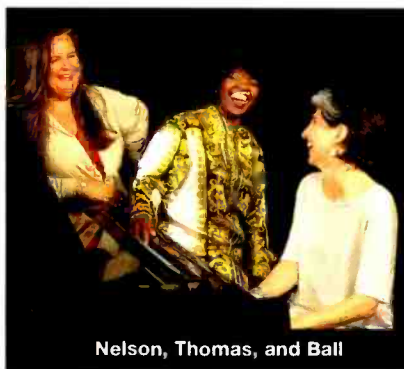
NEW RECORDINGS REVIEWED BY CHRIS ALBERTSON, FRANCIS DAVIS, WILL FRIEDWALD, PHYL GARLAND, RON GIVENS, BRETT MILANO, ALANNA NASH, PARKE PUTERBAUGH, KEN RICHARDSON, AND STEVE SIMELS

**MARCIA BALL, IRMA THOMAS, AND TRACY NELSON** *Sing It!*

(Rouder, 48 min)

★★★★

**S**ing It!, a trio record by three of the most distinctive soul and blues vocalists, arrives with high expectations. Marcia Ball, planting one foot in New Orleans and the other in Austin, practices a form of blues-jazz that live audiences find irresistible. Irma Thomas, a soul queen for four decades, is deservedly a legend. And Tracy Nelson is nothing short of a country-soul force field. Here they sing separately, in pairs, and all together, and they fulfill the record's biggest promises as they revisit the R&B of the Fifties and Sixties in songs by



Nelson, Thomas, and Ball

JEAN HANGARTER/ROUNDER

Joe Tex, Mike Reid, Gary Nicholson, Steve Cropper, Dan Penn, and Jerry Ragovoy. It's a joy to hear these women, who at times ("Shouldn't I Love Him") recall the best "girl groups" of years past — and who seem to be enjoying the project as much as the rest of us. Yet only Nelson gets to the emotional core of the pain that drives the soul genre. Whether handling the lead of "In Tears" or sharing the duets of "You Don't Know Nothin' About Love" and "Heart to Heart," she is a pure and transcendent artist. More than that, she's a miracle. *A.N.*

**GARTH BROOKS** *Sevens*

(Capitol, 46 min)

★★

**G**ive Garth Brooks credit for opening his much-hyped, long-delayed seventh album with an honest-to-God country song. "Longneck Bottle" is a first-class George

Jones homage that sports an unusually traditional (for Brooks) swing sound, wailing steel and all. You have to figure he's making a point by putting this song up front: he may hold back his album for months as he fights with his record label over marketing strategy, but at heart he's still a regular guy.

Nice try, but the rest of *Sevens* doesn't measure up. Only the tuneful tearjerker "She's Gonna Make It" and the token barn-stormer "Cowboy Cadillac" are as convincingly country as the opener. Otherwise, Brooks sounds even slicker and poppier than before, and his message songs are trite. Worse still, each half of *Sevens* closes with a big production number that falls flat. "Fit for a King" tries to identify with the homeless and downtrodden, but no amount of gospel choruses can keep it from sounding condescending. As for "Belleau Wood," which celebrates a Christmas truce during World War I, Collin Raye already recorded "It Could Happen Again," a similar-sounding song on the same topic, for his 1996 Christmas album. And you know somebody's playing it too safe when his most topical song is set eighty years ago. *B.M.*

**GREG BROWN** *Slant 6 Mind*

(Red House, 54 min)

★★★★

**T**he hipster/beat-poet/singer Greg Brown opens *Slant 6 Mind* with "Whatever It Was," a moody stream of consciousness where "the little towns are lying on their faces." Like the seemingly normal burghs of David Lynch-land, Brown's small towns are teeming with anxiety, chaos, and perversion. There's a guy in a bra, for starters, as well as a headless body out on the lawn and a drive-by shooting in Lake Wobegon. It's scary in the heartland, and it's an ominous heart that beats through most of the rest of Brown's program.

Brown has a baritone-bass that gets

MARIAN MOORE/RED HOUSE



Greg Brown

down between the crevices of the lowest notes of the scale and rattles around for a while before coming up for air. He is a commanding vocalist who would attract attention even if he didn't wrap that otherworldly instrument around some of the most original and transporting lyrics in popular music. "Mose Allison Played Here" is a true-sounding story about the woes of an itinerant musician. The gritty "Down at the Mill" turns on anger and violence. And in "Billy from the Hills," the smell of death hangs in the air. These and other songs are cinematic jewels, polished to perfection by Brown's deft blues guitar playing.

Greg Brown's America won't be embraced by the *Brady Bunch* crowd, but it's an unforgettable portrait, painted by one of folk's pre-eminent artists. *A.N.*

**THE DERAILERS** *Reverb Deluxe*

(Watermelon/Sire, 48 min)

★★★★

**O**n first hearing, the Austin-based Derailers are so ear-tweakingly country, so steeped in the hard-core Bakersfield style, that it's easy to dismiss them as parody. But they eventually win you over with both their Buck Owens-inspired originals and their earnest covers of classics like Harlan Howard's "I Don't Believe I'll Fall in Love (Today)" and the thrilling "No One to

## STAR SYSTEM

Excellent ★★★★★

Very good ★★★★

Good ★★★

Fair ★★

Poor ★

Talk to But the Blues," a song reminiscent of early Elvis Presley but made famous by Lefty Frizzell. Vocally, the Derailers hit and miss: "Tears in Your Eyes" is nearly good enough to remind you of the Everly Brothers' familial harmony, but the lead in "Painful Days and Sleepless Nights" is just plain painful to hear. Still, you forget all that when they launch into "Ellen," a lively chicken-pickin' instrumental, or "Come Back," a rockabilly diamond in the rough. These four cats are too retro and rough-edged for Nashville, and, to my way of thinking, that's a compliment. Hear 'em before they get the big head. *A.N.*

**GOLDEN CARILLO** *Back for More*  
(Kayos, 38 min.; 16 W. 19th St., 5th floor,  
New York, NY 10011; KayosPro@aol.com)

★★★★  
The scene is the Manhattan haunt CBGB, the time is the late 1970s, and the veritable house bands are the Ramones, Blondie, Talking Heads, Television, the Shirts... the Shirts? Yes, they were there, too, a Brooklyn sextet of arty popsters who ultimately were overlooked for not being as raw, sexy, or eggheaded as their colleagues — never mind that Shirts shows were all-stops-out, dual-guitars-brandished affairs. The band eventually broke up, but riveting lead vocalist Annie Golden not only kept plugging (and unplugging) away but also showed her versatility by tackling cabaret (with future soundtrack composer Marc Shaiman), Broadway (as Lynette "Squeaky" Fromme in Stephen Sondheim's *Assassins*), film (from *Hair* to *12 Monkeys*), and TV (as Cliff's girlfriend Margaret in *Cheers*).

First and foremost, however, she remains a charismatic singer, and for the past several years she has been singing and writing with guitarist Frank Carillo. Their first two albums, *A Fire in New Town* and *Toxic Emotion* (actually different versions of the same record), had some strong material, but *Back for More* is a great leap. Golden and Carillo have become a genuine duo, their sweet/gruff voices blending perfectly to evoke the despair of the streets ("Slow Burn"), a lonely bar ("Cantina"), and Hell itself ("Any-

more Than You Do"). Elsewhere, the acoustic/electric backing revs up for sassy numbers like the title track and "Been Lovin' Me" as Carillo impresses with his brisk guitar work. And there are affecting elegies in Golden's two solo turns: "Picture of the Pain," a tribute to those hunted down by the media (written before Princess Diana's death), and the beautiful piano-and-cello ballad "Clara Bow."

In *Back for More*, Golden Carillo have made an album that comes across like a New York version of *Buckingham Nicks*. And you know what happened to Lindsey and Stevie after *that* record. *K.R.*

**LSG** *Levert.Sweat.Gill*  
(EastWest, 56 min)  
★★★★

To create the R&B supergroup LSG, a certain amount of accommodation was necessary to fuse the soulful emotional thrust of Gerald Levert with the polished Southern strut of Keith Sweat and the engagingly youthful balladry of Johnny Gill. The result is a consistently pleasing vocal blend, but *Levert.Sweat.Gill* reaches fewer peaks than expected. Perhaps each singer was trying too hard not to hog the spotlight. It doesn't help that many of the songs are based on simple, monotonous riffs. But the three are capable of pushing each other to exciting heights, as in "Drove Me to Tears," the best-shaped and most tuneful song here. And spirited changes of pace come by way of various guests, from rappers The Lox and LL Cool J to the refreshing female input of Faith Evans, Coko of SWV, and Missy "Misdemeanor" Elliott. Overall, *Levert.Sweat.Gill* is an experiment that lights no new fires but certainly doesn't fizzle. *P.G.*

**METALLICA** *Reload*  
(Elektra, 76 min)  
★★★

Metallica could just as easily have called this one *Rehash* or *Redux*, since the thirteen tracks have their origins in the sessions for the band's previous album, *Load*. Statistically, the mother lode of material on both records edges out Guns N'



KAYOS

Golden Carillo

Roses' output on the two volumes of *Use Your Illusion* by 3 minutes, making Metallica the new heavyweight in the overkill department. Artistically, *Reload* is more of the same, only darker — which is not to say better.

Whereas *Load* had changes of pace like the countryish "Mama Said" and the reflective "Wasting My Hate," *Reload* mires the band in a fire-breathing, heavy-mental rut of evil and devilry. As players, the guys remain sharp as a saber's edge, mounting a controlled attack upon all that bugs them with laser-precise riffing. At this point, however, there's something automatic about the demon-obsessed negativity. We've heard it all before, and although Metallica can still rock like the furies on *Reload*, its shtick now seems merely ill-tempered and anachronistic. *P.P.*

**TODD SNIDER** *Viva Satellite*  
(MCA, 65 min)  
★★★★

After two impressive albums that rocked with a decided folk-country leaning, Todd Snider has gone for a straighter rock/pop sound on *Viva Satellite*, making, as he puts it, music "in celebration of whatever we want, for better or worse." Most of the time it's for better, but it veers the other way in a cover of Steve Miller's "The Joker," a song that needed no resurrection, and in "I Am Too," with riffs too derivative to support Snider's claim that his is "the best rock band in the world." As before, Snider is often more interesting lyrically than melodically, especially in "God Send," where he succinctly prays for "an angel to love," tiring of "bachelor life / got two ex-wives / beer-can pile / night-club world / ashtray girl." The Townes Van Zandt-ish "Doublewide Blues" and "Positively Negative" ("Come over here tonight / And I will let you treat me like the victim / I'm not gonna be") round out his more intriguing songs, after the hallucinogenic "Satisfaction Guaranteed" and the hip I-found-Jesus-of-

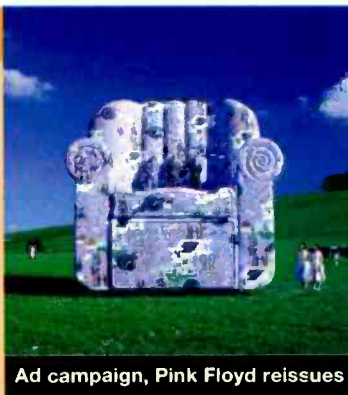
SONGS FROM THE BIG CHAIR

Southern Culture On The Skids



CD cover, Southern Culture on the Skids

CD cover, Dubstar



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Send this information, along with your name, address, and telephone number to: Stereo Review's "Ten Of The All Time Best" Sweepstakes, 1633 Broadway, 45th Floor, New York, NY 10019.

All entries must be received by April 1, 1998. Only one winner will be chosen.



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DAYTIME PHONE (WITH AREA CODE) \_\_\_\_\_

"Ten Of The All Time Best"  
(include name of song and artist):

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

5. \_\_\_\_\_

6. \_\_\_\_\_

7. \_\_\_\_\_

8. \_\_\_\_\_

9. \_\_\_\_\_

10. \_\_\_\_\_

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 •VHS-C, 16x-optical/22x-digital zoom, digital image stabilization, built-in auto light ..... **\$499<sup>00</sup>**

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 •Pocket-size Digital Camcorder, 120x-digital/10x-optical zoom, 2.5" SwivelScreen™ Color LCD **CALL**

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fering of "Once He Finds Us." Todd Snider's wide-ranging repertoire sometimes signals a lack of focus, but he's definitely a talent to be reckoned with. *A.N.*

**ROBERT WYATT** *Shleep*

(*Thirsty Ear, 52 min; 274 Madison Ave., Suite 804, New York, NY 10016; ThirstyE@aol.com*)

★★★

**S**leep is Robert Wyatt doing what he does best: discoursing in conversational meter in his wispy British voice as music swirls around him in strange and wonderful ways. Wyatt herds together modern jazz, difficult art songs, abstract pop confections, and audacious recastings of familiar source material; in the last category, the highlight is his breathless spinoff of Bob Dylan's "Subterranean Homesick Blues" as "Blues in Bob Minor." There is less of the leftist polemics that typified Wyatt's albums in the 1980s and more of the dreamily engaging twists and turns of his earlier work. The gently percolating first track, "Heaps of Sheeps," evinces the unmistakable hand of Brian Eno, and "Maryan" drifts along like a particularly intriguing daydream. Then there's "Free Will and Testament," whose philosophical lyrics hark back to the school of "pataphysics" — a kind of playful existentialism without the academic starch — hatched by Wyatt back in his days with the Soft Machine. All in all, *Shleep* is a return to the quirkiness and charm of Robert Wyatt at his inscrutably accessible best. *P.P.*

**YES** *Keys to Ascension 2*

(*Yes/Purple Pyramid, two CDs, 102 min*)

Live disc: ★★★

Studio disc: ★★★

**Open Your Eyes**

(*Beyond Music/Tommy Boy, 74 min; available in regular or SAIL-surround edition*)

★★

**T**he good news is that Yes has made a creative comeback and a commercial one at the same time. The bad news is that it has done them on separate albums.

The classic lineup of Jon Anderson, Steve Howe, Chris Squire, Rick Wakeman, and Alan White shows its mettle on *Keys to Ascension 2*, which, like the first *Keys*, combines live tracks from a 1996 reunion gig with new studio material. But this time the studio sessions cover a full CD, and it's the best Yes disc since 1977's *Going for the One*. At long last, the band throws commerciality to the wind and mines the cosmic epic style it perfected in the Seventies. The 9-minute "Foot Prints" and the 18-minute "Mind Drive" are complex pieces that hold together as songs, alternating Anderson's melodic musings with thrilling guitar/keyboard outbursts. The live disc is a nice but unnecessary bonus, since most of the songs have been on concert albums before and these faithful versions offer nothing new.

Recorded not long after, *Open Your Eyes* marks another personnel change — Wakeman is out (again), guitarist/singer/writer Billy Sherwood is in — and another change of course. Sherwood helps steers the band in the same radio-friendly direction Trevor Rabin did. It works fine in the first few tracks: "New State of Mind," the title song, and "Universal Garden" retain the grandiosity of prime Yes, with enough layers of vocals to make up for the lack of keyboards. But then a slick adult-contemporary approach takes over, as Anderson's lyrics descend into the trite feel-goodisms of recent years. Pleasant, yes; progressive, no. *B.M.*

**COLLECTIONS**

**THE BRIDGE SCHOOL CONCERTS, VOL. ONE**

(*Reprise, 62 min*)

★★★★

**T**he *Bridge School Concerts, Vol. One* is a model of how to put together a coherent multi-artist collection — no small feat, considering that fifteen performances by as many artists were culled from nine years' worth of benefit shows. Neil and Pegi Young cofounded the Bridge School to offer educational opportunities to children with "severe speech and physical impairments." Because the musical approach of the concerts is unplugged and because all involved keep the cherubic beneficiaries of their donated time at the forefront, *The Bridge School Concerts* comes together in a spirit of intimacy and generosity.

Neil Young opens the disc with "I Am a Child," a Buffalo Springfield-era tune written long before the term "inner child" passed into vogue. The most moving songs here make explicit statements about self-sufficiency: Tracy Chapman's "All That You Have Is Your Soul," the Pretenders' "Sense of Purpose," Patti Smith's "People Have the Power," and David Bowie's "Heroes." Other tracks qualify as curios that no fan or collector will want to be without, including Elvis Costello's "Alison" (with Young) and the improbable matchup of Don Henley and an early Beatles tune, "Yes It Is." The vibes must be good at these affairs: even industrial doom-mongers Ministry make nice with a bubbly true-bluegrass rendition of the Grateful Dead's "Friend of the Devil." *P.P.*

**ONE STEP UP/TWO STEPS BACK: THE SONGS OF BRUCE SPRINGSTEEN**

(*The Right Stuff, two CDs, 118 min*)

★★

**W**ith fourteen new versions and fourteen previously recorded tracks, *One Step Up/Two Steps Back* is the proverbial case of a double disc that would have made a fine single one highlighting just those artists who bring a measure of personality



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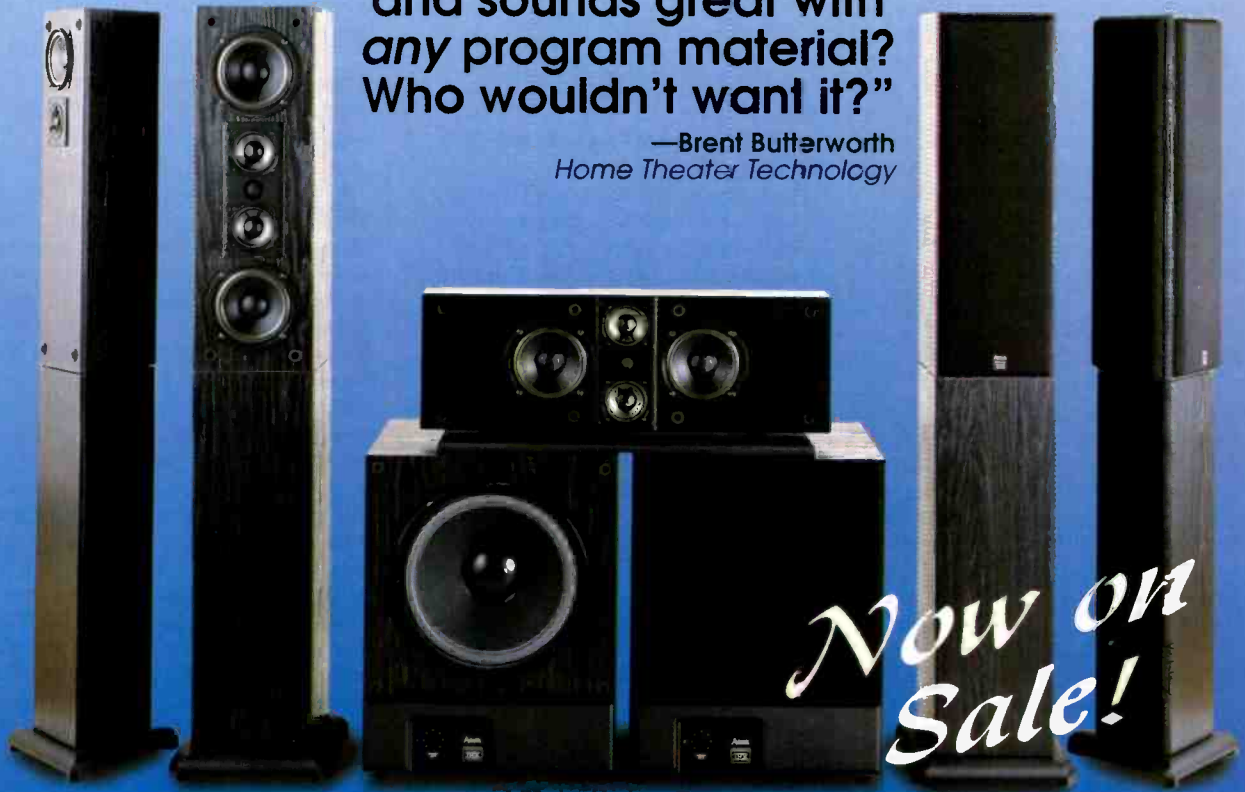
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# QUICK FIXES

**BETH NIELSEN CHAPMAN**

**Sand and Water**

(Reprise, 44 min) ★★ ★

The title song is Chapman's ballad about being reunited with a loved one "through the doors beyond the grave." The album, written and performed in a style reminiscent of late-1960s Judy Collins, is clearly a companion for those still stunned by sorrow but fighting to find their way back into the world. *A.N.*

**DURAN DURAN Medazzaland**

(Capitol, 49 min) ★★ ★

**THE DURAN DURAN TRIBUTE ALBUM**

(Mojo, 57 min) ★

A handful of tracks on *Medazzaland* attempt to recapture the sound and feel of old, but at its best the record plays like a decent Duran Duran tribute album. The real tribute album has a bunch of ska versions, a bit of hardcore, and some thrash metal, and it abounds with clumsy arrangements and snotty vocals. The only track that works is from a joke band, Björn Again, which transforms "Girls on Film" into an ABBA epic. *B.M.*

**DIZZY GILLESPIE**

**Bird Songs: The Final Recordings**

(Telarc Jazz, 63 min) ★★ ★

Taped live in January 1992, *Bird Songs* features appearances by Benny Golson, Jackie McLean, Clifford Jordan, David Sanchez, Paquito D'Rivera, and Antonio Hart — a fine lineup, but one that underlines how Gillespie had become just an echo of his former self. In "Con Alma" his eloquence is unimpaired, but I miss the authority of old. *C.A.*

**GRAND FUNK RAILROAD Bosnia**

(EMI/Capitol Entertainment Properties, two CDs, 101 min) ★★ ★

Performing together for the first time in more than twenty years, Grand Funk replicates its old live set. The sound is a lot cleaner now, and time has been relatively kind to the material. *B.M.*

**PATTY LARKIN Perishable Fruit**

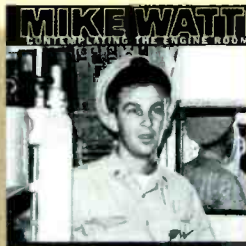
(High Street, 50 min) ★★ ★

In her first producing role, Larkin excluded drums and challenged her players and herself to create music "plucked, thumped, and sampled on stringed instruments." The result is graceful folk-pop that alternately recalls the dreaminess of k.d. lang, the detached coolness of Sheryl Crow, and the self-conscious hipness of Rickie Lee Jones. *A.N.*

**THE VERVE Urban Hymns**

(Hut/Virgin, 76 min) ★★ ★★

The Verve has mutated into something rather out of step with the rest of its Brit contemporaries: a traditional-sounding five-piece rock band that happens to be really good. *Urban Hymns* is the right kind of Sixties revivalism, faithful to the spirit, rather than the letter, of that era's best music. *S.S.*



**MIKE WATT**

**Contemplating the Engine Room**

(Columbia, 54 min) ★★ ★★

Watt's mesmerizing rock opera (as unlikely as that sounds) metaphorically recounts a day in the life of the Minute-men, the punk-rock trio for which he played bass. It also evokes the seafaring life of his late Navyman dad (who's pictured on the cover). Watts, guitarist Nels Cline, and drummer Stephen Hodges interact like a jazz group with punk instincts and avant-garde leanings, setting sail for territories previously claimed only by the likes of Captain Beefheart and the Hampton Grease Band. *P.P.*

**BEBE WINANS**

(Atlantic, 62 min) ★★ ★★

Winans is a passionate singer, but he is also a gifted songwriter, arranger, and producer, as his fine solo record attests. The music owes far more to R&B than to gospel, and the lyrics seem to address earthly love. Yet the album closes with a rousing rendition of the Edwin Hawkins classic "Oh Happy Day." *P.G.*

**BILLY YATES**

(Almo Sounds, 34 min) ★★ ★★

Fans of stone-cold country will likely send up a flare after one spin through Yates's debut. He knows how to get to the heart and head at precisely the same time and how to find the universal in the personal, whether facing life-altering "Choices" or addressing the departed loved one of "Flowers." Country does maudlin like no other music, but the bottom line is this: if that last song doesn't get you, you just ain't breathin.' *A.N.*

and passion to their interpretations. John Hiatt does a feisty, ripping "Johnny 99," John Wesley Harding finds the folk singer's poetry in "Jackson Cage," Elliott Murphy is perfectly matched with the wordy, street-wise world of "Stolen Car," and Ben E. King brings an effortless soulfulness to "4th of July, Asbury Park (Sandy)." But most of the project is generally flat at best and embarrassing at worst. Martin Zellar's ghostly, constipated "Darkness on the Edge of Town" is at the bottom, followed closely by Syd Straw's histrionic, uncomprehending "Meeting Across the River." And just who are Mrs. Fun/Tina and the B-Side Movement, who sandbag "Janey, Don't You Lose Heart" with a dull, disinterested reading? *One Step Up/Two Steps Back* makes you yearn to hear the originals, if only to dislodge these banal interpretations from the mind's ear. That seems something of a travesty, given Bruce Springsteen's rich, timeless store of song. *P.P.*

**TIBETAN FREEDOM CONCERT**

(Grand Royal/Capitol, three CDs, 168 min: enhanced CD)

★★★★

All-star charity events usually don't translate into good albums, but this three-disc set from the Tibetan benefit concerts organized over the past two summers by Beastie Boy Adam Yauch is a rare exception. Yauch put together a fine cross section of popular alternative and hip-hop acts, mixed with folk and Eastern roots music. *Tibetan Freedom Concert* wisely puts everyone on equal footing, with one track each by everybody who played, and it's good to hear Taj Mahal, Jamaican dub-master Lee Perry, and Japanese pop artist Yungchen Lhamo alongside the Foo Fighters, U2, and members of R.E.M.

Despite jivey moments from the Jon Spencer Blues Explosion and the severely overrated Beck, the music generally sounds urgent enough to suit the occasion, even if there are few explicitly topical songs. The best political number, a searing satirical poem by Public Enemy leader Chuck D., appears only in the multimedia section, but hip-hop gets a strong showing via a fiery performance by KRS-1, a warm and funky one by De La Soul, and a goofy one by Biz Markie. For rockier tastes, Patti Smith's "About a Boy" (far stronger than the *Gone Again* version), Sonic Youth's "Wildflower" (an inventive, 10-minute instrumental), and Oasis member Noel Gallagher's "Cast No Shadow" are worth the proverbial price of admission.

The multimedia portion doesn't provide much extra live footage, just some song excerpts (most under a minute), backstage sound bites, and interviewer Sean Lennon identifying himself six times. But there's a wealth of documentary material, including



speeches from the Dalai Lama, to put the music into perspective. *B.M.*

## JAZZ

### BILL COSBY

Hello, Friend: To Ennis with Love  
(Verve, 48 min)

★★★

**H**ello, *Friend* is a misleading release: it bears Bill Cosby's name and likeness on the cover, but it's not a Cosby album, except for the fact that he coproduced it. Actually, this is a good jazz session featuring Lester Bowie and Philip Harper on trumpet, Bobby Watson on alto saxophone, Craig Handy on tenor sax, and a rhythm section of pianist Cedar Walton, bassist Peter Washington, drummer Billy Higgins, and percussionist Steve Kroon — certainly a group that deserves proper credit. Recorded in 1993, the album was put aside until Cosby asked Verve to issue it as a tribute to the memory of his son, Ennis.

Cosby apparently picked the tunes — a good mix of standards and soul-jazz hits from the late Fifties and early Sixties — and he leads them off with his own piece "Wide Open," itself very much in the soul-type head-arrangement mold of the Sixties. There is nothing wrong with having a retro repertoire, but, given who was on hand, this could have been a far more venturesome and meaningful set. The ensembles are clean, the solos are often brisk and imaginative, and everybody plays very well indeed, but these are men who can, and often do, go well beyond very well. *C.A.*

### PAQUITO D'RIVERA & THE UNITED NATION ORCHESTRA Live at MCG

(Jazz MCG/Blue Jacket, 69 min)

★★★★

**I**t sounds ever so official, but the United Nation Orchestra has no connection with the United Nations. Dizzy Gillespie originated the name to illustrate music's role as an international language. Now saxophonist Paquito D'Rivera, who shared the orchestra's musical direction with Gillespie, continues spreading the pleasant amalgam of jazz, Afro-Caribbean, and Latin music.

*Live at MCG*, recorded last year at Pittsburgh's Manchester Craftsmen's Guild, is a richly textured multimood romp. Trumpeter Mike Ponella was inspired by a Neville Brothers performance to write the brassy, "St. Louis Blues"-like "King of Cancun." "Groove for Diz" also exemplifies the orchestra's excitement, as well as its diversity; written by trombonist William Cepeda and arranged (with a decided bow to Stan Kenton) by Luis Romero, it's based on the 12/8 Puerto Rican bomba yuba rhythm. And D'Rivera and Oscar Stagnaro duet on clarinet and bass, respectively, in "Andalu-

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cia Medley," paying tribute to Cuban composer Ernesto Lecuona.

I am particularly pleased to be able to recommend this CD because proceeds from its sale support the MCG's Jazz Education Program — we need more of those. If D'Rivera ever presents the United Nation Orchestra in your vicinity, make every effort to experience it. C.A.

**PAT METHENY GROUP** *Imaginary Day*  
(Warner Bros., 65 min)

★★

**MARC JOHNSON**

*The Sound of Summer Running*

(Verve, 53 min)

★★★★

*Imaginary Day* is one of those hour-long sighs that have won guitarist Pat Metheny a loyal following among advocates of fusion, New Age, and smooth jazz. Dominated as much by Lyle Mays's keyboards and Mark Ledford and David Blamires's la-la's as by Metheny's acoustic, electric, and synth guitars, this is the sort of pleasant background music that, if listened to more closely... fades even further into the background. But I wouldn't mind hearing the beguiling "The Roots of Coincidence" on the radio every so often.

Bassist Marc Johnson's *The Sound of Summer Running* is notable for bringing

Metheny together with guitarist Bill Frisell for the first time. These two are a good match, lyrical eclectics with a feel for contemporary Americana. Whatever Metheny's shortcomings as an improviser, he's a team player with an ear for texture. He mostly lets Frisell set the pace, and with Johnson and drummer Joey Baron providing a supple beat the result is an album of jazz that might best be described as bristlingly cerebral. And the absence of an actual Hammond B-3 doesn't stop these guys from turning in a killer organ groove in the irresistible "Union Pacific." F.D.

**MARK MURPHY** *Song for the Geese*

(RCA Victor, 64 min)

★★★★

**The Best of Mark Murphy:**

*The Capitol Years*

(Capitol Jazz, 49 min)

★★★

**Stolen... and Other Moments**

(32 Jazz, two CDs, 149 min)

★★★★★

Mark Murphy not only sings jazz but teaches it around the globe, and his most important lesson is his own life: pay your dues and stay true to your artistic conscience and eventually the world will catch up with you, although it may take forty years. Alongside Betty Carter, Murphy all

but invented the concept of swinging eclecticism, an accomplishment "officially" recognized at long last by his winning the *Down Beat* poll for the past two years. All of his records constitute veritable catalogues of techniques, including scat, the blues, Latin rhythms, vocalese, and even poetry recitation. Murphy's newest set, *Song for the Geese*, adds more via a three-voice choir (in the title track) and an acid-jazz background given to several cuts, including a rendition of the Steely Dan hit "Do It Again." But it's the swinging numbers ("You Go to My Head") and the ballads (his scathing soliloquy in Stephen Sondheim's "I Remember") that will most please lovers of classic jazz singing.

Two retrospectives complete the picture of Murphy's evolution. *The Capitol Years* offers a well-selected sampling of his three albums and assorted singles for that label. This is a younger, more conservative Murphy, one whom some listeners may even prefer. *Stolen... and Other Moments* summarizes the nineteen albums and twenty-two years Murphy spent with Muse Records; it's a gloriously varied program with sources of inspiration ranging from Antonio Carlos Jobim to Nat King Cole to Jack Kerouac. As colleague Sheila Jordan observes in the liner notes, "What's not to like? What singers do what Mark Murphy does?" W.F.

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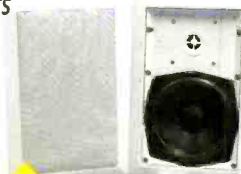
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NEW RECORDINGS REVIEWED BY RICHARD FREED, DAVID HALL, JAMIE JAMES, GEORGE JELLINEK, AND ERIC SALZMAN

## J. S. BACH Brandenburg Concertos

Il Giardino Armonico (Teldec 98442, two CDs, 93 min)

★★★★★

We think trends move quickly in these days of high-speed communications, but new musical fashions traveled across Europe at amazing speed in the seventeenth and eighteenth centuries. The Baroque concerto was invented in Italy at the beginning of the eighteenth century and crossed the Alps only a few years later. Although Bach

commonly regarded from a Germanic point of view.

Il Giardino Armonico is a Milan-based period-instrument group directed by the flutist and conductor Giovanni Antonini. These musicians lean into the musical grooves in an almost contemporary choreographic manner, giving us a jazzy, dancing, Bach under sunny southern skies. *E.S.*

## BEETHOVEN Piano Concertos Nos. 1-5; Piano Sonata No. 23 ("Appassionata")

Andras Schiff, piano; Dresden State Orchestra, Bernard Haitink cond. (Teldec 13159, three CDs, 203 min)

★★★★★

If you listen first to the last of the three discs in this set, the one containing the Fifth Concerto (the "Emperor") and the "Appassionata" Sonata, you will find it irresistible. Andras Schiff, the Dresden State Orchestra, and Bernard Haitink perform like preordained partners in the concerto. Eschewing anything that might smack of mere rhetoric or self-conscious reverence, they allow themselves — and us, as listeners — to revel in the vigor of Beethoven's imaginativeness and the inexhaustibility of music that even now, perhaps, has yet to reveal all of its wonders. One very small but very telling example occurs about 4 minutes into the final movement, in a transition passage for the piano that suddenly blossoms into the most fetching little dance when Schiff very clearly yet subtly brings forward the ingratiating accompaniment figure, which tends to go unnoticed. A similar sense of enthusiastic rediscovery illumines his unreservedly dramatic yet unwaveringly elegant re-examination of the familiar "Appassionata" Sonata, and the recorded sound is virtually ideal in both works.

The four earlier concertos seem to have been recorded by a different pianist — one whose approach might be described as contemplative, or ruminative, or profoundly respectful, but certainly not as enthusiastic or particularly vigorous. And his collaborators in these performances seem entirely in accord with that approach. The results cannot be written off as pedestrian or disengaged, but they do not meet the expectations raised except, curiously, in the slow movements, which are brought off with splendid conviction and communicative power. The outer

ones, for the most part, suggest little more than thoughtful attention to detail, an elegant level of articulation, and a fastidious balancing of the solo and orchestral elements — which merely provide the framework for the music's real substance. *R.F.*



GUIDO HARARI/TELDEC

Il Giardino Armonico

never left Germany and worked only occasionally with Italian musicians, he was well acquainted with the Italian style, which was probably the single greatest influence on him. And he would, I am sure, have enjoyed these Italian performances — light (even spare), fast, stylish, rhythmic — of his six Brandenburg Concertos, which are only too

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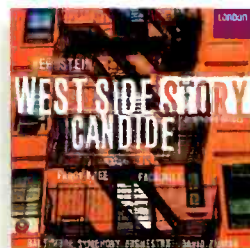
Excellent ★★★★★

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Good ★★★

Fair ★★

Poor ★



## BERNSTEIN Candide, Overture; West Side Story, Symphonic Dances; Facsimile; Fancy Free

Baltimore Symphony, David Zinman cond. (London 452 916, 73 min)

★★★★★

It is ironic (but perhaps not surprising) that Bernstein's "serious" symphonic music has had a slow go but his show and dance music is solidly entrenched in the modern orchestral repertory. The overture to *Candide* and the Symphonic Dances from *West Side Story* are long-time favorites, and *Fancy Free*, a wonderful score written for a ballet by Jerome Robbins, is now often heard as well. In this collection, only *Facsimile*, a rather abstract, Stravinskian work written in 1946 for another Robbins Broadway ballet, is relatively unknown, and it deserves to be better known. The performances by David Zinman and his Baltimore Symphony are expert. *E.S.*

## BRAHMS Viola Sonatas Nos. 1 and 2

Kim Kashkashian, viola; Robert Levin, piano (ECM 1630, 44 min)

★★★★★

Like the great B Minor Quintet and A Minor Trio, these sonatas, Brahms's Op. 120, were composed for the clarinet, but Brahms also prepared the versions for viola, which were quickly seized upon by performers on that instrument. Late Brahms at his mellow best, these two masterpieces have an autumnal hue that some listeners feel is more aptly conveyed by the dusky sound of the viola than by the clarinet's more pellucid tone. As in all of the Brahms duo sonatas, the keyboard instrument is an



equal partner, and nothing but the best will do.

Violist Kim Kashkashian and pianist Robert Levin are tops in their league, and they need give no ground to the stiff competition in these works interpretively. Because the viola's dynamic range is wider than the clarinet's, the piano sound here may seem a bit aggressive to listeners used to the versions with clarinet. It took a while for me to get accustomed to it, but once I did I found these readings right on target, even the extreme dynamics in the opening movement of the Sonata No. 1. The sound overall is first-rate — full bodied and amply present. I do wish, however, that we had been given more than a mere 44 minutes of playing time. *D.H.*

**CANTELOUBE** Songs of the Auvergne  
**EMMANUEL** Burgundian Songs

Dawn Upshaw, soprano; Lyons Opera Orchestra. Kent Nagano cond.  
(Erato 17577, 59 min)

★★★★★

Many topflight sopranos have embraced Joseph Canteloube's *Chants d'Auvergne* since Madeleine Grey's pioneering version in the 1930s. There are eighteen Auvergne songs here; a previous Erato disc by Dawn Upshaw and Kent Nagano offers others from the same collection. The *Chansons Bourguignonnes* of Maurice Emmanuel (1862-1938) were new to me, but they are ideal discmates for the Canteloube.

Both Emmanuel and the younger Canteloube (1870-1957) were enthusiastic folklorists who found in the songs of these respective regions a welcome link to French music's Renaissance and Baroque past, as well as a free departure from the various turn-of-century "schools." Emmanuel's harmonizations are more subdued — two of his songs, "Noël" and "Complainte de Notre Dame," are touchingly devotional — and they lack the pungency and the imaginative orchestrations of Canteloube's settings, but they are delightful nonetheless.

Songs like these challenge the interpreter to be simple and artful at the same time. Upshaw's wonderful sense of vocal color enables her to capture the lyricism without excessive sentiment, to reveal the subtle humor and flirtatious teasing in the texts, and to render the music with the appropriate rustic charm. The deftly played orchestral backgrounds are beautifully recorded. *G.J.*

**ELGAR** Violin Sonata in E Minor  
**FRANCK** Violin Sonata in A Major

Midori, violin; Robert McDonald, piano  
(Sony 63331, 55 min)

★★★★★

Midori, now in her mid-20s, has taken a new tack — away from showpiece concertos and encore pieces and into substantial sonata repertoire — and on this CD

she emerges as a cultivated and mature musician. Her choice of the Elgar E Minor Sonata, a late, nostalgic work composed in the closing months of World War I, is particularly notable. The music opens abruptly with a fiercely Brahmsian statement complete with tritonal elements, but this gives way to a wistfully lyrical expression. There follows an elusive, almost spooky "Romance" that Elgar's wife said suggested the dead trees at twilight next to the composer's country retreat. The final movement harks

back to the richly conciliatory vein found in the last pages of the Second Symphony. Midori and her very capable partner, the pianist Robert McDonald, do very well indeed by the work.

Unlike the Elgar, the Franck A Major Sonata has been recorded many times, and not just for violin. Midori's performance is on the restrained side — not a bad approach to a work that can be given a decidedly overheated rendition. It contains some of Franck's finest late music, free of bombast

## Something Old, Something New

There will be conservatives who will delight in the Kronos Quartet's *Early Music (Lachrymae Antiquae)* because of its title, and progressives who will be distressed for the same reason. Is the Kronos forsaking its lifelong mission to champion the new and comb the globe for the unusual? Not at all. You see, this is early music, but it is also new music and world music. The early music dates back to the chant of the ninth-century Byzantine abbess Kassia and the twelfth-century abbess Hildegard of Bingen. The new music reaches up to John Cage and Alfred Schnittke. The world music ranges from the folk singing of Tuva to the folk fiddling of Sweden.

What's remarkable is that the early music sounds new, and the new and world music sounds early. *Early Music* is the Kronos's most superb concept album, designed to be a 69-minute artwork unto itself, oblivious to time and place. It will please neither musicologists who demand historical authenticity nor ethnologists who demand cultural context. (Most of the selections are arrangements of pieces not intended for string quartet.) But it will entrance those open-minded enough to embrace it as an unbroken entity.

Of the twenty-one brief numbers, eleven are by medieval, Renaissance, and early Baroque composers such as Kassia, Hildegard, Perotin, Guillaume de Machaut, John Dowland, Christopher Tye, and Henry Purcell. Eight numbers would count as new music, yet in each case they seem old. Arvo Pärt's *Psalom* is frankly neo-medieval; Harry Partch's *Two Studies* are based on ancient Greek scales. Cage's youthful pieces *Totem Ancestor* and *Quodlibet* sound non-Western in their hypnotic drones and rhythmic ostinatos. Schnittke's *Collected Songs Where Every Verse Is Filled with Grief* (1985) stands apart from time, its anguish reminiscent of Shostakovich,

its half-hearted resolution as poignant as Russian folk song. And the world music sounds as modern as Cage, resting upon relentless drones and ostinatos.

*Early Music* is performed almost entirely without vibrato, yet this approach is flexible enough to be piercing, austere, even raucous, as in Machaut's *Kyrie II*, or silken, hushed, and translucent, as in the Purcell *Fantasia No. 2* and Tye's "Rachell's Weeping" and "Farewell My Goode," where the



Kronos Quartet

quartet sounds like a consort of viols. The Kronos members have learned an entirely new approach to their instruments and to quartet style, and first violinist David Harrington, whose playing can be needlessly strident, has benefited the most. Whatever the Kronos records in the future, *Early Music* has opened the door to an unsuspected new world of colors and styles.

— K. Robert Schwarz

**KRONOS QUARTET**  
**Early Music (Lachrymae Antiquae)**

Kronos Quartet; other musicians  
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and formal overextension; the cyclic elements are handled in a subtle rather than obvious manner, and the chromatic aspect of the composer's idiom is less obtrusive than usual. Recorded sound and balance leave nothing to be desired. *D.H.*

**HAYDN** Symphonies No. 103 ("Drum Roll") and No. 104 ("London")  
La Petite Bande. Sigiswald Kuijken cond.  
(*Deutsche Harmonia Mundt/BMG 77362*, 58 min)

★★★★★  
**S**igiswald Kuijken and La Petite Bande's recordings of Haydn's twelve "London" Symphonies, which got off to a splendid start with a surpassingly persuasive CD of Nos. 93, 94, and 95 a few years ago, has been less consistently appealing in its subsequent installments, but the present disc, which concludes the series, is surely another winner.

Kuijken takes Haydn's slow movements rather more expansively than his period-instrument colleagues in Britain, who tend to take them very briskly indeed. He is still successful, however, in realizing the *spirit* of a Haydn andante or allegretto with a robustness that enlivens at any speed. At just a shade under 11 minutes, the slow movement of No. 103 is certainly not rushed, but it strides along at a purposeful pace, absolutely undulled by gratuitous solemnizing — and yet suggesting that anything the tiniest bit faster would sound breathless.

In contrast to that andante, the slow movement of No. 104 proceeds at a somewhat more measured pace, building effectively toward the eruptive middle section, which comes off to powerful effect while avoiding any impression of being "staged." The minuets of both works are uncommonly fleet, and the outer movements, despite some less than ideal wind balances, successfully realize Haydn's familiar blend of movement and substance, warmth and wit on the highest level. The recording itself, while not quite demonstration class, is agreeably full-bodied and well defined. *R.F.*

**MENDELSSOHN** *Elijah*  
Bryn Terfel (*Elijah*). Renée Fleming (the Widow). Patricia Bardon (an Angel). John Mark Ainsley (Obadiah), others: Edinburgh Festival Chorus; Orchestra of the Age of Enlightenment. Paul Daniel cond. (*London 455 688*, 131 min)

★★★★★  
**M**endelssohn's *Elijah*, first performed in 1846, was his last major work. Though his basic text was in German, he saw to it that the English version was musically compatible, for the work had been commissioned by Britain's Birmingham Festival. For nearly a hundred years thereafter, the British considered it the greatest post-Handelian oratorio. For today's audiences, even in Britain, it takes a superlative

# Stereo Review

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performance with first-rank soloists, chorus, and orchestra to put the work across. And for my money, this new recording does just that, in spades.

Conductor Paul Daniel, best known for his work in contemporary music, turns out to have just the right touch to bring out both the dramatic tension and the lyricism of the Elijah story. He has a splendid chorus, a period-instrument orchestra, and a superb array of soloists headed by the Welsh bass-baritone, Bryn Terfel. From the opening proclamation, "As the Lord God of Israel liveth," which precedes the overture, there is no doubt that we are in for a memorable listening experience. While it is Terfel's heroic portrayal of Elijah that makes the deepest impression, tenor John Mark Ainsley is a pleasure to the ear in "If with all your hearts . . ." and soprano Renée Fleming's voice and delivery in the Widow's dialogue and duet with Elijah are right on target, if a bit cool for my taste. But for me the best of the women soloists is Patricia Bardon, who communicates a real sense of warmth and assurance in "Oh rest in the Lord."

Of course, Terfel and the Edinburgh Festival Chorus make a splendid show out of the contest between the Israelites and the priests of Baal, whose subsequent damnation is genuinely chilling. Terfel does equally well with the more thoughtful and somber aspects of the Biblical hero. The taking up of Elijah into heaven on the chariot of fire is another great moment for the chorus, which packs plenty of punch even if it does not enunciate quite as distinctly as Robert Shaw's on his Telarc recording. I have no complaint with the excellent solo and ensemble work for the Angels; there is both elegance where needed and ample feeling, with no lapse into sentimentality. The recorded sound is excellent, with ideal balances between soloists, chorus, and orchestra. A first-choice *Elijah*. *D.H.*

**ROUSE** Symphony No. 2; Flute Concerto; *Phaethon*

Carol Wincenc, flute; Houston Symphony, Christoph Eschenbach cond. (*Telarc 80452*, 65 min)

★★★★

**C**hristopher Rouse is a fascinating figure, one of the first composers to bring the rock idiom into the symphony concert hall. His recent works, in a sophisticated atonal style, have taken on a dark, even angry tone. The heart of his Symphony No. 2 is a bravura, 13-minute-long adagio, which is dedicated to the memory of the composer Stephen Albert, a friend of Rouse's who had recently died in a car accident. It swings in mood between an anguished string threnody and acrid, staccato protests by brass and percussion. The movement is bracketed by two allegros, which contain much the

same musical material. The first allegro is "refracted through the prism of the second movement," in the composer's words, and transformed into a tempestuous finale dominated by high brass and winds and awash with pounding timpani and cymbals.

The Flute Concerto, a much more subdued affair, is infused with a nostalgic, folkish mood reflecting the composer's Celtic ancestry. The piece alternates between airs for the flute, either unaccompa-

nied or very sparsely orchestrated, and liting marches. The disc concludes with *Phaethon*, a dynamic, exciting tone poem based on the myth of the son of the Greek sun god Helios, who takes the old man's chariot out for a spin, loses control, and crashes to earth. The composer says he had reached the exact point in the score where Zeus hurls a thunderbolt at Phaethon, to put an end to his disastrous joyride, on the day the space shuttle *Challenger* exploded. It is a



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**BARTOK** Concerto for Orchestra; Divertimento for String Orchestra

Royal Philharmonic, Daniele Gatti cond. (Conifer/BMG 51324, 68 min) ★★ ★  
Daniele Gatti has his London orchestra playing near the top of its form, with an especially well-judged springiness in the Concerto for Orchestra's second movement. But he comes no closer than any



of his eminent predecessors to matching the formidable standard Fritz Reiner set in his Chicago Symphony recording of the concerto, and the Divertimento for Strings flows a bit more ingratiatingly in several other recordings. R.F.

**BERLIOZ** Les Nuits d'Été; Arias

Susan Graham, soprano; Royal Opera House Orchestra, John Nelson cond. (Sony 62730, 61 min) ★★ ★  
Although Susan Graham hails from the American Southwest, you'd swear she was French, so idiomatic and instinctive is her feel for this repertoire. Berlioz's song cycle *Les Nuits d'Été* is a work of shifting moods and colors, and she captures them with incandescent beauty. The Royal Opera House Orchestra, however, conducted by John Nelson, sounds rather colorless. The disc is filled up with a clutch of arias from Berlioz's operas and from the dramatic symphony *The Damnation of Faust*. J.J.

**ORFF** Carmina Burana

Beverly Hoch, soprano; Stanford Olsen, tenor; Mark Oswald, baritone; F.A.C.E. Treble Choir; Montreal Symphony Chorus and Orchestra, Charles Dutoit cond. (London 455 290, 59 min) ★★ ★  
Orff's *Carmina Burana* is probably the most popular choral/symphonic work in the twentieth-century repertoire. Its German publisher once told me that the royalties from it alone virtually kept his publishing operation in the black! Charles Dutoit's reading isn't very sexy but rather a solid, typical, big, and fat version with good soloists and excellent choral work. Recommended but with only modified rapture. E.S.

**RACHMANINOFF** Suites Nos. 1 and 2 for Two Pianos; Six Duets; Prelude in C-sharp Minor

Cynthia Raim and David Allen Wehr, pianos (Connoisseur Society 4214, 79 min) ★★ ★  
Seasoned and sensitive pianists Cynthia Raim and David Allen Wehr give us a fine sampling of the youthful Rachmaninoff's writing for two pianos and for piano duet. The Six Duets and the First Suite are the more picturesque, while the Second Suite is decidedly the more polished. The famous C-sharp Minor Prelude is done here in the composer's own 1938 two-piano version, which sounds bigger but not necessarily better than the solo original. The sonics are A-1. D.H.

**SCHUBERT** Lieder

Matthias Goerne, baritone; Andreas Haefliger, piano (London 452 917, 72 min) ★★ ★  
Schubert's lieder on poems of Goethe include some of his best-loved songs, from the hair-raising ghost story "Erkönig" to "An den Mond," a dreamy, heartbroken song to the moon. Matthias Goerne, a talented young German baritone, communicates the many subtle moods of these songs with disarming directness and admirable voice control, and he's ably accompanied by the pianist Andreas Haefliger. J.J.

**WAGNER** Orchestral Music

MET Orchestra, James Levine cond. (Deutsche Grammophon 447 764, 72 min) ★★ ★  
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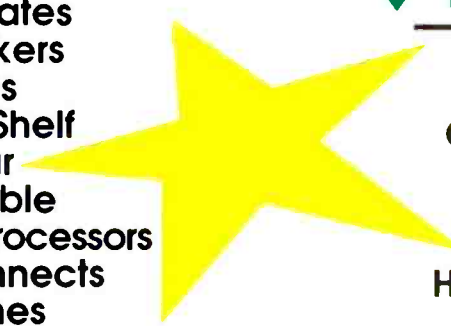
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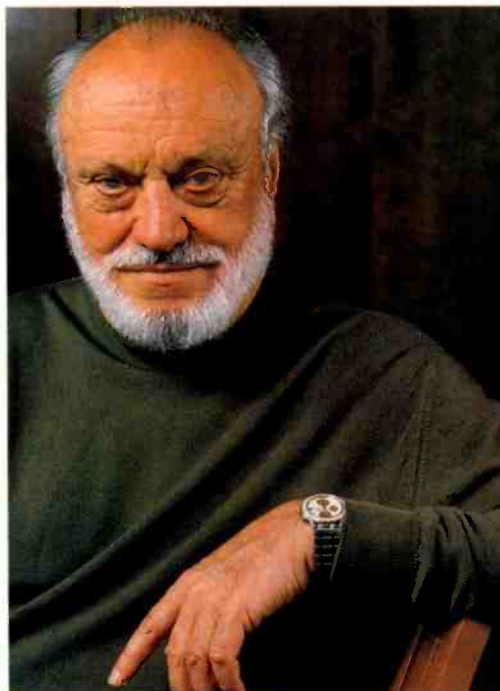
# Kurt Masur

SINCE HE TOOK OVER the New York Philharmonic seven years ago, Kurt Masur, the genial, bearded bear from Leipzig, has become widely known as the man who imposed discipline on this famously fractious orchestra and inspired musical performances at the highest artistic levels since the legendary Leonard Bernstein era (1958-1969). Yet perhaps the best thing he did for the orchestra was to land it an exclusive, thirty-two-CD contract with Teldec at a time when recording companies were beginning to shy away from such iron-clad, big-money deals. Interviewed at his office in Lincoln Center last September, he said that Teldec "had a wonderful, basic idea — to follow the New York Philharmonic and Masur from the beginning, from the opening concert until now."

With Masur's enthusiastic support, Teldec decided to do all the recordings live during performances at Avery Fisher Hall, the orchestra's home in Lincoln Center. "It gives an entirely different feeling to the recordings," Masur said, "because they take place in front of an audience. That's absolutely clear, especially in the case of the New York Philharmonic, because they're not afraid to play in front of a microphone. What we have achieved together is much more honest [than studio recordings]. Teldec was brave to do it that way, because there was a risk. No one knew how it would work."

He has developed a close working relationship with his producer, Martin Fouqué. "Martin has an understanding of music and musical style, and a knowledge of conducting, which is important." If the conductor and the producer aren't on the same wavelength, Masur said, "then suddenly you may feel, for example, that the tempo doesn't fit, or the sound doesn't fit the tempo, and you don't feel the spirit of the performance." Masur and Fouqué's most recent collaboration was not for Teldec but for Deutsche Grammophon: a recording of the Brahms Violin Concerto and Schumann's Fantasy for Violin and Orchestra with Anne-Sophie Mutter, who is an exclusive DG artist. Masur called it one of the best recordings he has done with the Philharmonic.

Then he paused dramatically, and said that while he has been quite satisfied with the artistic fruits of the relationship with Teldec, there have also been problems, which he tactfully expressed in a double negative: "The nonartistic side was never without problems. There is no doubt, we wanted to do more." He threw up his big hands. "Artists want to do more. We did the



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Britten *War Requiem*, but there are more contemporary pieces we wanted to do."

It's all more than a bit ironic: from the beginning of Masur's directorship, even as critics and audiences raved about his sparkling Mendelssohn, his majestic Dvorak, his profound Beethoven, there was also some grumbling that the repertory was becoming too staid, too German. Yet even when he programs contemporary music, he gets knocked. Last summer, in the Lincoln Cen-

ter Festival, he conducted a rare performance of Hans Werner Henze's *Tristan*, one of the neglected masterpieces of contemporary German music. "People complained that I'm only interested in composers who are connected with the past," he said in exasperation. "Well, Beethoven was connected with the past. Schoenberg was connected with the past."

Pressed to name some of the recording projects he had pushed for that Teldec rejected, he shrugged and said, with a sardonic chuckle, "We gave up from the beginning." The difficulties arose, he explained, because the orchestra was under exclusive contract with Teldec, and the label wanted them to record "the basic repertory of a symphony orchestra — which is fine." Another shrug. "But the orchestra has had several important first performances. We had Schnittke's Seventh Symphony; we had Minoru Miki's *Symphony for Two Worlds*; there was a new piece by Bright Sheng."

Masur said that he asked Teldec if the orchestra could record such contemporary repertory with one of the smaller American labels instead. "But it wasn't allowed. They said, 'Exclusive is exclusive.' It's a pity. It limited the mirror. I would call it, of what we have done over the past seven years. It makes me a little bit sad." Masur believes that the record labels and artists' managers "make the mistake of thinking that the audience only wants to hear Beethoven. That isn't true. Of course it's important to improve, to create performances of Beethoven that make people sit up and be excited. But perhaps on the first half of the program, it might be interesting to hear something new."

The main question now, he said, is the future. "We at the Philharmonic are trying to find some way of making two or three recordings a year by young composers." Lowering his voice to a dramatic *mezza voce*, "Someone must care about them," he said. "Otherwise, how will they live? A young composer can only earn money by doing movie music. You can learn a lot from that — for a while. But ultimately it flattens a composer's musical expression."

Less than a year remains in the Philharmonic's contract with Teldec. And after that? "I don't know how it will continue," Masur said. "None of us knows." The ongoing slump in classical-music sales is at the heart of the problem, but Masur maintains a positive attitude: "At the moment our world is a little bit shaky. We have to find some way of becoming healthy again. 'Healthy' means that young composers have a chance, and that we are able to give the audience an orientation about what's going on in the musical world." □



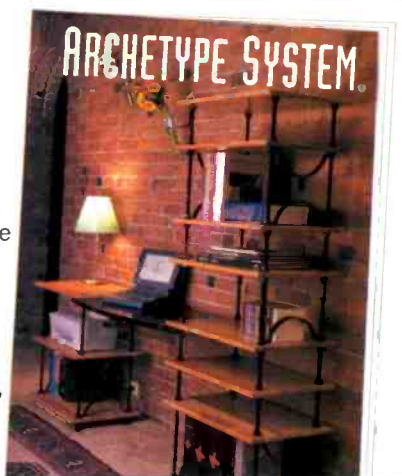
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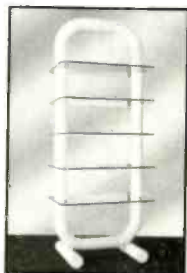
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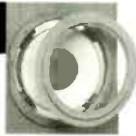
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## Format-of-the-Month Club

THE MOST COMMON complaint that I hear these days from consumers, dealers, and manufacturers is that high-end audio is shooting itself in the foot with its latest trend: the Format-of-the-Month Club. Somehow, somewhere, someone told the high end that it should stop waiting for the giants like Sony, Philips, Toshiba, and Dolby to develop new worldwide format standards and start creating new and proprietary formats on its own. The result has been an alphabet soup of ill-conceived formats that offer no real benefit to the consumer over the accepted industry standards like CD and Dolby Digital. For example, there's HDCD, which offers "penalized compatibility" (the undecoded discs can be played on conventional CD players but with degraded performance), and DTS-encoded CDs and the soon-to-be-released DTS DVDs, which aren't compatible at all without an expensive hardware upgrade.

Now you can add another three-letter niche format to the mix, DAD. The L.A.-based audiophile LP-reissue label Classic Records held a press conference at this winter's Consumer Electronics Show to announce a new format it calls "24/96 Digital Audio Disc," a high-quality, audio-only version of DVD (but not the DVD-Audio format, which is still being hashed out by the official standards group). Promoted by a small group of high-end hardware manufacturers, most notably Muse Electronics, this new format will be used to rerelease the past and present catalogs of Classic Records, Chesky, and other audiophile labels in 24-bit, 96-kHz-sampled two-channel stereo.

Just when we're finally on the verge of a new and improved worldwide digital audio format in the form of DVD-Audio, a group of high-end manufacturers has announced that, rather than wait for the official DVD-Audio format standard, they're coming out with their own separate format. And while the rest of the world is evolving from stereo to multichannel surround sound, the high end decides to stick to stereo! I can't help but scratch my head in that same worn spot I always scratch when the high end thinks small and then wonders why its ranks are dwindling.

I was told that DAD's two-channel specification isn't a limiting factor be-

cause it's going to be used to rerelease the existing archive of stereo recordings. But DVD-Audio can and will be used for the same purpose, with the same uncompressed, high-bandwidth sound quality as DAD. Just because DVD-Audio will likely be a 5.1-channel format doesn't mean it can't be used as a transparent delivery medium for stereo or even mono archival recordings, much as DVD-Video's 5.1-channel Dolby Digital soundtrack expertly delivers the mono sound of such classic films as *Dr. Strangelove*. You don't have to use all 5.1 channels all of the time if the original recording doesn't need them.

For sixteen years I've been hearing the high end carp about the sound of CDs (and joining in myself). Yet, despite all the complaints, high-end manufacturers did the right thing by accepting the CD as the new worldwide standard and working

**It's not the job** of the high end to go off and create multiple niche formats, especially at the rapid clip we're seeing.

to refine its sound with upgraded circuitry in the players, separate high-end digital-to-analog (D/A) processors, and better digital mastering on the recording side from such audiophile labels as Chesky, Mobile Fidelity, and DCC. So why are they now coming out with a new format, just as the world is about to welcome DVD-Audio as CD's official successor?

Some see DAD as a tourniquet to stop the bleeding away of the market for separate two-channel D/A processors, whose sales and popularity with audiophiles have plummeted in the past two years because of the success of Dolby Digital. While the smarter D/A-processor manufacturers, like Theta, Krell, and Meridian, have moved on to building multichannel processors that can handle everything from two-channel PCM audio from CDs to 5.1-channel Dolby Digital, there are clearly many other manufacturers in the high end who either lack the skill to design a proper surround preamp or simply wish to stay the two-channel course.

The first DAD-ready DVD players from Muse and Conrad-Johnson may have already hit the market as this issue goes to press. Now, I really like the guys at Muse and Conrad-Johnson — I've given rave reviews to their products, and I consider theirs to be two of the most reliably solid high-end product lines in the industry. But as much as I respect their design and engineering talent, they've got no business creating new proprietary formats. No matter how good DAD sounds, it's still going to be a niche format like HDCD and DTS, confined to a handful of high-end hardware manufacturers and software titles.

It's a fact of life that the Sonys, Philips, and Toshibas of the world are the ones who develop worldwide A/V media formats. They have the experience and the clout, and, more important, they have a worldview that includes the general public, not just hard-core audiophiles. And no format, no matter how awesome its potential, can succeed by catering only to several thousand rabid audiophiles.

As I see it, the high end's duty is to present its case for improved technical performance, wait for the giants to thrash it all out, and then build the best-sounding playback hardware for the new standard. It's not its job to go off and create multiple niche formats, especially at the rapid clip we're seeing. If the high end wants to create its own two-channel DVD-based format separate from the 5.1-channel DVD-Audio the rest of us will be enjoying, I guess it's entitled to. But I have to wonder whether this is really a benefit to the audiophile, or just another Format of the Month.

The road to audio perfection is littered with the sun-bleached bones of such niche "super-formats" as the dbx-encoded LP, and the vultures are already starting to circle around HDCD and DTS-encoded CDs and laserdiscs. Will DAD join them? If the worldwide DVD-Audio standard offers the same uncompressed, high-resolution sound in a 5.1-channel format, the answer will be yes. □





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